

BOBLATSSS 2019

Information and technology transforming lives:  
connection, interaction, innovation

# PROCEEDINGS



JOSIP JURAJ STROSSMAYER UNIVERSITY OF OSIJEK  
**FACULTY OF HUMANITIES  
AND SOCIAL SCIENCES**



UPPSALA  
UNIVERSITET

**Linnæus University** 

**THE HAGUE**  
UNIVERSITY OF  
APPLIED SCIENCES



Information and technology transforming lives:  
connection, interaction, innovation

Proceedings of the XXVII Bobcatsss Symposium,

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# BOBCATSSS 2019

Osijek, Croatia  
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INFORMATION AND  
TECHNOLOGY TRANSFORMING LIVES:  
CONNECTION, INTERACTION, INNOVATION

PROCEEDINGS OF  
INTERNATIONAL SYMPOSIUM  
BOBCATSSS



JOSIP JURAJ STROSSMAYER UNIVERSITY OF OSIJEK  
**FACULTY OF HUMANITIES  
AND SOCIAL SCIENCES**



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## PREFACE

It is a great pleasure for us to present the proceedings of the 27th BOBCATSSS symposium. Since 1993, BOBCATSSS conference has been annually organized for libraries and information science students and professors. In line with their goal, the Proceedings of the 27th BOBCATSSS symposium entitled *Information and technology transforming lives: connection, interaction, innovation* quite faithfully document the meeting of the same title held from 22 to 24 January 2019 in Osijek, Croatia. This year's symposium gathered 209 participants from 22 countries all over the world (Bosnia and Herzegovina, Bulgaria, Czech Republic, Denmark, Finland, France, Croatia, Italy, Japan, China, Hungary, Netherlands, Germany, Poland, Portugal, USA, Slovenia, Serbia, Sweden, Spain, Taiwan and Turkey).

The 27th BOBCATSSS conference was organized by students from the Department of Information Sciences, Faculty of Humanities and Social Sciences at University of Osijek, Croatia, with the cooperation of the students from the following partner institutions: The Hague University of Applied Sciences, Netherlands, Uppsala University and Linnaeus University, Sweden.

This Proceedings follows the programme of the BOBCATSSS conference and the articles are distributed into three main sections: Papers, Posters and Workshops. Out of 43 lectures presentations held at the 27th BOBCATSSS symposium, 39 are presented in the first section of the Proceedings. The papers are divided into three conference subthemes: Social roles of information institutions; Information profession(s) and discipline and Innovative technologies.

Each thematic section is headed by a paper of invited speakers. The first thematic section is introduced by the paper by Koraljka Golub (Associate Professor, Head of the Institute, Digital Humanities Initiative Co-Leader, Department of Cultural Sciences Faculty of Arts and Humanities, Linnaeus University) entitled *From the Library and Information Science Department to the University-Wide Transdisciplinary iSchool: A Model of Linnaeus University in which the author presented recently established iInstitute at the Linnaeus University*

Milijana Mičunović (Assistant Professor at Department of Information Sciences, Faculty of Humanities and Social Sciences at University of Osijek, Croatia) with her extremely interesting and well received work *New industrial revolution, emerging technologies and information institutions: is there a roadmap to the future?* begins the third thematic section of the Proceedings in which the author discussed about new industrial revolution (NIR), emerging technologies and economic metamorphosis and how they impact our professional and private lives.

Out of 20 Poster presentations held at the 27th BOBCATSSS symposium, 19 are presented in the second section of the Proceedings. The last section of the Proceedings comprises Workshop reports. Out of 6 Workshops, we bring you reports from five.

Awarded participants are an invited speaker Milijana Mičunović (University of Osijek, Croatia) for the best paper titled *New industrial revolution, emerging technologies and information institutions: is there a roadmap to the future?*, Sonia Camarasa Sola, Robert Mokhtari Marmol and Laura Garcia Piqué (University of Barcelona, Spain) for the best poster titled *Animals in the library: the benefits of bringing them at the library* and Núria Toneu Llobet (University de Barcelona, Spain), Joost Verberne (Hanze University of Applied Sciences, Netherlands), Wei Jen Chou (Providence University, Taiwan) and Chia Ling Lee (National Central University, Taiwan) for the best workshop titled *Say goodbye to your privacy? A workshop on online privacy in Smart Homes and how to prevent your data from being leaked*.

For the first time the organizers of BOBCATSSS 2019 awarded two special prizes: the first submitted abstract by Alina Stoicescu (University of Copenhagen, Denmark) *Data science competencies in Danish academic libraries* and the first submitted full text manuscript by Isto Huvila (Uppsala University, Sweden) *Library catalogue is not a community! User contributions to online services of archives, libraries and museums*.

In BOBCATSSS tradition, Paavo Arvola from EUCLID awarded this year's BOBCAT of the year award to Professor Tatjana Aparac-Jelušić (University of Zadar, Croatia).



The BOBCATSSS symposium is a forum which facilitates students' independent work but also collaboration between students and their professors. The proceedings bring good examples of papers resulting from such work. We believe that BOBCATSSS is also a great place to present results of international cooperation so we hope that in future more papers resulting from such collaboration will be shared.

We would like to thank our organizing partners, keynote speakers, the authors, our sponsors and everybody who participated and traveled a long way to be a part of another exciting Bobcatsss symposium.

#### DISCLAIMER

The opinions in the papers do not necessarily reflect the opinions of the organizing team of BOBCATSSS 2019.

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UNIVERSITY OF OSIJEK, CROATIA

HEAD COORDINATOR

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UNIVERSITY OF OSIJEK, CROATIA

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Niels van der Meer, Student

UPPSALA UNIVERSITY TEAM, SWEDEN

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Annika Stengard, MA Student  
Malin Barkelind, MA Student

LINNAEUS UNIVERSITY TEAM, SWEDEN

Madeleine Lundman, Lecturer



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## P A P E R S

S u b t h e m e :  
Social roles of information institutions



## FROM A LIBRARY AND INFORMATION SCIENCE DEPARTMENT TO A TRANSDISCIPLINARY, UNIVERSITY-WIDE ISCHOOL: A MODEL OF LINNAEUS UNIVERSITY

Koraljka Golub

Associate Professor, iInstitute, Linnaeus University, Växjö, Sweden  
koraljka.golub@lnu.se

### Abstract

*The information field, or the iField, resorts to interdisciplinary approaches to enrich and facilitate generation, transfer and curation of data, information, and knowledge by the widespread use of technology in order to maximize the potential of humans. It is largely promoted by the iSchools organization (<http://ischools.org>). The idea to create an iSchool at Linnaeus University (LNU) was born in 2016, when LNU had already had a proven track of interdisciplinary and cross-institutional collaborations, both within the university and beyond, such as a Master program titled Innovation through Business, Engineering and Design and Data Intensive Sciences and Applications (DISA) Centre of Excellence. Inspired by the new models to bridge traditional disciplinary and institutional boundaries, the iField seemed like an excellent platform through which to connect traditionally disparate departments, disciplines and non-academic institutions, in order to jointly address complex future societal challenges. In 2017 a project grant was awarded to explore the potential and identify the benefits of starting an iSchool and joining the iSchools organization. The idea was met with enthusiasm at a sufficient number of levels that the acting vice-chancellor at the time proposed a formation of an institute which is today named Information Institute (iInstitute, <https://lnu.se/en/iinstitute>). It comprises 14 existing programmes at undergraduate, graduate and doctoral levels, of which 6 planned to be introduced from truly transdisciplinary perspectives of the iField, 4 research centres, and 1 collaborative node comprising over 200 IT companies. The iInstitute was approved membership in the iSchools organization in December 2017.*

**Keywords:** iSchools, iField, iInstitute, Linnaeus University



## What is an iSchool?

The information field, or the iField, resorts to transdisciplinary approaches to enrich and facilitate generation, transfer and curation of data, information, and knowledge by the widespread use of technology in order to maximize the potential of humans. Disciplines of the iField include computer science, library and information science, business informatics, knowledge management, business, sociology, psychology, philosophy, ethics, linguistics, media, with a range of applied fields and disciplines such as astronomy, medicine, biology, health, history, religion, archaeology, musicology, literature, art. The world's most active organization in promoting and practicing the iField is iSchools (<http://ischools.org>). The iSchools vision is "to maximize the visibility and influence of its member schools (<https://ischools.org/members/directory/>), and their interdisciplinary approaches to harnessing the power of information and technology, and maximizing the potential of humans. We envision a future in which the iSchool Movement has spread around the world, and the information field is widely recognized for creating innovative systems and designing information solutions that benefit individuals, organizations, and society. iSchool graduates will fill the personnel and leadership needs of organizations of all types and sizes; and our areas of research and inquiry will attract strong support and have profound impacts on society and on the formulation of policy from local to international levels" (<https://ischools.org/stories/ischool-movement/>).

The iSchools Organization as of 2018 involves over 80 prestigious universities from around the world. The following universities with iSchools are ranked among the top 50 according to the World University Rankings of the Times Higher Education in 2018:

- University of Oxford
- University of California, Los Angeles
- University College London
- University of California, Berkeley
- Cornell University
- University of Michigan
- University of Toronto
- Carnegie Mellon University
- University of Washington
- Peking University
- University of Melbourne



- Georgia Institute of Technology
- University of British Columbia
- University of Illinois at Urbana-Champaign
- University of Hong Kong
- McGill University
- University of Texas at Austin.

iSchools prepare students for a broad spectrum of satisfying and rewarding careers (<https://ischools.org/stories/careers/>), including:

- Information architects
- Network managers
- Project managers
- Web developers
- Solution developers
- Software development engineers
- Quality assurance professionals
- IT analysts and managers
- Programmers
- Librarians
- Information officers
- Legislative relations
- Competitive intelligence analysts
- Knowledge management specialists
- Underwriting coordinators
- Media correspondents
- Teachers.

## Why an iSchool at Linnaeus University (LNU)?

The idea to create an iSchool at LNU was born in 2016, when LNU had already had a proven track record of interdisciplinary and cross-institutional collaborations both inside and outside the university (<http://lnu.se/en/research/searchresearch/forskningsprojekt/linnaeus-university-as-a-unique-ischool>). For example, a master's program titled Innovation Through Business, Engineering and Design (<http://lnu.se/en/programme/innovation-through-business-en>



gineering-and-design-specialisation-design-master-programme/vaxjo-international-autumn) had recently started covering the private sector's need (notably IKEA, whose Swedish headquarters is close to LNU) to educate professionals who have knowledge and skills in all three of those disciplines. At about the same time, the LNU Centre for Data Intensive Sciences and Applications (DISA) had begun taking shape (<https://lnu.se/en/disa>). DISA now involves eight different specializations, including computational social sciences, data-intensive digital humanities, data-intensive astroparticle physics, visual analytics for engineering smart systems, and wood and building technologies. DISA also boasts strong collaborative practices with the private sector, including a cluster of more than 200 IT companies in the region and beyond.

Inspired by these new models to bridge traditional disciplinary and institutional boundaries, the iField seemed like a great platform through which to connect traditionally disparate departments, disciplines, and non-academic institutions in order to jointly address complex future societal challenges. The need for the iField and the iSchool at LNU is best described by Professor Andrew Dillon, a recent Head of iSchool at the University of Austin who kindly acted as LNU's iSchool project advisor in 2017:

The most pressing problems of the 21st century are trans-disciplinary and invariably mediated by information or its associated technologies. To lead change, scholarship must cross boundaries and equip the next generation of graduates to think in terms of leveraging human abilities through new IT. There is no single subject or discipline for this, it has to be outside traditional boundaries or it will not work. To do this, an iSchool at your university is essential. Without it, progress will invariably be limited and narrow.

LNU's iSchool grew out of a project to build an iSchool at Linnaeus University (January-December 2017). The iSchool took the form of a virtual unit named iInstitute which encompasses over a dozen of programs, research centres and external partner nodes from across the University and beyond. The iInstitute became a proud member of the iSchools organization on 17 December 2017.

In order to address some of the most relevant challenges of the 21st century that can be mediated and facilitated by information and communication technologies, the iSchool at LNU is well placed to contribute to the iSchool family in many ways. Not only does LNU harness expertise across a range of disciplinary boundaries in order to find novel approaches and solutions to tackle these problems, but it is also known for its excellence as an entrepreneurial university and for its openness to cross-institutional collaboration. Moreover, LNU's cross-disciplinary and cross-sectoral approach could serve as a source of inspiration for



exploring new ways to conduct academic activities within universities that have more traditional models. To quote Jens-Erik Mai, head of the department of information studies at the University of Copenhagen, “I think the idea of establishing an information school with those elements is both innovative and very exciting ... I think it could help lay the foundation for what an iSchool could also be”.

LNU’s membership in iSchools provides several potential benefits. First, it is significantly contributing to strengthening internal research and education in the cross-disciplinary iField, also in collaboration with external public and private sectors. Second, creating new, relevant programs and updating existing ones can attract many new students, leading to additional revenue for the university. Third, LNU can now collaborate with more than 80 iSchools from around the world. Collaboration exists in a variety of areas, such as research, education, and the forming of joint strategies for promoting the iSchools organization and the iField, both worldwide and in regional chapters.

## Building on Strengths, Shaping the Future

As seen from Figure 1 below, the iInstitute acts as a virtual centre which brings together existing education and research nodes including:

- Eight existing programs from five departments at three faculties (Faculty of Arts and Humanities, Faculty of Technology, and Faculty of Health and Life Sciences), currently numbering 106 lecturers, associate professors and full professors employed on a regular basis, 19 adjuncts, and 41 external actively involved teachers;
- Four research centres; and,
- A collaboration and innovation centre involving over 200 IT companies.



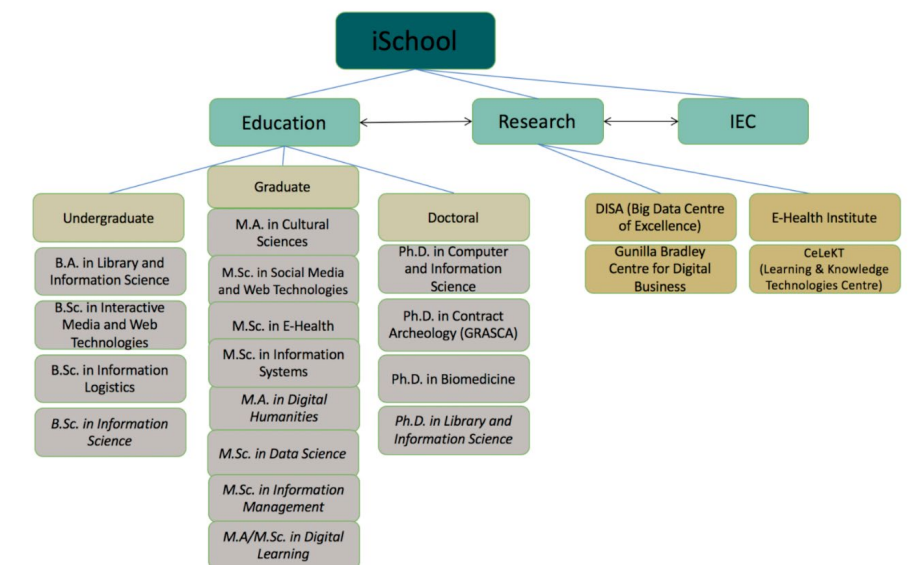


Figure 1. iInstitute current and planned nodes

The programs included are the following ones:

Undergraduate programs:

- Bachelor in Library and Information Science (Swedish distance and campus modes; 180 ECTS; Department of Cultural Sciences, Faculty of Arts and Humanities; accepting 40 new students per year).
- Bachelor in Interactive Media and Web Technologies, with two tracks the student can choose from in the second year, which ones? (Swedish campus mode; 180 ECTS; Department of Computer Science and Media Technology, Faculty of Technology, accepting 40 new students per year).
- Added in November 2018 is also Bachelor in Information Logistics (180 ECTS; Department of Informatics, Faculty of Technology).

Graduate programs:

- Master in Cultural Sciences (Swedish campus mode; 120 ECTS; Department of Cultural Sciences, Faculty of Arts and Humanities, accepting 20 new students per year).



- Master in Social Media and Web Technologies (international distance and campus mode; 120 ECTS; Department of Computer Science and Media Technology, Faculty of Technology, accepting 20 new students per year).
- Master in e-Health (Swedish distance mode; 120 ECTS; Faculty of Health Sciences, accepting 30 new students per year).
- Added in November 2018 is also M.Sc. in Information Systems (120 ECTS; Department of Informatics, Faculty of Technology).

Doctoral programs:

- PhD in Computer and Information Science (a joint PhD program between the Department of Informatics and Department of Computer Science and Media Technology, both at the Faculty of Technology).
- Graduate School in Contract Archaeology (GRASCA), related both to Digital Humanities (focus on digital archaeology), information mediation and communication and database handling (Department of Cultural Sciences, Faculty of Arts and Humanities).
- PhD in Biomedicine with focus on Health and Pharmaceutical Informatics (Faculty of Health and Life Sciences).

The research and collaboration nodes include the following:

- DISA – Data Intensive Sciences and Applications, Centre of Excellence;
- Gunilla Bradley Centre for Digital Business;
- CeLeKT: Centre for Learning and Knowledge Technologies; and,
- IEC (Information Engineering Centre), a research and collaboration project with over 200 IT companies.

The iInstitute aims to foster collaboration across the above programs, research nodes, departments and faculties in order to improve the quality of what is already in place, through bringing in multiple perspectives to educate, research and solve complex problems which require trans-disciplinary powers.

In addition, based on the above expertise, the iInstitute aims to develop the following programs in the period of 2019-2022:

- B.Sc. in Information Science / Information Science and Technology / Data and Information Science;
- M.A. in Digital Humanities;
- M.A./M.Sc. in Digital Learning;



- A self-standing module / M.Sc. in Data Sciences;
- M.A./M.Sc. in Information Management; and,
- PhD in Library and Information Science.

In addition to enriching these current and planned programs related to the iField, the iInstitute will explore possibilities by combining expertise from different disciplines in order to add to the value of other existing programs and better prepare graduates for existing job markets. One example would be to offer minors in IT for students majoring in arts and humanities in order to provide them with greater job opportunities. Another is to jointly develop modules for data science and for digital humanities and to offer them jointly for efficient resource distribution. Also, knowledge of IT is important in many situations, but knowledge of taxonomies and metadata has proven crucial in settings where high precision and recall are needed, including in big companies; therefore, combined knowledge from library and information science and IT would be beneficial. These are only some of the directions the iField at LNU could be developed in order to further strengthen the skills and employability of its students, as well as research in the iField among scientists.



## DEREGULATION OF THE LIBRARIAN PROFESSION IN POLAND: THE COURSE AND THE CONSEQUENCES

Mariola Antczak

Assoc. Prof., Department of Information, Library and Book Science,  
Faculty of Philology, University of Łódź, Poland  
mariola.antczak@uni.lodz.pl; marant@uni.lodz.pl

Zbigniew Gruszka

Ph.D., Department of Information, Library and Book Science, Faculty of  
Philology, University of Łódź, Poland  
zbigniew.gruszka@uni.lodz.pl.

### Abstract

*The article describes the process of the deregulation of the librarian profession in Poland (2011-2018). The authors discuss the following research problems: What are the most important changes introduced in the legal acts of the deregulation?, How did librarians, as well library and different organizations, react to the planned changes regarding the deregulation?, How are the consequences of deregulation assessed five years after their implementation? Between others, the method of analyzing legislative and other documents, the in-depth interviews based on a structured questionnaire – was used to achieve such goals.*

**Keywords:** deregulations of professions, librarian's profession, Poland, qualifications of librarians, legislative documents for librarians, librarians



## The background and the purpose of the study

The first act regulating the professional qualifications and the rules for the promotion of librarians was the 1998 regulation created as an executive act for the new act on libraries, amended in 1999 and binding until 2012 (Regulation of the Minister of Culture and Art of June 26, 1998; Minister of Culture and Arts of 9 March 1999, Act of 27 June 1997 on libraries). In 2011, the Polish government pledged to take legislative action aimed at reducing the number of regulated professions, which would ensure new vacancies for Poles. They stated that the high requirements in terms of seniority and professional qualifications deter active young people from seeking jobs because of the prospect of the high costs of getting the jobs. The case concerned removing from the list of regulated professions, *inter alia*, the librarian and employees of scientific archive and information, and it became the starting point for proposals for the related legislative changes.

According to a report of the Republican Foundation, the following barriers for vacancies exist: the educational requirement, having passed a state examination or a corporate examination, registration after meeting certain conditions, the requirement of experience, and meeting specific objective criteria (e.g. a clean criminal record, health certificates, etc.) (Wipler, 2011, pp. 15-16).

The Polish government decided that it would aim to reduce the number of regulated professions almost fourfold. Poland limited access to 380 professions – as it was claimed based on data collected by the Republican Foundation – and it was the highest number in Europe. In comparison, the Czech Republic had 333, Finland 122 and Sweden 91 (Wipler, 2011, p. 13).

To sum up, the government expected that after the introduction of appropriate legislative provisions, the consequences of the proposed changes would be:

- easier access to jobs for young people – a decrease in unemployment,
- shortened time to start working in the profession after completing studies and the acceleration of the process of entering the labor market,
- an increase in the quality of services provided,
- catching up with other European countries in terms of the number of regulated professions,
- in the case of librarians: “enabling professional promotion for people with high competences and broad skills regardless of their seniority” (Regulation of the Minister of Culture and National Heritage from March 5, 2012, Regulatory Impact Assessment, p.4).



In 2013, the announced changes entered into force and the librarian profession was deregulated (Act of 13 June 2013).

## Details of the methods, procedures or instruments used

The authors of the article discussed the following research problems:

- What are the most important changes introduced in the legal acts of the deregulation?
- How did librarians, as well library and scholar organizations, react to the planned changes regarding the deregulation?
- How are the consequences of deregulation assessed five years after their implementation?

The following methods were selected to achieve the set goals: a critical analysis of the subject literature and an analysis of the provisions contained in: (1) legal acts, (2) letters addressed to the government and the chairman of the Examination Commission that conducted qualification proceedings for candidates for certified librarians and certified archive employees and scientific information employees at the Ministry of Science and Higher Education, and (3) radio and television interviews from the early 2010s. In addition, the structured interview method was used.

The aim of the authors of the article was to determine the most important provisions contained in the legal acts aimed at the deregulation of the librarian and archive worker, describe the community response to the changes and diagnose the effects of the provisions in the legal acts. In November 2018, in-depth interviews were conducted, based on a structured questionnaire. It contained 11 questions regarding the attitudes and opinions of the respondents on the deregulation of the librarian's profession and a SWOT analysis form dedicated to respondents. The study was addressed to the managers of three different types of libraries - scientific, public, and public with the status of a provincial library.

## Findings and discussion

*The most important changes in the legal acts concerning the professions of librarian and archive and scientific information employee*

The concept of the deregulation from 2011 was supported by the Minister of Science and Higher Education, the Minister of Culture and National Heritage



and the Minister of Justice. As a result, the proposals for changes in the legal regulations concerning the profession of librarian appeared. The drafts of the legal acts were submitted to the communities in question so they could form their opinions (Project dated 6 March 2012 ..., pp. 83-84, draft from 18 May 2012 ...).

The first legal act (Project dated 6 March 2012 ...) concerned proposals for amendments to the Law on Higher Education (Act of 27 July 2005 ...). Innovations were connected with the rules of appointing qualified librarians, and thus the liquidation of the Examination Board that conducted the qualification procedure for candidates for certified librarian and certified employee of archive and scientific information at the Ministry of Science and Higher Education. The project assumed the elimination of uniform requirements and rules applicable to candidates for certified librarians and certified scientific information and archive employees (defined previously in the Act of 27 July 2005 ..., Art. 117), shifting the responsibility of determining these posts to employers at universities. It is now possible for such records to appear in the university's statutes. The new provisions also meant that everyone with a higher education could become certified librarians.

As a result of numerous protests against the changes regarding the requirements for the position of certified librarian in university libraries, another draft was prepared (Project dated 18 May 2012). The justification for the proposed changes stated that:

[...] due to the modernization of the cataloging system and the new technologies in libraries, there is no need to require extensive work experience in order to be promoted to a higher position. Often, the knowledge of new technologies and other skills, such as searching for extra-budgetary funds, may be a greater asset of an employee than education and rich work experience [...] (Project dated 18 May 2012 ..., Justification, 2012).

One argument justifying the introduction of the changes was that it gave young people access to the profession who were active in various areas of life and with experience in other professions.

The project of 18 May 2012 mainly concerned public library librarians. The document contained qualification requirements entitling them to occupy specific library positions. It stated that the qualifications would henceforth be decided by the employer, based on an analysis of the relevant employee documents, i.e., diplomas or certificates.

The project was accompanied by three tables regarding qualification requirements for specific positions in libraries: (1) for library service employees, (2) for



certified librarians, and (3) for specialists in other professions related to library activities (see Table 1). In the light of the proposed provisions, a junior librarian belonging to the library service, who might have completed secondary education and have no job record, or a person with secondary education (also belonging to the library service) with one year's work experience, would be good enough for the position of a librarian. At the same time, an alternative was proposed so that the position of librarian may also be taken by a B.A. or M.A. graduate without work experience. A senior librarian, curator and senior curator, as library service employees, would have to have a university degree at B.A. or M.A. level, and a sufficient job record. An alternative to the senior librarian would be the possibility of having higher education at B.A. level, but also four years' work experience (or in the case of an M.A., two years) (Project from 18 May 2012, Annex, point 1, see Table 2).

*Table 1.* Librarian positions in Polish public and scientific libraries between December 2012 and August 2013, repealed by the Act of 13 June 2013.

Positions in libraries	1. Librarian positions of library service employees	2. Librarian positions for certified librarians	3. Positions for specialists in other professions related to library activities
Positions	<ul style="list-style-type: none"> <li>• junior librarian</li> <li>• librarian</li> <li>• senior librarian</li> <li>• curator</li> <li>• senior curator</li> </ul>	<ul style="list-style-type: none"> <li>• assistant</li> <li>• assistant professor</li> <li>• qualified curator</li> <li>• senior qualified curator</li> </ul>	<ul style="list-style-type: none"> <li>• information and scientific documentation assistant</li> <li>• associate of information and scientific documentation</li> <li>• certified archivist</li> <li>• senior certified archivist</li> </ul>

Source: own study based on the Regulation of the Minister of Culture and National Heritage of December 5, 2012, appendix



Table 2. Qualification requirements for librarians in Poland from 2012.

Position	Education	Work record/experience
junior librarian	Librarianship course	-
	Librarian secondary education	
	Secondary education and apprenticeship or training connected with librarianship	
librarian	B.A. LIS	-
	B.A.	1 year
	Secondary school education	2 years
senior librarian	M.A.	2 years
	B.A. LIS	
	B.A.	3 years
curator	M.A.	work record
senior curator	M.A.	work record

Source: own study based on the Regulation of the Minister of Culture and National Heritage of 5 December 2012

According to the provisions of the project, librarians would not need to have any work record. They would be required to have graduated from studies in the field of LIS, with either a B.A. or an M.A. degree (Project from 18 May 2012, Annex, point 2). Similarly, specialists in other professions related to library activities – senior archivist, certified archivist, assistant professor and scientific archive assistant – would not need any work record, but only education, depending on the position; higher positions would need a B.A. or M.A. degree. The field of study is no longer defined here (Project from 18 May 2012, Annex, point 3).

*The reaction of the librarians, and library and other organizations to the changes proposed by the government in the field of deregulating the librarian's profession and employees of archives and scientific information.*

The project of 6 March 2012 was presented to the Conference of Managers of Polish Academic School Libraries, the National Science Centre, the Main Council of Science and Higher Education, the Polish Accreditation Committee, the Main Council of Research Institutes, the Young Scientists' Council, the Central Commission for Degrees and Titles, the Foundation for Polish Science, and the Association of Polish Librarians, among others. The reaction of the community was



unambiguous and relevant letters criticizing the project were issued (Opinion of the Executive Board of the Conference of Managers of Polish Academic School Libraries, Polish Librarians' Association position ...)

In addition to the activities by the various institutions, the librarians themselves also reacted, including managers of libraries, especially scientific ones. Prof. Hanna Tadeusiewicz, the chairwoman of the Examination Commission that conducted the recruitment procedure for candidates for certified librarian and certified employee of archive and scientific information, received many letters (Dobrzyńska-Lankosz, 2012c, Jazdon, 2012b, Kobierska-Maciuszko, 2012, Konieczna, 2012b, Copernicus Library in Toruń, 2012, Majerowicz, 2012, Nieć, 2012). Specialist librarian journals published articles (Tadeusiewicz, 2012, Konieczna, 2012, and Kubów, 2012). The problem was also described in the Polish periodical *Rzeczpospolita* (2012).

During the protests of the institutions and library managers and librarians, it was proposed that the suggested changes be entirely scrapped. It was emphasized that for people with various qualifications, levels of education and professional experience, the barriers to employment were not related to their qualifications but the libraries' budgets, as the vast majority of libraries are financed from public funds.

It was also requested that the long-standing good practice of granting the status of a certified librarian should be maintained. The librarians noted that the legislators' arguments that the changes would improve the quality of services offered by libraries and the reduce their costs were unfounded. The quality of services – according to the librarian community – would decrease, because the motivation to improve qualifications would disappear. In addition, if all employees with higher education were employed in the positions of certified librarians, the costs of university functioning would increase rather than decrease (the costs of employing qualified librarians are higher).

The project of 18 May 2012, in accordance with the applicable law, was also submitted to the relevant authorities for opinion (15 entities). Among them were the Information Society Development Foundation, the Polish Library Association, the National Library Council, the National Library, the Conference of Managers of Polish Academic School Libraries, the Conference of Managers of Voivodship Public Libraries, and the Polish Librarians Association (Regulation of the Minister of Culture and National Heritage of 5 March 2012, Impact assessment, p.1).



As in the first case, the librarians did not remain indifferent. The most important responses to the new legislative guidelines include the response of the librarians participating in the Library Development Programme (Opinions of librarians ...); comments and opinions of Polish Librarians' Association to the draft Regulation of the Ministry of Culture and National Heritage (Position of Polish Librarians' Association ...); negative opinions about the project formulated by the Polish Association of Libraries (Krajewski, 2012) and the Board of Managers of the Academic Schools of Polish Academies (Dobrzyńska-Lankosz 2012a and 2012b); a letter from the Managers of the LIS Institutes, in which there was strong opposition to the deregulation of the profession, stressing that it was against the recommendations of the IFLA and UNESCO (the Position of the Conference of Managers ...); the opinion of the Information Society Development Foundation, which stated that if libraries were to support the development of the local community, offer access to information and knowledge through communication technologies, and conduct activities in the field of culture, education and social integration, they certainly needed staff who would be able to meet these tasks. This was not guaranteed by the new legislative provisions (Kramza, 2012).

In the letter written by the managers of LIS institutes to the Minister of Culture and National Heritage, it was written that knowledge of new technologies and the ability to obtain extra-budgetary resources depend on the education level of the LIS graduates. Criticism of the lack of consultation with academic teachers was voiced. In addition, it was noted that one year's work experience should not be equated with having completed undergraduate studies. The argument of there being a positive impact on reducing youth unemployment through new legislative provisions was also considered to be irrelevant. Unemployment – as it was stated – also prevails among graduates of higher education, so it was questioned why the proposal concerned the employment of people with secondary education. In accordance with the recommendations of UNESCO and IFLA, employing people with higher education and specialist competencies should be a priority. It was also stated that in accordance with the provisions of the Act on Libraries of 1997, "Employees employed in librarian positions should have library qualifications" (Act of 27 June 1997, Article 29).

In the project, there were no records referring to the role of Ph.D. or postgraduate studies as being a necessary element of self-improvement, or that they should be a condition for applying for higher positions. The project was considered flawed in terms of formal and substantive issues, and it was proposed that a new one be prepared. The managers of the institutes related to the LIS signed the document. The Information Society Development Foundation emphasized



that the project nullified the activities supporting programmes of the Library+ libraries (libraries applying for the Library+ certificate had to fulfill the condition of having employees who had completed librarian studies) and the Library Development Programme (in which LIS institutes participated) as well as the implemented Promotion of Readership Programme (Kramza, 2012). The letter emphasized that if librarians who were already working were not prepared to obtain appropriate extra-budgetary funds, it may be worth organizing appropriate training for them and not employing new, unqualified employees.

Some MPs from the Polish parliament sent letters to the Minister of Culture and National Heritage, in which they called for consultations with librarian and academic circles in the creation of such projects; they also justified the unreasonable and unwarranted changes (Romanek, 2012; Sztorc, 2012). They expressed their opinion on the worrying consequences of the new proposals related to the decline in the number of students in the LIS, as the requirement of formal education to work in a library would not be necessary. This, in turn, could cause unemployment among academic teachers in these fields, a lack of research in the field of bibliology, and thus, a decrease in the quality of library services. The MPs stressed that project promoters lacked knowledge of the labor market.

Repercussions of the new projects and the response of the community to the changes were noted by the media. In the professional press, as mentioned earlier, a few articles were published (Tadeusiewicz, 2012, Konieczna, 2012, Kubów, 2012). In the e-journal for librarians – “EBiB” – there is a record of a lively discussion between Stefan Kubów, Aleksander Radwański, Jacek Wojciechowski and many other librarians and information professionals (Radwański, 2012, 14 and 15, Liquidation of professions ... 2011/12, Liquidation of librarians ... 2011/12).

An interview on RMF FM with Grzegorz Jasiński, the deputy manager of the Jagiellonian Library, included information on the proposals for legislative changes. It turns out - the editor began - that today, to practice the profession of a librarian, one must go through excruciating experiences (Jasiński, 2012) and he added that it was necessary to meet a number of detailed requirements.

In order to become a full-fledged certified librarian, candidates need a full-time education and a master's degree. In addition, the candidate must have at least two years of work experience in a research library, archive, museum or as an academic teacher. [...]. There is also a need for documented achievements in didactic work and at least two publications in the field of librarianship, scientific information, archivistics or museology [...], knowledge of a foreign language confirmed by a special commission or other authorized institution. In addition,



the future librarian must still get the permission of the manager of the library, because he formally declares the candidate (Jasiński, 2012).

The manager of the Jagiellonian Library confirmed that there were no restrictions on employment due to education; the barrier was the lack of posts and funds. He stated that the ministry was confused by the terms “librarian” and “certified librarian”.

At the end of 2012, ensuring that the new act was the result of public consultations which took into account some of the comments and suggestions of these previously mentioned entities, a regulation was issued on the qualification requirements entitling employees to hold librarian positions (first of all, the postulate was taken that the requirements for education compatible with the library profile or at least having specialist training or seniority in positions requiring librarian preparation, and the requirement that candidates possess professional achievements for the two top positions (Regulation of the Minister of Culture and National Heritage from 5 December 2012, Regulatory Impact Assessment, p 1. The ordinance of 1999 (the Ordinance of the Minister of Culture and Art of 9 March 1999) ceased to be valid. The new legislative act was the result of an amendment to the act on organizing and conducting cultural activities (Act of 31 August 2011).

The regulation stresses that it does not refer to librarians who are academic teachers, librarian teachers employed in schools and pedagogy libraries, nor to the librarians and employees of archives and scientific information employed by universities (Regulation of the Minister of Culture and National Heritage of 5 December 2012 (Justification, p.1). The existing legal acts were in force (see, among others, the Act of 27 July 2005, the Act of 26 January 1982, the Teacher’s Charter, and the Regulation of the Minister of Science and Higher Education of 21 August 2006). However, on 23 August 2013, the ordinance from 2006 on candidates for registered librarian and certified employee of archives and scientific information was also revoked (Internet system of legal acts). This was a consequence of the introduction of the act amending the laws on the regulation of professions (Act of 13 June 2013). On its basis, the following changes were introduced: “Art. 7. In the Act of 27 June 1997 on libraries (Journal of Laws of 2012, item 642 and 908) and shall read as follows: Article 29. 2. “Libraries may employ people with secondary education. “(Act from 13 June 2013).

On 4 July 2013, the Presidium of the Conference of Rectors of Academic Schools in Poland, regarding the requirements for candidates for certified librarians and qualified employees of archives and scientific information, prepared a resolution. The Presidium recommended that universities should include re-



quirements for qualified candidates in their codes of practice. One of the proposed solutions included in the resolution would be to adopt the principles recommended by the Conference of Managers of Academic Schools in Poland (Szafrński, 2014, Pidtypczak-Majerowicz, 2017). The scientific community, however, believed that the requirements set out in the resolution were not sufficient and favored a lower intellectual effort to join the library elite (Pidtypczak-Majerowicz, 2017, p. 2-3).

According to the regulations from 2012, in force until August 2013, (Regulation of the Minister of Culture and National Heritage from 5 December 2012, attachment), people with secondary education could work in a public library as a junior librarian and librarian. Higher education, although not necessarily in librarianship, was needed for the position of senior librarian, curator and senior curator. The librarian positions of certified librarians and specialists in other professions related to library activities (assistant, assistant professor, certified curator, senior certified curator, assistant and then lecturer in archives and scientific information, certified archive and senior archive worker) could include people with higher education, e.g., with a master's degree. The manager of the institution would decide on professional promotion. The requirement to take an exam during the qualification procedure was replaced by professional achievements, including a Ph.D. degree, postdoctoral degree or the title of professor (Regulation of the Minister of Culture and National Heritage from 5 December 2012, Rationale to the regulation, p. 2). As it was stated:

The result of the regulation will be easier access to work in libraries, enabling the faster promotion of professionally active employees who have experience in professions other than librarian and who have demonstrated achievements in their field (Regulation of the Minister of Culture and National Heritage of December 5, 2012, Rationale to the Regulation, p. 4).

The guidelines included in the regulation of 2012 were in force for less than a year and were repealed by the Act of 13 June 2013, deregulating the profession of librarian. As a consequence, the possibility of employing people with secondary education and no formal education connected with librarianship was allowed in libraries. In addition, the responsibility for determining the professional promotion requirements was transferred to the managers of particular types of libraries.

#### *Evaluation of the consequences of deregulation five years after its implementation*

To assess the effects of deregulation in Poland, representatives of the librarian community were asked about this issue. The purpose of the interview was to find out the opinions of the managers of various types of libraries on the effects



of the legislative provisions introduced in 2013. For this purpose, qualitative research was carried out. To achieve the goal, in-depth interviews were used, a component of which was a SWOT analysis completed by respondents. The managers were selected from a public library, a scientific library and a public library with provincial status.

The answers of the management team to the question about the attitude to the deregulation highlighted the discrepancies in its perception – one of the respondents, representing a public library, had a decidedly positive attitude to the issue discussed; the representative of a scientific library referred in a neutral way; the representative of a library with provincial status was concerned about the deregulation immediately after its introduction, but after 5 years he described his attitude as neutral.

Two out of the three managers stated that the changes to the regulations were necessary, especially when taking into account the professional qualifications of librarians. In the case of the status of certified librarians, the lack of institutions centrally certifying their knowledge and experience was noted. The lack of a professional qualifications framework for librarians, which would allow for a comparison of the requirements and expectations of individual library positions, was also commented on. In the case of the third respondent, the deregulation of the profession mostly caused concerns about its effects on libraries. This was related to the expectation of increasing the number of offers of people applying for librarian positions, as well as the need to protect people already employed. The problems of further motivating staff to improve their professional qualifications caused much doubt. As a result, this library introduced internal regulations with clearly defined quality criteria for the professional advancement of librarians. The representative of a scientific library emphasized that the full deregulation of the profession took place on October 1, 2018, when the new law on higher education (Act 2.0) introduced the position of a certified librarian. The word “library” appears in the text of the Act once only (Act of 20 July 2018).

When the respondents were asked to indicate the strengths of the deregulation, they emphasized that it is a response to the dynamically changing situation of libraries. They also stated that the role of library management has increased in terms of introducing additional requirements for candidates for librarian, individualizing employment forms and defining principles of professional promotion.

According to the respondents, the weaknesses of the deregulation included the lack of professional qualifications of librarians which correspond to Euro-



pean Union guidelines, and the lack of a clear path of professional promotion (according to the representative of the public library), the depreciation of the profession, as well as a lowering of the level of candidates (the representative of the scientific library).

The opportunities that the managers mentioned included the possibility for the professional development of active librarians and the lack of pressure to complete their education; the opportunity to change the organizational structure of libraries; and shortening the promotion path by reducing the number of librarian positions.

The lack of a professional qualifications framework for librarians and the lack of a nationwide network of public libraries were recognized as threats. The common view was that decisions on libraries and librarians are taken outside libraries, and that the professional community often does not have a say in who will be employed in the library, especially when the unit is run by local government. In the case of scientific libraries, the complete liquidation of the professional group of certified librarians in academic librarianship, as well as the lack of homogeneous qualifications in library positions, were perceived as a threat.

The interviewees also assessed the expected results of the deregulation put forward by the legislator – easier access to work in libraries for young people, regardless of education, which would enable the faster promotion of professionally active employees, with shorter work experience and lowering the library's operating costs. Of the three people surveyed, only one responded affirmatively, indicating that the introduced law had influenced the faster promotion of professionally active employees; the remaining expectations of the legislator, according to the interviewees, had not been confirmed. People who apply for higher positions in the library hierarchy are still expected to have a degree. Perhaps that is why all three respondents fully or partially supported the deregulation of professional requirements of librarians – either through the introduction of national qualifications frameworks or through the reintroduction of formal requirements, but without certification or exams for certified librarians. The respondents emphasized the lack of an institution that sets the directions for the development of libraries of different types, indicates standards, provides a qualifications framework, or that performs the tasks of an accreditation center, especially since supra-institutional bodies are not unanimous in the field of qualification and benchmark requirements for librarians.

In the face of the introduced changes, the role of academic centers which formerly prepare librarians to work in the profession is still emphasised. The



institutions are still expected to prepare staff at higher education level, for post-graduate studies and for practical courses, most often in cooperation with local libraries. The new courses of study (such as Digital Information, Information Architecture, Information Science with Business English), which put greater emphasis on the issues related to information management rather than on librarianship, fulfill their role in preparing graduates for work in libraries. It is probably the only course of action in these circumstances. The interviewees confirmed that 70-100% of all people employed in their libraries after the deregulation had not completed library studies.

## Conclusions

The most important legal acts related to the deregulation include the Act of 13 June 2013 (the Act amending the laws regulating the performance of certain professions) and the Act of 20 July 2018 (the Law on Higher Education and Science). The regulations introduced resulted in the lack of qualification requirements for librarian positions (Ordinance of 5 December 2012). It meant that libraries could employ people with only a secondary education and without having completed library studies. The new law on higher education does not include provisions regarding libraries and librarians, except for the statement that "The university has a library and information system in a library" (Act of 20 July 2018, Article 49 point 2).

In view of the above, the burden of responsibility for hiring people with librarian qualifications and preparing for them professional promotion rests solely with the managers of public and scientific libraries. As presented in the article, the community of librarians, scientists and library organizations reacted mostly negatively to the changes introduced. Generally most of government expectations were not confirmed by library managers. Both in 2013 and five years after the introduction of the deregulation of the profession, the biggest concerns are related to the lack of unified qualification requirements for librarians and the lowering of the prestige of the profession.

**Acknowledgment:** A great deal of information comes from letters addressed to the chairman of the Commission for Librarians, Prof. Hanna Tadeusiewicz, in her private collection; we thank her for sharing them.



## References

- Dobrzyńska-Lankosz, E. (2012a). *Opinia Konferencji Dyrektorów Bibliotek Akademickich Szkół polskich w sprawie odrzucenia projektu z dnia 18 maja 2012 r. w całości* [paper addressed to the Ministry of Culture and National Heritage], 22nd February [a document stored in the private collections of H. Tadeusiewicz]
- Dobrzyńska-Lankosz, E. (2012b). *Opinia Rady Wykonawczej Konferencji Dyrektorów Bibliotek Akademickich Szkół Polskich w sprawie projektu ustawy (z dn. 6 marca 2012 r.) o zmianie ustaw regulujących wykonanie niektórych zawodów* [paper addressed to the Ministry of Justice], 30th March. Retrieved from [http://kangur.uek.krakow.pl/biblioteka/konferencja/opinie/opinia\\_2012\\_03\\_30.pdf](http://kangur.uek.krakow.pl/biblioteka/konferencja/opinie/opinia_2012_03_30.pdf)
- Dobrzyńska-Lankosz, E. (2012c). *Opinia Rady Wykonawczej Konferencji Dyrektorów Bibliotek Akademickich Szkół Polskich w sprawie propozycji MNiSW w zakresie uchylenia art. 117 ustawy Prawo o szkolnictwie wyższym*, 31nd March [a document stored in the private collections of H. Tadeusiewicz]
- Golec-Nycz, E. (2018.) *Prawo o szkolnictwie wyższym i nauce – kilka uwag o statusie bibliotekarzy EBIB 178 (1), 1-7*. Retrieved from <http://open.ebib.pl/ojs/index.php/ebib/article/viewFile/616/767>
- Internetowy system aktów prawnych ISAP. Retrieved from: <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20061551112>
- Jasiński, G. (2012). *Bibliotekarza droga przez mękę, być może już niedługo*, 9th March, serwis RMF FM Najbliżej faktów. Retrieved from <http://www.rmf24.pl/fakty/polska/news-bibliotekarza-droga-przez-meke-byc-moze-juz-niedlugo,nId,451734>
- Jazdon, A. (2012a). *Głos w sprawie deregulacji zawodu bibliotekarza*. In *Forum Akademickie*. Portal środowiska akademickiego i naukowego. Retrieved from <http://forumakademickie.pl/fk/2012/01/glos-w-sprawie-deregulacji-zawodu-bibliotekarza/>
- Jazdon, A. (2012b). *Likwidacja Komisji dla dypl.* [official correspondence], 2nd February [a document stored in the private collections of H. Tadeusiewicz]
- Kobierska-Maciuszko, E. (2012). *Szanowna Pani Profesor* [official correspondence], [a document stored in the private collections of H. Tadeusiewicz]
- Konieczna, D. (2012a). *Bibliotekarz musi wiedzieć więcej! Bibliotekarz*, 7-8, 4-9
- Konieczna, D. (2012b). *Biblioteka Uniwersytecka UWM w Olsztynie, Uwagi (subiektywne) NT. likwidacji egzaminu na bibliotekarza dyplomowanego*, [official correspondence], [a document stored in the private collections of H. Tadeusiewicz]
- Krajewski, B. (2012). *Stanowisko Polskiego Związku bibliotek dotyczące projektu rozporządzenia Ministra Kultury i Dziedzictwa Narodowego w sprawie wy-*



- magań kwalifikacyjnych do zajmowania stanowisk w bibliotekach, [official correspondence], [a document stored in the private collections of H. Tadeusiewicz]
- Kramza, R. (2012). Opinia Fundacji Rozwoju Społeczeństwa Informacyjnego na temat projektu rozporządzenia MKiDN w sprawie wymagań kwalifikacyjnych do zajmowania określonych stanowisk w bibliotekach, [official correspondence], 25th June [a document stored in the private collections of H. Tadeusiewicz]
- Książnica Kopernikańska w Toruniu (2012). Uwagi do pisma z dnia 4 czerwca 2012 r. w sprawie zaopiniowania projektu rozporządzenia ministra kultury i dziedzictwa narodowego w sprawie wymagań kwalifikacyjnych do zajmowania określonych stanowisk w bibliotekach [official correspondence], [paper addressed to the Ministry of Culture and National Heritage], 23rd June, [a document stored in the private collections of H. Tadeusiewicz]
- Kubów, S. (2012). Deregulacja? Tak, ale z głową i znajomością rzeczy. *Poradnik Bibliotekarza*, 5, 37-38
- kwa (2012). Zbędne studia w bibliotece. *Rzeczpospolita* z dn. 15 czerwca, 4
- Lankosz, E. (2012). Rozporządzenie MKiDN, [official correspondence], 17th July [a document stored in the private collections of H. Tadeusiewicz]
- Likwidacja bibliotekarzy dyplomowanych (2011/2012). In Forum EBiB. Retrieved from <http://forum.nowyebib.info/pun/viewtopic.php?id=794>
- Likwidacja zawodów regulacyjnych??? (2011/2012). In Forum EBiB, 2011/12. Retrieved from <http://forum.nowyebib.info/pun/viewtopic.php?id=713>
- Majerowicz M. (2012), Zawód bibliotekarza [official correspondence], 19th March [a document stored in the private collections of H. Tadeusiewicz]
- Nieć, G. (2012). Rozporządzenie MKiDN, [official correspondence], 17th July [a document stored in the private collections of H. Tadeusiewicz]
- Opinia Rady Wykonawczej Konferencji Dyrektorów Bibliotek Akademickich Szkół Polskich w sprawie projektu ustawy (z dn. 6 marca 2012 r.) o zmianie ustaw regulujących wykonanie niektórych zawodów (2012), 25th March [a document stored in the private collections of H. Tadeusiewicz]
- Podtypczak-Majerowicz, M. 2017. Bibliotekarze dyplomowani we współczesnej bibliotece Naukowej – kłopot czy wyzwanie? *BiE*, 11, 1-8
- Projekt z dn. 6 marca 2012 r. Ustawa o zmianie ustaw regulujących wykonywanie niektórych zawodów (2012). Retrieved from [http://zarzadcy.com.pl/files/file/projekt\\_ustawy\\_z\\_06\\_03\\_2012.pdf](http://zarzadcy.com.pl/files/file/projekt_ustawy_z_06_03_2012.pdf)
- Projekt z dn. 18 maja 2012 r. Rozporządzenie Ministra Kultury i Dziedzictwa Narodowego w sprawie wymagań kwalifikacyjnych do zajmowania określonych



- stanowisk w bibliotekach (2012). Retrieved from [http://www.sbp.pl/repository/dokumenty/SBP/projekt\\_rozporzadzenia\\_kwalifikacje.pdf](http://www.sbp.pl/repository/dokumenty/SBP/projekt_rozporzadzenia_kwalifikacje.pdf)
- Radwański, A. (2012). Likwidacja zawodów regulacyjnych??? In Forum EBIB, post 14 i 15, 20th December. Retrieved from <http://forum.nowyebib.info/pun/viewtopic.php?id=713>
- Romanek, A. (2012). Zapytanie poselskie [paper addressed to the Ministry of Culture and National Heritage], 22nd June [a document stored in the private collections of H. Tadeusiewicz]
- Rozporządzenie Ministra Edukacji Narodowej z dn. 12 marca 2009 r. w sprawie szczegółowych kwalifikacji wymaganych od nauczycieli oraz określenia szkół i wypadków, w których można zatrudnić nauczycieli niemających wyższego wykształcenia lub ukończonego zakładu kształcenia nauczycieli. Dz. U. Nr 50, poz. 400 z późn. zm. Retrieved from: <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20090500400>
- Rozporządzenie Ministra Kultury i Sztuki z dnia 26 czerwca 1998 r. w sprawie wymagań kwalifikacyjnych uprawniających do zajmowania określonych stanowisk w bibliotekach oraz trybu stwierdzania tych kwalifikacji. Dz. U. 1998 nr 122 poz. 803. Retrieved from <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU19981220803>
- Rozporządzenie Ministra Kultury i Dziedzictwa Narodowego z dn. 5 grudnia 2012 r. w sprawie wymagań kwalifikacyjnych uprawniających do zajmowania stanowisk bibliotekarskich oraz stanowisk dla specjalistów innych zawodów związanych z działalnością biblioteczną (2012), Dz. U. 2012 poz. 1394. Retrieved from <http://legislacja.rcl.gov.pl/docs//505/47495/47526/dokument57426.pdf?lastUpdateDay=10.12.12&lastUpdateHour=1%3A48&userLogged=false&date=poniedzia%C5%82ek%2C+10+grudzie%C5%84+2012>
- Rozporządzenie Ministra Kultury i Sztuki z dn. 9 marca 1999 r. w sprawie wymagań kwalifikacyjnych uprawniających do zajmowania określonych stanowisk w bibliotekach oraz trybu stwierdzania tych kwalifikacji (1999), Dz. U. 1999 Nr 41 poz. 419. Retrieved from <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU19990410419>
- Rozporządzenie Ministra Kultury i Sztuki z dnia 26 czerwca 1998 r. w sprawie wymagań kwalifikacyjnych uprawniających do zajmowania określonych stanowisk w bibliotekach oraz trybu stwierdzania tych kwalifikacji. Dz. U. 1998 nr 122 poz. 803. Retrieved from <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU19981220803>
- Rozporządzenie Ministra Nauki i Szkolnictwa Wyższego z dnia 21 sierpnia 2006 r. w sprawie kandydatów na dyplomowanego bibliotekarza oraz dyplo-



mowanego pracownika dokumentacji i informacji Naukowej. Dz. U. Nr 155, poz. 1112. Retrieved from <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20061551112>

Stanowisko Bibliotekarzy uczestniczących w programie Rozwoju Bibliotek w sprawie Rozporządzenia dotyczącego wymagań kwalifikacyjnych do zajmowania określonych stanowisk w bibliotekach (2012), [paper addressed to the Ministry of Culture and National Heritage], 15th June, [a document stored in the private collections of H. Tadeusiewicz]

Stanowisko Konferencji Dyrektorów Instytutów BiIN w sprawie projektu Rozporządzenia MKiDN w sprawie wymagań kwalifikacyjnych do zajmowania określonych stanowisk w bibliotekach z dnia 18 maja 2012 r.] (2012), [paper addressed to the Ministry of Culture and National Heritage], 25th June, [a document stored in the private collections of H. Tadeusiewicz]

Stanowisko SBP w sprawie deregulacji. Opinia Stowarzyszenia Bibliotekarzy Polskich dotycząca projektu ustawy o zmianie ustaw regulujących wykonywanie niektórych zawodów (2012), 5th April, [paper addressed to the Ministry of Justice]. Retrieved from <http://www.sbp.pl/artukul/?cid=4784&prev=447>

Stępnia, J. (2012). Certyfikat bibliotekarza dyplomowanego. In Forum Akademickie. Portal środowiska akademickiego i naukowego. Retrieved from <http://forumakademickie.pl/fk/2012/01/certyfikat-bibliotekarza-dyplomowanego/>

Suleja, T. (2012). Stanowisko w sprawie likwidacji egzaminu na dyplomowanego bibliotekarza oraz dyplomowanego pracownika dokumentacji i informacji naukowej, Wrocław, 18th March [a document stored in the private collections of H. Tadeusiewicz]

Szafrński, L. (2014). Deregulacja zawodów a bibliotekarz dyplomowany Retrieved from <http://www.sbp.pl/artukul/?cid=10303&prev=648>

Sztorc, A. (2012). Interpelacja dotyczy: projektu Rozporządzenia Ministra Kultury i Dziedzictwa Narodowego w sprawie wymagań kwalifikacyjnych do zajmowania określonych stanowisk w bibliotekach z dnia 18 maja 2012 r. 2nd July [a document stored in the private collections of H. Tadeusiewicz]

Tadeusiewicz, H. (2012). Bibliotekarz dyplomowany – postępowanie kwalifikacyjne. Bibliotekarz, 7-8, 10-11.

Ustawa z dn. 26 stycznia 1982 r. Karta Nauczyciela. Dz. U. z 2006 r. Nr 97, poz. 674, z późn. zm. Retrieved from <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=wdu19820030019>

Ustawa z dn. 13 czerwca 2013 r. o zmianie ustaw regulujących wykonywanie niektórych zawodów. Dz. U. z 2013, poz. 829. Retrieved from <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20130000829>



- Ustawa z dn. 27 czerwca 1997 r. o bibliotekach (1997). Dz. U. 1997, nr 85, poz. 539. Retrieved from <http://samorząd.infor.pl/akty-prawne/DZU.1997.085.0000539,ustawa-o-bibliotekach.html>
- Ustawa z dn. 27 lipca 2005 r. Prawo o szkolnictwie wyższym (2005). Dz. U. 2005, Nr 164, poz. 1365, z późn. zm. Retrieved from [http://www.uj.edu.pl/documents/10172/11741/27.07.2005\\_Ustawa\\_Prawo\\_o\\_szkolnictwie\\_wyzszym.pdf](http://www.uj.edu.pl/documents/10172/11741/27.07.2005_Ustawa_Prawo_o_szkolnictwie_wyzszym.pdf)
- Ustawa z dn. 20 lipca 2018 r. Prawo o szkolnictwie wyższym i nauce (2018). Retrieved from <https://www.uw.edu.pl/wp-content/uploads/2018/09/ustawa.pdf>
- Ustawa z dn. 31 sierpnia 2011 r. o zmianie ustawy o organizowaniu i prowadzeniu działalności kulturalnej oraz niektórych innych ustaw. Dz. U. Nr 207, poz. 1230. Retrieved from <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20112071230>
- Wipler P. [et al.] (2011). Zawody regulowane. Aktualny stan prawny i propozycje. Warszawa. Retrieved from <http://www.cafr.pl/wp-content/plugins/downloads-manager/upload/Zawody%20regulowane%20-%20Raport%20OST.pdf>
- Woźniakiewicz, J. (2012). Dotyczy uwag do projektu Rozporządzenia Ministra Kultury i Dziedzictwa Narodowego w sprawie wymagań kwalifikacyjnych do zajmowania określonych stanowisk w bibliotekach z dn. 18 maja 2012 r., 22nd June [paper addressed to the Ministry of Culture and National Heritage], [a document stored in the private collections of H. Tadeusiewicz]
- Zdrojewski, B. (2012). Odniesienie do zapytania posła Andrzeja Romanka z dn. 26 czerwca, [paper addressed to the Speaker of the Lower of the Polish Parliament], 9th July, [a document stored in the private collections of H. Tadeusiewicz]



## THE POSSIBILITIES OF GAMIFICATION: THE NEW TEACHING METHODS IN PUBLIC EDUCATION

Zsuzsanna Arany

Student (MA) – University of Pécs, Pécs, Hungary, Librarian Teacher – Budapest IX. Kerületi Szent-Györgyi Albert Általános Iskola és Gimnázium, Budapest, Hungary

arany.zsuzsi19@gmail.com

### Abstract

*The education of the 21<sup>st</sup> century is constantly changing. The Z- and Alpha generations have appeared in the public education and we cannot teach them with our old school teaching methods which came from the 20<sup>th</sup> century. The present methods in Hungary which are written in our National Curriculum and our Frame- and Local Curriculums are obsolete. We have some initiation, some starting aspirations to reform Hungarian public education, but so many times they stop at the corner of using computers and smartboards, however the ICT technology is part of our everyday lives with the applications with educational content and the new technology like virtual reality or augmented reality. The new teaching methods cannot skip using these devices, the only question is that in Hungary how and when we can reach these. The gamification is involving the game and the elements of the games several serious situations. This method can give so many pluses to the process of education, and these can be much more effective than the methods of 20<sup>th</sup> century. The learning can come true at a higher level. Sadly, in Hungary for some reason gaining lexical knowledge is much more important than global knowledge. We have separate subjects like Literature, History, Singing, Drawing, Biology, Chemistry, Physics, instead of subjects like "Arts", "Middle Ages", "Natural History" This method can help gaining lexical and global knowledge too. In my research I looked for the answers of several questions about improving information literacy with gamification in theoretical and practical ways. I examined gamification in a pedagogical usage. I illustrate gamification through several software which are good for practicing and improving critical thinking, information (or digital) literacy of students. I ended up with two practical examination with my students from Budapest IX. Kerületi Szent-Györgyi Albert Általános Iskola és Gimnázium. I observed their attitudes and reactions in lessons which based on gamification. I am currently thinking about making a representative examination about this theme in Hungary. I used questionnaires, individual observation and analyzing documents. I used several statistics about using internet, ICT devices etc. from Hungary's Central Statistical Office (Központi Statisztikai Hivatal). I researched about good practices and I tried to use them with my students.*



**Keywords:** public education, gamification, teaching methodology, Hungary, library lesson, literature

## Introduction

In the knowledge-based society, libraries have to meet great expectations, since they are getting further and further away from their original purpose. Instead of stationary information storage and service, library competencies that contribute to libraries becoming an information point available from anywhere are of increasingly higher value.

Competencies like this are among others digital literacy and sufficient motivation for lifelong learning. As a practicing school librarian, I teach use of library classes regularly, and my day by day experience is that the methods I was taught with do not work on the new generations. They receive information differently, and they search in different ways.

I started experimenting with gamification as a teaching method a couple of years ago, because my thinking and experience is that the appearance of new technologies and the spreading of different ICT-tools offer opportunities that can be profitable both for libraries and public education institutions. Not only because this way the librarian and the teacher can meet the unsaid expectations of the reader and the student, but also because teaching can be in fact more efficient, it can keep up attention and a bonus, more kinds of skills can be improved unnoticed during the teaching process.

Gamification means linking the elements of games into real life situations. Based on the good practices realized in Hungary and abroad, extraordinary results can be reached with gamification when it is used in public education, during classes, but the method of gamification can be applied successfully during teaching outside of the schooling system as well.

I had multiple opportunities to try the method of gamification in the Szent-Györgyi Albert Primary and Secondary School, during both formal and informal teaching, and so overall more than 100 children participated in my experiments. The feedback and experiences I got from them contributed greatly to understanding how the gamification model works and making credible statements about it.



## Research questions

- Reader activity can be increased by using gamification in the school library.
- Gamification enhances activity in class by raising interest in the material taught during the lesson.
- The methods of gamification provide effective tools for the teacher to efficiently execute the lesson plan.

## Methods

During my research I used the methods of both document analysis and qualitative observation. The latter was necessary on my gamified lessons held in practice.

During document analysis I laid the foundation of the theoretical background of my study, furthermore, analyzing and using the good practices discovered by already realized studies bears a significant role in my paper, since these can prove the importance of the examined topic, and nuance and complete my results.

An important step of my research was teaching the gamified lessons the lesson plan of which I prepared based on my own ideas and the good and actualized practices taken from literature on the topic. I introduce these lessons as case studies in my paper. The location of these lessons was the Szent-Györgyi Albert Primary and Secondary School in the 9th district of Budapest, where I had the opportunity to try gamification methods both on use of library and on literature classes. I currently work as a school librarian in the school.

My study had two target groups; students and teachers in public education. I chose students to participate in the experiment with stratified sampling, and both primary and secondary school groups participated.

In the Szent-Györgyi Albert Primary and Secondary School according to the Library pedagogy program<sup>1</sup>, children take use of library lessons from 1st through 10th grade, from which two fifth grader groups<sup>2</sup> participated in my examination,

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<sup>1</sup> The whole program is available on the official website of the school, on <http://szgya.hu/> (accessed 17 March, 2018)

<sup>2</sup> One of the groups was in an 8-grade primary school program, the other in a secondary school program



to whom my colleague taught use of library lessons based on the gamified lesson plans we prepared together beforehand.

Furthermore, I worked with a third grader group as well, whom I joined in their work about their compulsory reading (Klára Fehér: Lesz nekem egy szigetem – I will have an island) for a double lesson (2x40 minutes).<sup>3</sup>

From the secondary school students, I chose a ninth grader group, to whom I taught Hungarian grammar and literature lessons with the help of my colleague, also based on a lesson plan built on gamification.

During my research I examined multiple times how gamification methods can be used in an informal learning environment. In my paper, I will introduce a gamified activity for 1st to 4th grade students, and a program realized in an informal learning environment.

## Literature

The foundation of my image about gamification is based on Árpád Rab's dissertation titled *A digitalis kultúra hatása az emberi viselkedésre a gamifikáció példáján keresztül*.<sup>4</sup>

The author is a future researcher and studies the phenomena of information society, and digital culture is in the focus of his work. The study describes the concept of information society in detail. In his dissertation the author reaches back to the very basics, he uses the definitions of Castells, Bell, Beninger and László Z. Karvalics, among others.

Beside the authors listed above, he introduces the reasoning of Pippa Norris about media-disease, who states that "*the internet is not an environment that dulls people and makes them vulnerable, but on the contrary, it is an opportunity*." (Rab, 2015. p. 5)

Through his dissertation, we can get a picture about the concept and characteristics of *digital culture*. According to his statement, it is "*a living, flourishing, expanding social phenomenon in interaction with the traditional culture*." (Rab, 2015. p. 9.). The author created the concept of the dual cycle of digital culture, which,

<sup>3</sup> Their use of library lessons and my examinations are still ongoing, but due to scheduling I could analyze only these two lessons to fit my paper.

<sup>4</sup> In English: *The effect of digital culture on human behavior illustrated through the example of gamification*



in his interpretation, means placing the characteristics of the digital culture he identified into a system, and evaluating them within it.

He mentions ludology as well, as the principle studying games, game elements. The central question, which Árpád Rab himself focuses on, too, is computer games and psychological motivation, particularly the reasons of starting a game and addiction.

At one point of the dissertation he starts discussing the concept of gamification. Here we can get a picture of the relationship between serious game and gamification, and he also explains the meaning of these phrases. In addition to the relationship of the two concepts, he also introduces the usefulness and utilization of the methods through the relationship of gamification and education. The author tries to prove to the readers by the help of good practices from abroad that the two methods are vastly efficient in education as well. He illustrates through case studies that in American education gamification as a teaching method is already actively used and immensely popular. He considers an application called Motion Math a great example, which is designed to help mathematical skills.

He points out that the method of gamification can not only be used in education and formal learning environment, and he lists case studies as illustrations.

He made a chart summarizing the working mechanisms of the gamification method, in which he translated English phrases connected to the method into Hungarian and he explained the necessity and importance of each criterion. (Rab, 2015. pp. 85-86)

An excellent summary of the topic is written by Richárd Fromann in his book titled *JátékosLét: A gamifikáció világa*.<sup>5</sup> The author deals with the question of gamification with the playful worldview in focus. The book describes the characteristics of information society and it discusses the birth of the internet generation as well. He also mentions the world of alternative and virtual realities, emphasizing the necessity of motivation.

The research called JátékosLét (Playful being) has been studying the world and culture of gamers and the motivational factors that move each generation since 2011.

From the book we can get a clear picture about the phenomenon of gamification, we can learn its characteristics and philosophy. The author discusses

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<sup>5</sup> In English: *Playful Being: The world of gamification*



the possible areas of utilization of the gamification method, analyzed mostly in educational, workplace and business processes.

I started thinking about the possible utilization of Virtual Reality (VR) and Augmented Reality (AR) based on the writing of Márta Körösné Mikis from 2015 titled *Digitális szemüveggel virtuális játszótéren*.<sup>6</sup> The author states that schools should be more open to new technologies, since incorporating these into education affects the creativity of students positively.

Since the students themselves are already members of virtual communities, let it be second life<sup>7,8</sup> type games or groups created on social media, the opportunities in these are still to be exploited in the field of education. The author refers to the words of Jenő Ranschung concerning this, who advocates the excellent pedagogical opportunities of childhood ICT-usage and supports the conscious use of computers and internet. The author warns about the possible negative effects as well, which must be taken into consideration during the planning processes; *“The ICT in itself is not enough; for one, the overuse of multimedia elements can have a counterproductive, distractive effect, and for two, incorporating them into traditional, everyday lessons can raise methodological issues in case of students with different abilities.”* (Körösné, 2015. p. 70.)

Another inspiration was the article from Márta Oszoli-Pap titled *Fogalmazástanítás a DIXIT-tel*<sup>9</sup> published in the periodical Tanító in 2018.

The author shows in the framework of a case study how she used the popular card game (Dixit) to improve the students' composition and thinking skills. The method – in its current form – does not meet the criteria of gamification, but with a few adjustments it could be an excellent gamification tool. Incorporating the game into education is a great example for how well games that were not specifically designed for educational purposes can be used within school setting, too.

<sup>6</sup> In English: *With digital glasses on a virtual playground*

<sup>7</sup> A second life type game is basically a virtual world with its own rule system. A game like this is for example the popular Sims.

<sup>8</sup> The Second Masquerade. <https://thesecondmasquerade.wordpress.com/mi-az-a-second-life/> (accessed: 27. march 2018)

<sup>9</sup> In English: *Teaching composition with DIXIT*



## Gamification

In the past few years, gamification as a concept and as a method is getting more and more widespread worldwide. In the past years a continuous increase could be observed in the literature about gamification, which shows a strong link with the appearance and spreading of traditional and computer games and other applications working based on the new method. Although there were computer softwares that helped learning and getting information in a playful environment in the past decades as well, the concept of gamification was unknown at that time, and few people thought of it as an equal tool to other teaching methods.

The first to define the concept without using the word *gamification* was probably James Paul Gee.

Starting from Gee's theory, gamification is the activity during which we adapt game elements to real life situations, so that we can provide information, acquire knowledge and improve skills in an understandable manner. (Arany and Egervári, 2017.)

For a game, application or teaching method based on gamification to be successful, there always has to be a motivational force that the individual feels to be personal, helping the composition of causes and reasons beside participating in the activity.<sup>10</sup> A motivational force can be for example collecting points, and setting up a ranking, a so-called *leaderboard* based on them. By the implementation of the point system not only the wish for progression in the ranking can be generated, but the gain of different results, prizes and badges, or a possible leveling up can also be a motivational factor. It is very important, that the goal is stated clearly and understandably. This way, it can be remembered more easily, and it can keep up the motivation of the players. Constant feedback to the players about their work and results so far is very important as well.

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<sup>10</sup> A gamification method is for example the point collecting promotion of big supermarket chains as well, which incites customers to shop in bigger volume. It is an excellently composed "motivation", since after collecting 10-15 points, they can get the object of their wish at a reduced price or as a gift. In addition to the fact of gamification, this is a great economic strategy, too, but this does not fit the topic of the current study.



## The possibilities of applying gamification in public education

Based on the realized good practices and on my own research, I believe that the application of the gamification method in education greatly contributes to the motivation for learning in younger generations, and it can create a learning environment that is closer to the worldview of students and enables teachers to address them more easily.

Students of the Z and Alpha generations in education are eager to get new information and knowledge, but they do not wish to acquire it through studying in the strict sense, since it is a much faster solution to just “google it”.

ICT-tools are closely related to the new needs of generations. The presence of information and communication technologies in education, and their usage in learning and teaching can make the education process more efficient by providing students information in an environment that is more homelike to them and is closer to their way of thinking. Transformation of the education system is difficult, since many are skeptical against smartphones and tablets, even though it would be important to change, since the traditional educational methods cannot find their target group anymore, and in my opinion, this is the main reason for the Hungarian students getting more and more behind in international competence tests. It is unlikely that they got dumber, it is rather just harder to address them and motivate them to study.

My previous studies prove that there are three ICT tools that can be found in most schools. These three tools are interactive boards, computers and projectors. The joint application of these in education would not mean a challenge or require serious planning, but it would greatly contribute to making lessons more interactive and interesting.

## Application of gamification methods in an informal learning environment; a game called *In the footsteps of Mátyás on the Day of Folktales*

For the day of Folktales, we announced a game for the students of our school with my librarian-teacher colleague, and we named it “In the footsteps of Mátyás”. Considering reader education as our personal mission, we tried satisfying the reading- and learning needs of the digital natives by using tools that they know and like to use. With this mindset, we created our game that is based on



QR codes, and the goal of which was reader education, improving the children's apprehension and thinking, logical and device usage skills.

Relating to the "just fairytales", during the game students had to find a saying attributed to king Mátyás, which they had to put together word by word from for example tales about king Mátyás, among other things.

To facilitate this, we hid 8 QR codes in the school building. The students' task was to read them with their devices and solve the riddle. The QR codes contained a tale, and we attached a question to each one. The answers to the questions were one or two words, which they could find only by reading the tales. By placing the words in the right order, the contestants got a meaningful sentence; "*The one who rules justly should not be afraid of the wrath and sword of his subjects!*"<sup>11</sup>

During the planning, we had to take into consideration that not all students had smart devices and internet connection, but these were essential to solving the tasks. This problem could be solved quickly, since the library has 7 tablets that the students could "borrow" for the time of the competition.

For the students, a much bigger challenge was the – in their words – "folly" they got after reading the QR codes, even though it was just the description of the task and the bibliographical description of the tale. Despite this, they quickly learned to understand the task and the descriptions, but it is a significant lesson for us in the future not to show them the readings in this form.

In many cases, it proved to be difficult to understand the "archaic" language of the tales, and they found numerous words unknown to them that they were only able to comprehend with the help of the librarians or other teachers.

Of course, we did not forget rewarding the students either. There has been a tradition for years – and we could not miss it this year either – called the "big ones tell tales to the little ones" program, when the senior students visit their junior schoolmates, and they greet them with fairytales. Expanding this concept, we got the idea of giving fairytales as a reward to the ones participating in the game "In the footsteps of Mátyás". And that is how the ones that solved the riddles correctly could attend a reading where no other than Peti Puskás told his favorite tale about Mátyás.

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<sup>11</sup> Galeotto M.: Mátyás királynak kiváló, bölcs, tréfás mondásairól és tetteiről szóló könyv. (The book about the excellent, wise, humorous sayings and acts of king Mátyás). Budapest: Magyar Helikon, 1997. p. 61.



My experience about the game is that students use tablets and websites confidently, so we can build on these in future events and competitions as well.

Many of them had met QR codes for the first time, and since they know it now, we can easily give them similar tasks during events and competitions in the future, too. There was an idea to indicate the academic principles that can be found on certain shelves in the library with QR codes, too, providing more information that students often need for solving tasks, not only in the case of a game like this, but also during use of library lessons.

The game “In the footsteps of Mátyás” was a test. I was curious how students can solve a complex task containing several smaller units while working in teams. They successfully overcame the obstacles, so our task is to keep up with them and come up with more and more interesting tasks. The only limit is our imagination.

## Application of gamification methods in a formal learning environment: use of library lessons for the third grade

During my research I wanted to try the methods of gamification with different age groups. One of the target groups I analyzed was a third grader class; they have in all 6 use of library lessons in a school year, from which I taught the first two with my colleague based on a gamified lesson plan. On the double lesson we recalled the rules of using the library, then they attended a use of library lesson connected to their compulsory reading (Klára Fehér: *Lesz nekem egy szigetem*<sup>12</sup>). The topic of the lesson was getting to know the life and work of the author Klára Fehér. The duration of the lesson was 2x40 minutes, i.e. two shortened lessons.

During the lesson they got several tasks that aimed at learning the spaces and the holdings of the library, and they also had the opportunity to get to know the works of the author. We built the lesson together with their teacher according to the TFR model. In the first part of the lesson (Tuning in) we solved a puzzle that I made together. After the right solution, they got to know the topic of the lesson (the solution: Fehér Klára), so we could step forward into the Finding phase. In this section, they got the relevant information about the life of Klára Fehér and they learned about her other works, too.

The students worked in groups, we assigned three roles at the beginning of the game, a cashier and a first- and second envoy from every group. Each group

<sup>12</sup> In English: I will have an island.



chose an envelope that contained a jigsaw puzzle about a cover of one of Klára Fehér's books. The task of the groups was to complete the puzzle, and then the first envoy of the group – using the group's library watch ticket correctly – had to find the book that was on the jigsaw puzzle. They got a point only if the correct book was on the group's table and the watch ticket was in the right place.

Since the class was not yet confident in using the alphabet, another task was to "place on the shelf" the books of Klára Fehér that I listed on cards, i.e. put them on the table alphabetically in the right order. While one member from each group switched places to cross-check each other's work, the time for the second envoy's task came as well, since they had to put the book they brought in back in the place of their watch ticket, for which they got a point only if they used the watch ticket correctly.

At the end of the lesson, in the Reflection section, they had to finish sentence beginnings to improve their communication skills.

- In today's lesson, I learned...
- In today's lesson, I had fun because...

Almost everybody finished the second sentence differently. Some of their answers were:

- *"In today's lesson, I had fun because I could be in the library."*
- *"In today's lesson, I had fun because we played a lot."*
- *"In today's lesson, I had fun because in the library I always learn something new."*
- *"In today's lesson, I had fun because Ms. Zsuzsa always prepares something interesting for us when we come to the library."*

## Conclusion

At the beginning of my research, I formulated three hypotheses. I expected proof or refutation either from literature or from the gamified lessons and games in the library that I realized myself or with the help of my colleagues. I consider the experiments successful, since they served as valuable lessons, and they completed my theoretical research well.

In my first hypothesis, I stated the following; *by using gamification in the school library, reader activity can be enhanced*. Although I carried out the experiment in only one school library, I was able to reach a lot of students, since more than 900 children attend the school and the group sizes are big. Based on the experiments



carried out, there was a measurable increase in reader activity, and thanks to the point collecting game and the gamified use of library lessons we were able to make the use of library popular among students who had not often visited the library before. The playful tasks and healthy competitiveness reached their goal; students learned to use the library holdings and they found literature valuable for them.

My second hypothesis – *Gamification enhances activity during class by raising interest in the material taught during lesson* – proved to be true as well. Methods applied during use of library classes (Take away homework!, collecting points, team competitions) increased the activity of students during class, competition between groups made them excited, and an active conversation formed between them. This is especially true to the ninth grade, who became “experts” of the topic by the end of the third lesson, and they were willing to continue learning about the material within the concept of the escape room.

In my third hypothesis, I claimed the following; *the methods of gamification provide effective tools to the teacher to execute the lesson plan efficiently*. I found proof of this hypothesis during my first gamified lesson already, since setting goals, implementing a point system, setting a ranking and applying game elements in lessons were all steps that made students focus and most of them tried to achieve the best possible results. The young generations are significantly performance oriented, the most effective feedback of which could be setting up a leaderboard ranking. While in case of younger students, it is important to give them “physical” points (wooden disks in my case), for older students, a spectacular diagram generated from Excel can be enough.

Beside collecting points, strong emotions can be generated in students by minus points as well. One of the most feared sentences in my classes – used frequently by the famous and infamous teachers of Hogwarts, too – was “five points from Gryffindor”. When a group lost some points, it enhanced their activity just as well as when they received one.

One of the important lessons of my research is that preparing a gamified lesson based on device usage not only requires precise planning, but also an IT infrastructure that is currently not available in every educational institute; the fluent realization of my classes was also made difficult by slow internet connection. So before keeping a lesson like this, it is worth assessing the infrastructure of the classroom. During the planning, good practices and case studies from Hungary and abroad can be used as support. I believe that there is a great burden on researchers of the topic and on practicing teachers, since planning a gamified



curriculum is a completely new type of activity and there is a lot of research and experimenting ahead of us before – at least partially – the gamification of the educational system can happen.

## References

- American Library Association Presidential Committee on Information Literacy. (1989). *Final Report*. Chicago, American Library Association
- Arany Zsuzsanna, Egervári Dóra. (2017). Az információs műveltség fejlesztési lehetőségei a gamifikációval. In Horváth Ágnes, Nagy Ádám, Szeifer Csaba (Eds.). *Iuvenis Ifjúságsszakmai Konferencia: konferenciakötet* (pp 125-146) Retrieved from [http://www.ifjusagugy.hu/kotetek/IUVENIS\\_konferencia\\_kotet\\_web.pdf](http://www.ifjusagugy.hu/kotetek/IUVENIS_konferencia_kotet_web.pdf)
- Byerly Greg; Brodie, Carolyn (1999). Information literacy skills models: defining the choices. In Barbara Stripling (Ed.). *Learning and libraries in an information age: principles and practice*. (pp 54-82)
- Fromann Richárd (2017): *JátékosLét*. Typotex, Budapest
- Gee, J. P. (2011): *Learning Theory, Video Games, and Popular Culture* In Bauerlein M. (ed.): *The digital divide*: Jeremy P. Teacher/Penguin
- Rab Árpád. (2015). A digitális kultúra hatása az emberi viselkedésre a gamifikáció példáján keresztül. Retrieved from [http://phd.lib.uni-corvinus.hu/916/1/Rab\\_Arpád.pdf](http://phd.lib.uni-corvinus.hu/916/1/Rab_Arpád.pdf)



## UNDERGRADUATE RESEARCH IN INSTITUTIONAL REPOSITORIES: THE OREGON STATE UNIVERSITY EXPERIENCE

Michael H. Boock

Associate Professor/Digital Projects Librarian

michael.boock@oregonstate.edu

Hui Zhang

Associate Professor/Digital Applications Librarian, Oregon State  
University Libraries & Press, Corvallis, Oregon, USA

hui.zhang@oregonstate.edu

### Abstract

*Institutional repositories provide open access to the scholarship and creative works of institutions of higher education throughout the world, most often in the form of faculty-authored journal article post-prints and graduate-level theses and dissertations. The authors share the results of a ten question survey of primary contacts at Oregon State University academic departments and programs that have actively encouraged or required students to deposit approved research materials to the ScholarsArchive@OSU institutional repository. The survey asked respondents to describe positives and negatives, and concerns from students and faculty, of making this content available open access in the repository. The authors also describe the usage of undergraduate content from 2007 to 2017 by looking at item downloads, and compare that usage with graduate-level content housed in the repository. The authors articulate the variety of benefits of preserving and making undergraduate research available in the institutional repository.*

**Keywords:** undergraduate research, institutional repositories, open access

### Introduction

In this paper, the authors share the results of a brief, ten question survey of primary contacts at the Oregon State University departments, academic programs, and offices that require students to deposit approved research materials



to the ScholarsArchive@OSU institutional repository. The survey asked respondents to answer questions, from their own perspective and that of their peers, about the value of making this content available in the repository, and to describe positives and negatives of doing so. The authors also describe the usage of undergraduate research in the repository from 2007 to 2017 by analyzing download statistics. Undergraduate research usage data is compared with the usage of graduate-level theses and dissertations housed in the repository. Based on an analysis of the survey results and the usage information, the authors articulate the variety of benefits of preserving and making undergraduate research available in the institutional repository.

The Oregon State University Libraries & Press implemented the ScholarsArchive@OSU open access institutional repository in 2005. From the beginning, the goal for the Library in implementing the repository was not only to make the university's scholarship more widely accessible but also to meet the needs of the university, individual colleges, departments and academic programs, the libraries and archives, and, especially, the faculty, students, and staff of the university. The Library was opportunistic in doing this. The repository has been widely promoted to faculty and administrators through department meeting presentations, faculty meetings, as well as through individual meetings with key potential repository stakeholders across the university including deans, department heads, associate deans of research, the research office, individual faculty, academic advisors in departments of undergraduate research, and academic program leads. During the course of this outreach, if a representative of a college, department, administrative unit, or academic program expressed an interest in making use of the repository, the libraries generally took them up on it. Doing so served to demonstrate the utility of the repository to university constituencies as quickly as possible. It also enabled the Library to begin populating the repository with content.

Undergraduate research in the ScholarsArchive@OSU institutional repository includes official undergraduate theses required by three academic programs of the university and faculty reviewed presentations, posters, and creative works presented by students at two undergraduate research symposiums held annually at the university. The Oregon State University Libraries partnered with the University Honors College soon after the institutional repository became available. The Library had previously been unable to devote the resources necessary to cataloging and shelving the physical copies of their theses in the past, but it was determined that making them available in the repository would be more efficient as well as advantageous to the students and the Honors College.



The Library identified two additional academic degree programs that require a final thesis from their graduating students—International Studies and Biore-source Research. Each of those programs were interested in making their students’ theses available as well, and for the same reasons. Making the information available would increase the visibility of the academic programs and make the important research conducted by the students of these programs widely available for the first time.

In 2012, the Library also began working with a newly formed Oregon State University Undergraduate Office of Research, Scholarship, and the Arts. The Office organizes a “Summer Symposium” and a “Celebrating Undergraduate Excellence” event, each of which provides students with an opportunity to present posters, lectures, and creative works to the campus community. Oregon State University recognizes student participants’ significant commitment to research by awarding a “researcher” notation to eligible graduating student transcripts. Aware of the large volume of undergraduate and graduate student research that was already being made available in the institutional repository, the Office contacted the Library to determine if there would be interest in making these posters, presentations, and creative works available in the repository.

## Literature Review

Since the publication of the Boyer Commission report (1998) that described educational benefits of engaging undergraduate students in conducting research, there have been a large number of articles published about the value of undergraduate research in student learning (for example Kinkead, 2003). A smaller number of articles in the library literature have been published about the benefit to students and other stakeholders of preserving and making undergraduate research available in institutional repositories. There are no research articles that survey university faculty and program leads to determine this value.

Chan (2009) notes that undergraduate research in the form of theses and final research projects are prevalent in Hong Kong institutional repositories, but they do not discuss the reasons why institutions make the content available in their repositories. Researchers at Utah State report that faculty who were informally surveyed at their institution believe that making student research available in an institutional repository “would be helpful when recruiting students.” Librarians at Western Oregon University propose the use of institutional repositories as a tool for disseminating a wide range of undergraduate student scholarship for the purposes of archiving and disseminating this content. Hensley (2014),



in a survey of academic libraries, suggests that by depositing research in institutional repositories students “learn how information is organized, presented, preserved, and distributed while exploring issues such as intellectual property, copyright, open access, and author rights.” At a panel presentation at an Association of College and Research Libraries Conference, the same researchers found that library services for ensuring the longevity and availability of undergraduate research were underdeveloped (Davis-Kahl, 2011).

Gilman (2013) explains that academic libraries are well positioned to provide the expertise and the infrastructure necessary for publishing undergraduate journals as well as creative projects. In a point-counterpoint article that appeared in the *Journal of Libraries and Scholarly Communication*, Kennison and Shreeves (2014) note that a potential benefit of providing access to undergraduate research in institutional repositories is “that [those] libraries are better placed to implement green OA resolutions and mandates when their IR is already well populated and well used with other critical institutional content.” The authors also describe specific projects in place at their institutions (University of Illinois and Columbia University, respectively) to make undergraduate research available in their institutional repositories in support of their universities’ recent emphases on undergraduate research.

## Methodology

One of the authors (Professor Boock) designed a brief ten-question survey of 7 primary contacts from academic programs that have actively encouraged or required students to deposit approved research materials to the ScholarsArchive institutional repository. The purpose of the survey was to gather respondent perspectives about how making undergraduate content available in the repository benefits students and the University as a whole. The survey also sought to understand the positives and negatives of making this content available in the repository from the point of view of the respondents, student depositors, and faculty with whom the respondents work. A survey link was sent via e-mail on September 11, 2011 to the 7 contacts.

For usage data, ScholarsArchive@OSU has used the Elasticsearch statistics engine and DSpace Usage Events until 2017 to manage usage data including file downloads. Since 2018, the repository is built on Hyrax which collects usage information such as file downloads via Google Analytics.



## Survey Results

Contacts were asked to respond within one month. All 7 responded, for a response rate of 100 percent. This was expected as the survey only consisted of 10 questions and was estimated to take 4 minutes or less to complete. As the population of the survey included only persons who had previously taken an active interest in using the repository, it can be expected that responses might be more positive than negative in regard to whether there is any value in using an institutional repository to disseminate this research. The age of the survey is also a limitation. It is important to note that the author of the survey is well acquainted with each of the respondents, which may have had an impact on the response rate and also on the positivity of the responses themselves.

The web-based survey was developed using Qualtrics software and distributed to the 7 contacts anonymously using the “Anonymize Response” feature of Qualtrics, effectively de-identifying the survey results. The first question asked respondents what they see as the value to the student and to the University of making undergraduate research freely available online in ScholarsArchive@OSU. In the open-ended responses, 6 of the 7 noted that the availability of undergraduate research in the institutional repository promotes the University or the individual academic program:

- It gives OSU a boost - hey look what our UGs are doing!
- Recruiting tool for prospective, high-achieving students.
- Documents OSU student work.
- The value to OSU is in disseminating the work of our students. Research is one of those high impact experiences that can make a difference in an undergraduate’s career. The more we can celebrate and disseminate that, the more students will get involved and the more they will have a good experience at OSU.
- Availability allows free sharing of scientific knowledge and increasing research efficiency. Encourages other undergraduates to follow in their footsteps. Documents faculty members assistance and participation in undergraduate research and mentoring. Helps to satisfy ‘educational outreach/public information’ components of various research grants.
- For the university, I think it makes it easier to illustrate the extent to which undergraduates at OSU engage in real research and knowledge-producing activities.



Each of the 7 respondents noted advantages to students of making their research available online in the institutional repository. The sampling of the written responses below indicates a wide variety of such advantages to students:

- Leverage for the student as he or she looks for jobs. Evidence of the quality of undergraduate research.
- Documents and provides example of writing and experimental process, important for graduate/professional school considerations. Several of our students have been able to publish their work in journals, extension pamphlets, educational outreach materials, etc. and others have work that is the building blocks for future research.
- Making theses available to a broader public helps the undergraduate researchers feel part of a larger research venture and a community of scholars. This is deeply motivating and rewarding for these students.
- Helps other students with examples of student work. Undergrads address different topics than grads. [Their research] is intriguing.
- Making the work available on-line raises the level of importance of the work for the student. It's not just a hoop to be jumped through or a box to be checked, but a body of work that becomes accessible to anyone with access to the internet. I've been amazed how often the UHC theses get accessed and downloaded.

Question 2 asked respondents if they have any concerns with making undergraduate research content available open access. Two of the 7 respondents noted a concern (35%) and 5 noted no concern (65%). The two who expressed a concern indicated plagiarism, quality of research, and the availability of an author's personal information as concerns. Respondents were asked if a student ever told them that they didn't want their work to be available in the ScholarsArchive@OSU institutional repository. Only 1 of the 7 responded "yes" to this question, and noted in the follow-up question that this happened "every other year". Respondents were also asked if faculty in their academic programs expressed concern about undergraduate student research being available in the repository. Of the 4 responses to this question, 2 responded that they had heard concerns from faculty and that those concerns had been expressed every other year. Both noted that the faculty member was concerned that a student might not be able to publish their research.



## Usage Data Results

Usage statistics (i.e. number of downloads) were gathered for 4 academic programs at the University that encourage or require students to deposit their research in ScholarsArchive@OSU:

- University Honors College theses
- International Studies theses
- BioResource Research theses
- Other undergraduate research that includes University Research, Scholarship, and the Arts and Undergraduate Excellence Award research.

It is not clear why, but at Oregon State University, University Honors College and International Studies theses have been downloaded at a much higher rate than other undergraduate research (Table 1).

*Table 1.* Comparison of Download Rates for Undergraduate Research Collections and Graduate Level Research

	<b>Number of deposits</b>	<b>Number of downloads</b>	<b>Download rate</b>
University Honors College Theses	1,011	152,7416	1,511
International Studies Theses	110	283,856	2,580
BioResource Research Theses	114	22,912	201
Other Undergraduate Research	380	199,504	525
Graduate Theses and Dissertations	6,042	10,902,846	1,804

## Discussion

From the Library's perspective, making undergraduate research more widely available in the repository meets the Library's strategic plan goal of disseminating the University's scholarship to the citizens of the state and the world. The Library was just bringing the ScholarsArchive@OSU repository online in 2005 and was anxious to begin getting content into the repository to see how it worked, how well metadata was harvested and indexed by Google, and how often the content was going to be downloaded. Working with enthusiastic partners in the University Honors College and other academic programs that require a final undergraduate thesis gave the Library an opportunity to test and improve repository workflows, figure out repository permissions, and copyright restrictions. Also from the Library's perspective, making the Honors College and other University theses available online saves the space of storing physical copies while dramat-



ically increasing access to them, as demonstrated in the download numbers for these theses. While undergraduate content was found to be downloaded less often than graduate level content, undergraduate content is still heavily downloaded (Table 2). Download rate is calculated as Downloads / Items.

*Table 2.* Comparison of Download Rates for Undergraduate Research vs. Graduate Level Research

	<b>Number of deposits</b>	<b>Number of downloads</b>	<b>Download rate</b>
Undergraduate Research	1,615	2,033,688	1,259
Graduate Theses and Dissertations	6,042	10,902,846	1,804

From the perspective of academic programs of the University, making the research available online provides these programs with well-preserved, indexed and searchable collections of student work. It provides evidence of the quality of undergraduate research. Making undergraduate research available illustrates the extent to which undergraduates at the University engage in real research and knowledge-producing activities. The students become part of the campus' culture of creating and disseminating knowledge.

Current and future students of the University benefit by having examples of previous student work available for consultation. Research is a high impact experience that can make a difference to an undergraduate student's life and career. The more the University is able to involve students in university research endeavors and celebrate and disseminate this research, the more engaged these students may be in the University's research mission. Students may use the persistent URL for their research reliably in their resumes, vitas, and electronic portfolios. Student research in the repository is a demonstration of quality teaching and pedagogy, as well as undergraduate mentoring by faculty of the University. Advisor and committee member are included as metadata elements so that faculty are able to link to these contributions from their own vitas and dossiers. One respondent also notes that the availability of the research helps to satisfy "educational outreach/public information" components for faculty research grants.

## Conclusion

The primary contacts from Oregon State University academic programs that have actively encouraged or required students to deposit approved research materials to the ScholarsArchive@OSU institutional repository were surveyed to



gather their perspectives about how making undergraduate content available in the repository benefits students and the University as a whole. The survey also sought to understand student and faculty concerns with making this content available in the repository. Results found overwhelming support for making this content available in the institutional repository. Respondents describe a variety of benefits to students, faculty, and the academic programs. In addition to making the research more widely available, respondents note that by conducting research and publishing it in the repository, the students meet the pedagogical and research missions of the University and describe a variety of other benefits to their future careers in academia and elsewhere. A number of benefits to the University as a whole and to the participating academic programs are also described by respondents including promotion of the programs and demonstration of the opportunities for undergraduates to conduct quality research at the University. Although undergraduate research is downloaded less often than graduate research in the repository, the difference is not so great as to suggest that the undergraduate research is not useful and the download number remain impressive.

## References

- Barandiaran, D., Rozum, B., & Thoms, B. (2014). Focusing on student research in the institutional repository: DigitalCommons@USU. *College & Research Libraries News*, 75(10).
- Boyer Commission on Educating Undergraduates in the Research University. (1998). *Reinventing Undergraduate Education: A Blueprint for America's Research Universities*. Retrieved from <https://eric.ed.gov/?id=ED424840>
- Chan, D. L. H. (2009). An Integrative View of the Institutional Repositories in Hong Kong: Strategies and Challenges. *Serials Review*, 35(3), 119–124.
- Davis-Kahl, S., Hensley, M. K., & Shreeves, S. L. (2011, March). Completing the research cycle: The role of libraries in the publication and dissemination of undergraduate student research. Presented at the Association of College and Research Libraries Conference 2011., Philadelphia, PA. March 31, 2011. Retrieved from <https://www.ideals.illinois.edu/handle/2142/27744>
- Gilman, I. (2013). Scholarly communication for credit: Integrating publishing education into undergraduate curriculum. In Davis-Kahl, S., & Hensley, M. K. *Common ground at the nexus of information literacy and scholarly communication*. Chicago: Association of College and Research Libraries.



- Hensley, M. K., Shreeves, S. L., & Davis-Kahl, S. (2014). A Survey of Library Support for Formal Undergraduate Research Programs | Hensley | College & Research Libraries, 75(4).
- Kennison, R., Shreeves, S., & Harnad, S. (2013). Point & Counterpoint The Purpose of Institutional Repositories: Green OA or Beyond? *Journal of Librarianship and Scholarly Communication*, 1(4).
- Kinthead, J. (2003). Learning Through Inquiry: An Overview of Undergraduate Research. *New Directions for Teaching and Learning*, 2003(93).
- Passehl-Stoddart, E., & Monge, R. (2014). From Freshman to Graduate: Making the Case for Student-Centric Institutional Repositories. *Journal of Librarianship and Scholarly Communication*, 2(3).
- Wawrzynski, M., & Baldwin, R. (2014). Promoting High-Impact Student Learning: Connecting Key Components of the Collegiate Experience. *New Directions for Higher Education*, 2014(165).



## CORRELATION BETWEEN ATTITUDES TO INFORMATION SEARCH PROCESS AND KNOWLEDGE OF CITATION

Nermin Çakmak

Assistant Professor Dr., Ataturk University, Faculty of Letters, Department  
of Information and Document Management, Erzurum, Turkey  
nermin.cakmak@atauni.edu.tr

Fatma Baysen

Assistant Professor Dr., Near East University, Ataturk Faculty of  
Education, Nicosia, North Cyprus  
fatma.baysen@neu.edu.tr

Engin Baysen

Assistant Professor Dr., Near East University, Ataturk Faculty of  
Education, Nicosia, North Cyprus  
engin.baysen@neu.edu.tr

### Abstract

*Although a vast amount of research dealt with Information Search Process-ISP and citation in various ways there is lack of study trying to find out the relationship between ISP and knowledge of citation. Thus, the present quantitative study filled the gap in search for the correlation between the two variables. Thus, the main aim was to reveal if there is a relationship between the attitude to ISP and knowledge of citation utilizing two different questionnaires. University students of an education faculty (n=343) participated to the study. There is an intermediate, positive correlation between the two variables. regarding gender no significant difference was found on attitudes to information search process, but significant difference was revealed about knowledge of citation in favor of girls. Grade difference was found to create significant differences in both knowledge of citation and attitude to ISP. The knowledge of citation increases in the second grade dramatically, but it decreases in the following years. Similar tendency was revealed about attitudes toward ISP. Discussions and recommendations to teaching citation and increasing positive attitudes toward ISP were presented.*

**Keywords:** information search process, attitudes, citation, correlation



## Introduction

### Information Search Process

Information search can be defined as a complex process having aspects of not only mental but also psychology (Kuhlthau, 1994, 1996). Kuhlthau constituted her Information Search Process (ISP) model in six dimensions. The dimensions included, Task initiation, Topic selection, Pre-focus exploration, Focus formulation, Information collection, Search closure. She stated that individual thoughts, feelings, and actions and learning styles affects the ISP. Recent research stated attitude toward ISP (Çakmak, 2016) and misconceptions of search process (Çakmak & Baysen, 2017) as factors for ISP. ISP is not a one time activity but continuous, complex, nonlinear, interpretive, and constructivist process (Kuhlthau, 1996). In the process sources are discovered, data are clarified, and the steps are repeated or new steps can be added to the process, if needed (George, 2008).

### What is Citation?

Research depends on accumulation of knowledge. Researchers should base their studies on previous research, they are inspired by or use previous findings, methods, and approaches. Utilizing others' work necessitate to cite those sources used in a proper way. Citation is to telling others (readers) that as a writer you have benefited from someone else's ideas by citing that someone's work ("What is citation?", 2017). Citation is the only way to use other people's work without plagiarizing. Citation is prominent aspect of ethics. If the source of the idea used is not given, trustworthiness and objectivity of particular study would be harmed. In turn the particular field would also be affected (Kurbanoğlu, 2004). Internal (feeling, cognitive, attitude etc.) and external (assignments, time management, information and communication technologies, mediators etc.) factors affecting students' ISP has been investigated in many ways (Kuhlthau, 1996; Barranoik, 2004; Cheng, 2004; Çakmak, 2016; Baysen & Özsavaş Akçay, 2017). Additionally there are a lot of research considering knowledge of citation, plagiarism and academic dishonesty (Goh, 2015; Lei & Hu, 2015; BavaHarji, Chett, Ismail, & Letchumanan, 2016; Baysen, Hošková-Mayerová, Çakmak, & Baysen, 2017; Ünal & Özenç Uçak, 2017).

### Literature Review

We are living the information era and the huge amounts of new information is added each day for us to handle with. Although many technologic facilities



accompany the information produced, it is not easy to access to information, organize it, utilize and integrate it to the benefit of one's life. It is easy to imagine the probable experiences of undergraduates in this context. Undergraduate students have to work and be successful about number of academic tasks. They have to prepare for their exams, do assignments, get high scores, attend to class discussions, prepare for seminars and workshops. For all these tasks they need information (Baro, Onyenania, & Osaheni, 2010, p. 111; Zhou, 2013). They need to entegrate themselves in information seek processes not only for their university lives but also in their professional lives. ISP requires students be skillful both in information access and also skills of analysis, synthesis, writing and utilization (Barranoik, 2004, pp. 24-25). On the other hand, ISP can be challenging and discouraging for students. Students encounter many difficulties including organizing and synthesizing the data collected (Holliday & Li, 2004; Head, 2008) and giving in-text citations obeying the citation rules. This challenge ends up with many intentional or unintentional unethical action including plagiarism (Belter & Pré, 2009).

The most critical steps in ISP regarding students' citation knowledge are synthesis and writing. Quality of the assignment is prominent factor affecting this step. Çakmak (2016) worked with 27 undergraduate students to reveal their ISP experiences. She revealed that most students (19) found the assignments boring because the assignments given by their teachers have low quality, not interesting, and they are not free in choosing the subjects to study. The lack of positive emotions while doing the assignments made students not to search for diverse sources, not use the library but instead use the internet to find few sources which they thought would be sufficient for such an assignment, there is no need to obey the rules of citation, and even they can act copy-paste plagiarism. On the other hand, Kuhlthau (1994), stated the need for quality assignments to improve students ISP skills. She announced that the assignments should direct students to different information sources and made students give bibliographic citation. Giving students few assignments would prevent experiences which in turn would harm the improvement of academic writing skills (Belter & Pré, 2009; Çakmak, 2016).

Lack of courses including factors affecting citation, the need to cite, what plagiarism is, the importance of preventing plagiarism, academic honesty and ethics (Belter & Pré, 2009; Evering & Moorman, 2012) harms ethical issues. Moreover, easy access to internet and electronic databases (Hue, Thom, & Le, 2018) causes collecting primitive data which requires less learning, synthesizing, and skills (Ma & Qin, 2017). The others include: intention to academic fraud (Emiñoğlu, & Nartgün, 2009); attitude to plagiarism (Pupovac, Bilic-Zulle, Mavrinac,



& Petrovecki, 2010; Bašić, Kružić, Jerković, Buljan, & Marušić, 2018) and knowledge of citation and misconceptions concerning plagiarism (Henderson, 2011; Çakmak & Baysen, 2017).

There is a lack of research dealing with relation between ISP and knowledge of citation. The current research intend to reveal the relationship between ISP and knowledge of citation. The study also considered demographic variables of age and gender and tried to find their effects on ISP and knowledge of citation for the same group of students. The present study tried to answer following questions:

1. What is the level of correlation, if any, between ISP and knowledge of citation?
2. Is there any significant difference between the mean scores of boys and girls concerning,
  - a. attitudes to ISP
  - b. the knowledge of citation
3. Does the grade variable creates significant difference concerning,
  - a. attitudes to ISP
  - b. the knowledge of citation

It is important to reveal the correlation between attitudes to ISP and knowledge of citation. The level of correlation can guide the librarians and the teachers to plan proper teaching. The second benefit can be about the gender differences regarding attitudes toward ISP and knowledge of citation. Thirdly finding the effect of grade on attitudes toward ISP and knowledge of citation would guide the teaching staff to understand the effect and use the idea to improve students understandings.

## Method

Quantitative cross-sectional research design (Creswell, 2003, p.14) was carried out in the present study to find out the correlation in between attitudes toward ISP and knowledge of citation.

## Participants

Education faculty students ( $n=343$ ) from different departments attended the present study. The departments included Preschool Teaching, Primary School



Teaching, Guidance and Psychology, and Special Education. The students' grade and gender distributions are shown in Table 1 and Table 2.

*Table 1. Grade Distribution*

<b>Grade</b>	<b>f</b>	<b>%</b>
1	60	17
2	141	41
3	68	20
4	74	22
Total	343	100

*Table 2. Gender Distribution*

<b>Gender</b>	<b>f</b>	<b>%</b>
Girl	207	60
Boy	136	40
Total	343	

## Data Collection

Students were given as much time they needed to respond to two data collection tools in one class time, forty minutes. Students finished answering in 30-40 minutes.

## Materials

Two data collection tools were used in the present study, Attitude Scale for the Information Search Process (ASISP) and Questionnaire for Knowledge of Citation (QKC).

## ASISP

ASISP formed by Çakmak (2016) including 5 Likert type scale was used to reveal addendances' attitudes toward information search process. The scale included five factors having 46 items in total. The factors included are: the "*Task initiation-TI*", the "*Topic Selection Process-TPS*" and "*Defining Focused Topic-DFT*",



the “*Information Collection and Search Closure-IC and SC*”, and the “*Skills of Research Methodology-SRM*”.

## QKC

A questionnaire (Baysen et al. 2017) consisted of 14 Likert type (Yes–No–I’m not sure) questions depending the literature concerning citation and plagiarism is used to find students’ knowledge of citation (plagiarism).

## Data Analysis

The distribution for the two data type got from the same sample were non-normal ( $p < .05$ ) thus the researchers preferred the Nonparametrik statistics including Mann-Whitney U (for two groups) and Kruskal-Wallis (for more than two groups) tests.

## Results and Discussions

There is a positive correlation between attitudes to information search process and the knowledge of citation and the correlation is significant at the 0.01 level. The correlation coefficient,  $r$ , is 0.345 which represents a moderate relation between the two variables.

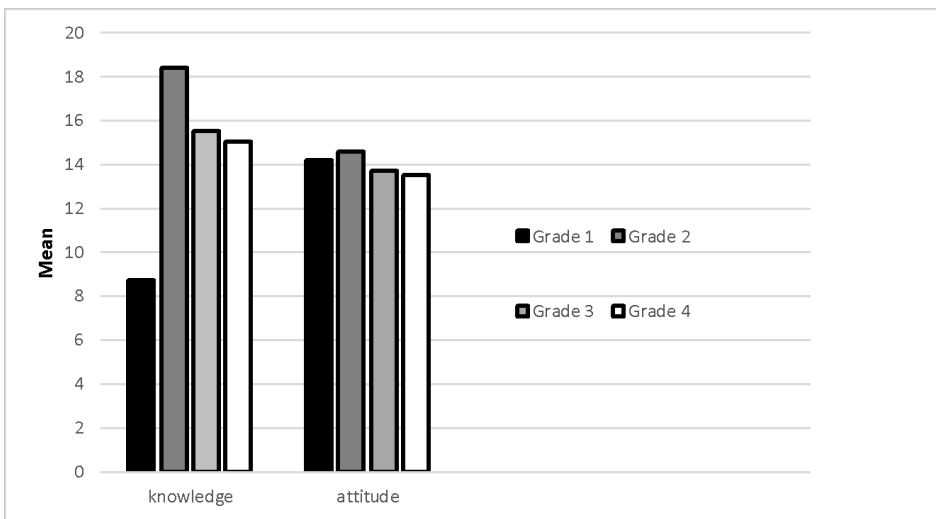
For the variable gender there is no significant difference between the mean scores of boys and girls concerning attitudes to information search process ( $p > .05$ ). But there is a significant difference related with the knowledge of citation depending on the variable gender. The girls are more knowledgeable about citation issues ( $p < .001$ ), or relative to the boys, they respect those rules of citation more than the boys.

There is a significant difference depending on class variable regarding attitudes to information search process in between grade 1 and 2 ( $p < .05$ ), in favor of grade 2. Similarly there is a significant difference related with the knowledge of citation. Second graders are more knowledgeable than first graders ( $p < .001$ ). There is a significant difference between first graders and the third graders concerning attitudes to information search process ( $p < .05$ ), in favor of first graders. There is a significant difference related with the knowledge of citation between first and the third graders ( $p < .05$ ), in favor of third graders. There is a



significant difference between first graders and the fourth graders concerning attitudes to information search process ( $p < .001$ ), in favor of first graders. There is a significant difference related with the knowledge of citation between first and the fourth graders ( $p < .001$ ), in favor of fourth graders. There is a significant difference between second graders and the third graders concerning attitudes to information search process ( $p < .001$ ), in favor of second graders. There is a significant difference related with the knowledge of citation between second and the third graders ( $p < .001$ ), in favor of second graders. There is a significant difference between second graders and the fourth graders concerning attitudes to information search process ( $p < .001$ ), in favor of second graders. There is a significant difference related with the knowledge of citation between second and the fourth graders ( $p < .001$ ), in favor of second graders. There is a significant difference between third graders and the fourth graders concerning attitudes to information search process ( $p < .001$ ), in favor of third graders. There is a significant difference related with the knowledge of citation between third and the fourth graders ( $p < .05$ ), in favor of third graders.

*Graph 1. Changes in Knowledge of Citation and Attitudes to ISP*



Significance differences and the Graph 1. results about knowledge can be interpreted as the teaching environment increases students knowledge of citation remarkably passing from the first to second grade. This increase continues with a decrease passing from second to third grade and the decrease in knowledge continues in the fourth (last) year of university. The tendency to rise and then to decrease is also revealed consistently in the attitudes to information search



process, explaining the correlation between the two variables revealed in the present study. The reasoning behind the decrease in knowledge about citation (plagiarism) can be dealt with forgetting about the citation issues. But we think that students in the third and the fourth classes became tired of doing challenging assignments which decreased their positive attitudes toward information search process in turn changed their ideas about citation. For example, they started thinking that it is not bad to self-plagiarise.

## Recommendations

The librarians and the teachers need to plan proper teaching considering attitudes to ISP and knowledge of citation together because they are candidate to affect each other. Qualitative research to revealing assignments' direct effect on citations would be of great value for the researchers and the teachers. Students' knowledge of citation is volatile, can be affected artificially by the grade level. Teachers should identify what the truth is for citation and they should make their students not to interfere their attitudes to the truth. Boys' knowledge of citation should be researched to find the reasons for low knowledge level than the girls.

## References

- Baro, E. E., Onyenania, G. O., & Osaheni, O. (2010). Information seeking behavior of undergraduate students in the humanities in three universities in Nigeria. *South African Journal of Libraries and Information Sciences*, 76(2), 109-117. Retrieved from <http://sajlis.journals.ac.za/pub/article/viewFile/74/66>
- Barranoik, L. K. (2004). *Meaningful research projects: Perspectives from high school students and their teacher* (Unpublished doctoral dissertation), University of Alberta, Canada.
- Bašić, Z., Kružić, I., Jerković, I., Buljan, I. & Marušić, A. (2018). Attitudes and knowledge about plagiarism among university students: Cross sectional survey at the University of Split, Croatia. *Science and Engineering Ethics*, 1-17. Retrieved from <https://doi.org/10.1007/s11948-018-0073-x>
- Baysen, E., Hošková-Mayerová, Š., Çakmak, N., & Baysen, F. (2017). Misconceptions of Czech and Turkish university students in providing citations. In A. Maturo, Š. Hošková-Mayerová, D.-T. Soitu, & J. Kacprzyk (Eds.), *Studies in Systems, Decision and Control Series: Vol. 66 Recent trends in social systems: Quantitative theories and quantitative models* (pp. 183-190). Switzerland: Springer. Retrieved from [https://doi.org/10.1007/978-3-319-40585-8\\_16](https://doi.org/10.1007/978-3-319-40585-8_16)



- Baysen, F., & Özsaş Akçay, A. (2017). Mimarlık öğrencilerinin bilgi arama süreçlerine ilişkin tutumları [Architecture students attitudes toward information search process]. *Bilgi Dünyası*, 18(1), 141-142. doi: 10.15612/BD.2017.596
- BavaHarji, M., Chetty, T. N., Ismail, Z. B., & Letchumanan, K. (2016). A Comparison of the act and frequency of plagiarism between technical and non-technical programme undergraduates. *English Language Teaching*, 9(4), 106-118. Retrieved from <http://www.ccsenet.org/journal/index.php/elt/article/view/57991>
- Belter, R. W., & Pré, A. (2009). A strategy to reduce plagiarism in an undergraduate course. *Teaching of Psychology*, 36(4), 257-261. doi:10.1080/00986280903173165
- Cheng, Y. (2004). *Thoughts, feelings, and actions: Quantitative comparisons of interactions and relationships among three factors in college students' information seeking* (Unpublished doctoral thesis). Indiana University, Bloomington.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods Approaches* (2nd ed.). London: Sage Publications.
- Çakmak, N. (2016). *Lisans öğrencilerinin bilgi arama süreçleri ile ilgili kavramları, tutumları ve düşünceleri* [Undergraduate students' concepts, attitudes and thoughts regarding information search process] (Unpublished doctoral dissertation), Ankara University, Ankara.
- Çakmak, N., & Baysen, E. (2017). Bilgi ve Belge Yönetimi Bölümü öğrencilerinin bilgi arama süreci deneyimleri: Kavram yanlışları [Department of Information and Records Management Students' information search process experiences: Misconceptions]. *Türk Kütüphaneciliği*, 31(3), 305-333. doi: 10.24146/tkd.2017.17
- Eminoğlu, E., & Nartgün, Z. (2009). Üniversite öğrencilerinin akademik sahtekarlık eğilimlerinin ölçülmesine yönelik bir ölçek geliştirme çalışması [A scale development study to measure academic dishonesty tendency of university students]. *Uluslararası İnsan Bilimleri Dergisi*, 6(1), 215-240. Retrieved from <http://www.insanbilimleri.com>
- Evering, L. C., & Moorman, G. (2012). Rethinking plagiarism in the digital age. *Journal of Adolescent & Adult Literacy*, 56 (1), September, 35-44. doi: 10.1002/JAAL.00100
- George, M. W. (2008). *The elements of library research: What every student needs to know*. New Jersey. Princeton University.
- Goh, E. (2015) Exploring underlying motivations behind extreme cases of plagiarism in tourism and hospitality education. *Journal of Hospitality & Tourism Education*, 27(2), 80-84. doi: 10.1080/10963758.2015.1033101



- Head, A. J. (2008). Information literacy from the trenches: How do humanities and social science majors conduct academic research? *College & Research Libraries*, 69(5), 427-445. doi: 10.5860/crl.69.5.427
- Henderson, T. (2011). *The biggest misconceptions about plagiarism*. Retrieved from <https://www.scooparticles.com/writing-articles/article-writing-articles/biggest-misconceptions-about-plagiarism-276836.html>
- Holliday, W. & Li, Q. (2004). Understanding the millennials: Updating our knowledge about students. *Reference Services Review*, 32(4), 356-366. doi: 10.1108/00907320410569707
- Hue, H. T., Thom, N. T., & Le, T. T. N. (2018). Factors that influence on students' attitudes towards plagiarism: The case of Vietnam. In *9th International Conference on Socio-Economic and Environmental Issues in Development, 11-12 May 2018* (pp. 552-563). Labours: Social Publishing House.
- Kuhlthau, C. C. (1994). *Teaching the library research process* (2nd ed.). Metuchen, N.Y., & London: The Scarecrow.
- Kuhlthau, C. C. (1996). *Seeking meaning: A process approach to library and information services* (4th ed.). Norwood, NJ: Ablex.
- Kurbanoglu, S. S. (2004). *Kaynak gösterme el kitabı*. Ankara: ÜNAK
- Lei, J., & Hu, G. (2015). Chinese university EFL teachers' perceptions of plagiarism. *Higher Education*, 70(3), 551-565. doi: 10.1007/s10734-014-9855-5
- Ma, R., & Qin, X. (2017). Individual factors influencing citation competence in L2 academic writing. *Journal of Quantitative Linguistics*, 24(2-3), 213-240. doi:10.1080/09296174.2016.1265793
- Pupovac, V., Bilic-Zulle, L., Mavrinac, M., & Petroveckı, M. (2010). Attitudes toward plagiarism among pharmacy and medical biochemistry students – cross-sectional survey study. *Biochemia Medica*, 20(3), 307-313. Retrieved from <https://hrcak.srce.hr/59293>
- Ünal, Y., & Özenç Uçak, N. (2017). Farklı eğitim ve kültürlerdeki üniversite öğrencilerinin intihal ve kopyaya ilişkin görüş ve davranışları. *Hacettepe Üniversitesi Edebiyat Fakültesi Dergisi*, 34(1), 177-194. Retrieved from <http://www.edebiyat-dergisi.hacettepe.edu.tr/index.php/EFD/article/view/1157>
- What is citation? (2017). *Plagiarism.org*. Retrieved from <http://www.plagiarism.org/article/what-is-citation>
- Zhou, M. (2013). "I am really good at it" or "i am just feeling lucky": the effects of emotions on information problem-solving. *Educational Technology Research and Development*, 61(3), 505-520. doi: 10.1007/s11423-013-9300-y



## RESHAPING ONLINE LEARNING IN A WIKI PLAYGROUND

Carla Colombati

European Documentation Centre Librarian, Wikimedia Italia Abruzzo Coordinator, University of Teramo, Giulianova, Italy  
ccolombati@unite.it

Lorenzo Marconi

Engineering Student (Master of Science), Sapienza University of Rome, Wikimedia Italia Abruzzo team, Tortoreto, Italy  
marconi.lorenzo1@gmail.com

Pietro Valocchi

TI Sparkle, Wikimedia Italia Abruzzo team, L'Aquila, Italy  
pietro.valocchi@gmail.com

### Abstract

*Technology is a pathway to diversify e-learning methodologies, with different platforms able to match different learning styles. An innovative approach to engage participants in achieving their learning objectives is to reverse the online approach, making the information flowing from the students to the network instead of from the network to the students. Wikipedia and all the other Wikimedia platforms provide opportunities to mix and match different virtual learning environments, with students of different disciplines cooperating on a common topic with different contributions. According to literature, a drivers to boost participants' motivation is to involve them in a Communities of Practice for E-learning. In this context, the paper aims to describe preliminary findings of a case study built on the basis of trials in innovative learning adopting Wiki platforms. The project was conducted in Abruzzo, a region in the center of Italy, at the University of Teramo by its European Documentation centre, in collaboration with Wikimedia Abruzzo, the newborn local governance of Wikimedia Italia. The methodology applied was both quantitative and qualitative: quantitative using questionnaires to verify the students' competences, and qualitative by means of focus groups and observation. The case study was an online touristic cultural heritage map for a town in Abruzzo using shareable hy-*



*pertext and media contents; the didactic goal was to improve information literacy and digital competences. In this framework, a support from local GLAMs professionals and scholars, was fundamental in order to collect information about sources to be used by the students.*

**Keywords:** CoP-E (Community of Practice E-learning), e-Learning, engagement, wiki-media platforms, wikipedia.

## Introduction

Technology has been widely used to diversify learning methods in order to match different learning styles. The tumultuous expansion of e-learning is a phenomenon showing a double digit growth year over year (Gutierrez, 2016).

There are two main drivers for such evolution:

- the increasing skill gap for new technologies;
- substitution of conventional educational offer to improved flexibility and return of investments (ICEF, 2018).

In the e-learning scenario, with different platforms available, each of them with their own characteristics and field of applications, Wiki ecosystem played a pivotal role since its beginning, with Wikipedia in 2001 and Wikimedia in 2003.

Wiki platforms are flexible enough to enable different e-learning methodologies:

- conventional approaches, based on acquisition of online contents by the students, usually supported by tutoring activities in a blended learning environment;
- constructivist or flipped classroom approaches, with online contents as a results of the learning activity (Bishop and Verleger, 2013).

The second approach improves the motivation of participants reversing the online methodology, with the information flowing from the students to the network instead of from the network to the students (Brailas, Koskinas, Dafermos and Alexias, 2015).

Using Wikipedia nowadays is even more appealing, it being constantly ranked in the top five most visited sites, with the distinguishing characteristic that half of its traffic comes from search engines. Wikipedia performances are a symptom its strong correlation with the internal architecture of search engines. As a consequence, working on Wikipedia contents becomes a way to improve visibility of any topic (Hinnosaar, Hinnosaar, Kummer and Slivko, 2017).



The idea to adopt Wikipedia as the platform to publish results of academic e-learning activities. In this way it is possible to achieve two main advantages:

- to adopt interactive and cooperative methodology to improve learning results;
- to improve the quality of Wikipedia contents by means of well-researched, reliable contributions.

The second point comes from the common concerns about the quality of Wikipedia pages, facing the skeptical attitude about Wikipedia as a reliable source due to volunteers' contributions. Volunteers were the key factor in the initial success of the project, but there is an increasing demand to improve the quality of Wikipedia content in order to let it be used in academic and professional environments (Jemiłniak and Aibar, 2016).

Academic institutions are already active in verifying and improving Wikipedia as a reference in standard learning activities (Staub and Hodel, 2016). A systemic involvement of academia in Wikipedia's content production can greatly improve this scenario in terms of quality and neutral point of view of its articles.

Due to the complexity of working in Wikipedia, participants are also urged to build communities of people mastering different skills, with students with different competences (i.e. history, economics, arts, photography, information technology, languages, etc) cooperating on a common goal (e.g. improving local cultural heritage online contents) The end result of this effort is the setup of workgroups combining different criteria:

- specialization: online publishing initiatives are quite complex to be addressed by a single person;
- understanding of the sector: each sector is unique and it is essential to bring specific experience into the team;
- systemic vision: each activity must be interconnected to the others;
- ability to work in a group: team building is the key to combine so different profiles;
- opportunity to learn project management skills in a real-life setting;
- ability to measure: monitor the results of the project in order to understand its progress (Santambrogio, 2016).

Making such communities working is a result by itself, and a medium to spread best practices among homogeneous professional sectors, like libraries or museums associations, in order to replicate success stories and to build new ones.



## Background and statement of the problem and purpose of the study

European Documentation Centres (EDCs) are based in Universities to foster European Commission policies, activities and documentation. At the University of Teramo the European Documentation Centre librarian's job consists in organizing multiple events, conferences, workshops, projects, for different stakeholders such as students, scholars, professionals, citizens. Another important task is teaching Information Literacy competences and Digital skills (Petrucchio, 2012; Ferrari, Punie and Brecko, 2013; Budd and Lloyd, 2014; Catalani, 2017, Catalani & Feliciati, 2018) for the use of the European digital repositories.

During the 2018 the European Documentation Centres Italian Network Project was directly connected to the European Cultural Heritage Year based on the Faro Convention (2005) as lighthouse to foster new initiatives around "cultural heritage" promotion. In the Faro Convention "heritage" and "community" are two emphasized concepts: communities are responsible to manage and add value to their own cultural heritage which represent themselves (Council of Europe, Framework Convention on the Value of Cultural Heritage for Society, 2005, 2nd. art.).

"Heritage" and "community", "Information Literacy" and "Digital competences" were key drivers for the European Documentation Centre of the University of Teramo and Abruzzo Wikimedia activities in the "Communities4Heritage" Project dedicated to university students and to Abruzzo's cultural heritage.

## Methodology

The project team was composed by the European Documentation Centre librarian at the University of Teramo, Coordinator for Wikimedia Abruzzo, and two Wikipedians.

In the "Communities4Heritage" Project framework the "Guardiagrele Wiki" case study was proposed in order to:

- improve students' Information Literacy competences and digital skills concerning the online publishing process, in terms of technical characteristics of Wiki platforms, information architecture, and peer review process.
- improve Wikipedia and Wikimedia platforms contents about the town of Guardiagrele in terms of its cultural heritage, preserving awareness



about traditions in local community and promoting tourism for the external market.

## Research question, aims and objectives

The researchers collected data to gain insight about students' awareness of their Information Literacy competences and Wiki digital skills, and their involvement throughout the e-learning program, in order to select strategies to improve their engagement.

- Research question 1: How do students perceive the use of Wiki platforms to publish their works as key drivers for enhancing their Information Literacy and Digital competences?
- Research question 2: How do Communities of Practice E-learning impact students engagement in this experience?
- Research question 3: How do online contents impacts local tourism, administration and social interaction, increasing interests to get involved in Wiki environment?

Aim: To understand to what extent the use of Wiki platforms plays a positive role in students' Information Literacy competences and digital skills; to what extent they find useful the online approach; to what extent students' engagement is enhanced by the communities of practice.

- Objective 1: To discover if Wiki platforms are perceived as a useful tool to improve their competences.
- Objective 2: To identify and clarify issues and key drivers that affect or boosts students' engagement.
- Objective 3: To discover impact of the whole "Communities4Heritage" – "Guardiagrele Wiki" on tourism, and on local users.

## Qualitative research

The qualitative research methodology, using one or several related research methods, implies embracing a particular approach with the aim to explore, analyze and understand in-depth a specific phenomenon related to humans' interpretation (Hennink, Hutter, and Bailey, 2011). The qualitative research helps to have answers such as "why" or "how". Therefore, qualitative research is most suitable for addressing 'why' questions to explain and understand issues or 'how' questions that describe process or behavior.



## “Guardiagrele Wiki” case study

As the researchers’ aim was to investigate students online learning approach publishing their contents on Wikimedia platforms, the case study is suitable for a context with specific boundaries, a specific set of data collection, time sessions for researchers delimited a priori (Yin, 2014; Pickard, 2007).

The researchers selected Guardiagrele in Abruzzo as case study being the town famous for its ancient and interdisciplinary traditions, with a strong and proud community, matching Convention of Faro’s concepts, “heritage” and “community”. In particular Guardiagrele:

- was in the EDEN European Destination of Excellence Network since 2015:
- [https://ec.europa.eu/growth/tools-databases/eden/destinations/italy\\_en](https://ec.europa.eu/growth/tools-databases/eden/destinations/italy_en)
- since 2015 the Guardiagrele Opera Festival attracts artist and public from all around the world every year at the end of July, and its staff played a great role as community supporting this Project ;
- the local administration and local community supported greatly the Wiki Loves Monuments contest, programmend on September 2018, whose conceptual framework was part of the Project too;
- the town was selected at the end of 2018 as the 4th most beautiful village of Italy in a television contest.

These characteristics fulfilled the “Communitas4Heritage” Project requirements with Professors - from Communication Science and Disciplines of Arts, Music and Entertainment - who aimed to involve specific classes of students in an e-learning project work impacting on a rich cultural heritage site, interacting with the local cultural communities.

In detail, the parties supporting the project were:

- European Documentation Centre of the University of Teramo in cooperation with professors and classes from Applied Musicology, History of the Arts, History and Theory of the Museum, Music and Communication in the Faculty of Communication Science;
- Wikimedia Abruzzo - Wikimedia Italy;
- Municipality of Guardiagrele;
- Guardiagrele Opera Festival organizational and artistic staff;
- Guardiagrele Library and Museums institutions.



The activities planned for the project were structured in terms of:

- Face-to-face tutoring by the researchers about Wiki platforms editing tools and definition of the scope of work;
- Interaction via social media;
- Gap analysis of content-pages already published on Wiki platforms;
- Editing marathon by the students of the University of Teramo;
- Online questionnaires submitted for initial and final self evaluation of students;
- Statistics to analyze students' editing activity;
- Focus group to explore students' issues and engagement felt during the whole experience.

The initiative was presented on October 31, 2018, in the framework of the round table about the "Communities4Heritage" project. In the same day the study case project was launched with the scope to end its 1st stage of the research by November 29, 2018. (see "Guardiagrele Wiki" page at [https://it.wikipedia.org/wiki/Progetto:GLAM/CDE\\_UniTeramo/Guardiagrele\\_Wiki](https://it.wikipedia.org/wiki/Progetto:GLAM/CDE_UniTeramo/Guardiagrele_Wiki)).

## Sample

The researchers collected students from specific classes of the Drama, Art and Music Studies and Communication Sciences Degrees at the University of Teramo in classes of three Professors directly involved with Cultural Heritage disciplines. Professors expressed their willingness to explore students' attitude to develop online content in an innovative Communities of Practice. Students selected pages in Wikipedia, Wikicommons and Wikivoyage to add data about Guardiagrele museums, pieces of art and festival.

## Data Collection Methods

After the literature review and document analysis, the researchers collect quantitative and qualitative data, in anonymous and confidential way, with:

- two online questionnaires; compiled at the beginning and the end of the experience;
- online and onsite participant observation;
- platform log statistics to monitorate students activities;
- interaction via messaging closed group
- a focus group organized at the end of the project.



## The online environment setup

The project was published using a page published on Italian Wikipedia GLAM project. An initial workshop was held about the basics of Wikipedia editing, open knowledge, neutral point of view, and the importance of the sources. Weekly meetings were scheduled to check the produced contents and to give suggest to the students how to proceed.

Out of twenty-one students, only one already had a Wikipedia account; distinct accounts for each student was created to track their contributions.

To prevent disruption of existing contents, we asked to the students to edit their articles in test pages stored in the private space on Wikipedia (e.g. User:Example\_user/Sandbox). In case an article on the selected topic already exists, the students copied the online page in their sandbox, to write back the improved content at the end of the editing.

To keep track of students' contributions, a tool hosted on the Wikimedia cloud farm was used

([https://outreachdashboard.wmflabs.org/courses/Università\\_di\\_Teramo/Guardiagrele\\_Wiki](https://outreachdashboard.wmflabs.org/courses/Università_di_Teramo/Guardiagrele_Wiki)). Users' activity resulted in more than 250 edits and a total contribution of 2.000 bytes.

## Online questionnaire for initial and final competences' self evaluation

- Online questionnaire for self evaluation of competences were divided in 2 sections: Section A: to collect data about the Information Literacy competencies; Section B: to collect data about Wikimedia usage skills.
- Initial questionnaire: it was launched on the 1st day of the the project, with 20 closed questions using a scale from 1 to 5; 21 people compiled their self evaluation.
- Final questionnaire: it was launched for 2 days, from November 28 to 29, 2018, with 20 closed questions with a scale from 1 to 5, and 2 open questions posed at the end of each section; 11 people compiled their self evaluation and just 1 person filled the open questions.



## Focus group

The focus group was held with 7 students. They were informed about the procedure and invited to express their opinions and feelings about three main topics: “engagement”, “issues” and on the role of the Community of Practice in the whole e-learning experience. They shared their impressions to researchers, who took hand note and controlled the conversation without direct interventions.

## Findings, discussion and conclusions

The questionnaires showed an improvement in the awareness of the information literacy process and in the willingness to use online tools. As far as the adoption of Wiki platforms, students felt more self confident in interact with such environment, even after a so short experiment.

The setup of a Community of Practice E-learning (Chikh, Berkani, Sarirete, 2008; O’Sullivan, 2009, Wenger, 2010) helped to achieve good results, constantly engaging the students by means digital tools.

Students felt as issues: the need to have a previous knowledge of Guardiareale, to be more confident with Information Literacy strategies, to manage time constraints, to select a messaging channel (a WhatsApp or Facebook closed group); engagement came mostly by the wikipedia e-learning environment and awareness of gaining skills: in this regard, the granting of a Wiki passport was considered a plus for their CV. All students decided to participate with no CFU to achieve.

## Conclusions

The project confirmed the expectations about the results we foresaw in the planning phase, with the blended mode approach, combining online activities with face-to-face classroom tutoring, as the key factor for the success of the initiative.

A first obstacle to overcome comes from the Wikipedia user interface: it remains hard to master by digital natives, used to more user friendly applications. As a drawback of the complexity of Wikipedia interface and architecture, we had a withdrawal of some participants, with the number of participants reduced from 21 students in the initial meeting to the half in the final phase.



In addition to support the adaptation phase, the tutoring meetings helped also to keep the focus on the project, preserving room to the content editing notwithstanding concomitant standard academic activities.

Other predictable result was the need for conventional work on information literacy. The expectation of easy to find online sources faced the reality of outdated, biased and promotional contents, that convinced the students to visit Guardiagrele in order to have first hand information about the library, museums and pieces of heritage.

In addition to the previous findings, the creation of a Communities of Practice E-learning has been pivotal to overcome all the issues raised by a so condensed and unconventional experiment.

The project and study case will continue in the 2nd semester on 2019, with the scope to complete the online contents and to present the overall results.

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## References

- Bishop, J. L., & Verleger, M. A. (2013, June). The flipped classroom: A survey of the research. In *ASEE National Conference Proceedings*, Atlanta, GA (Vol. 30, No. 9, pp. 1-18). Retrieved from: <https://peer.asee.org/22585>
- Brailas, A., Koskinas, K., Dafermos, M., & Alexias, G. (2015). Wikipedia in Education: Acculturation and learning in virtual communities. *Learning, Culture and Social Interaction*, 7. doi: 10.1016/j.lcsi.2015.07.00
- Budd, J. M., & Lloyd, A. (2014). Theoretical foundations for information literacy: A plan for action. *Proceedings of the American Society for Information Science and Technology*, 51(1), 1-5. doi: 10.1002/meet.2014.14505101001



- Catalani, L. (2017). I progetti Wikimedia per l'apprendimento delle competenze informative e digitali in biblioteca, a scuola, nelle università. *AIB Studi* 57(2), 253–263. Retrieved from: <http://aibstudi.aib.it/article/view/11654/10978>
- Catalani, L., & Feliciati, P. (Eds.). (2018). Wikipedia, Libraries and Archives. *JLIS.it*, 9(3). Retrieved from: <https://www.jlis.it/issue/view/789>
- Chikh, A., Berkani, L., & Sarirete, A. (2008). Communities of practice of E-learning 'CoPE' Definition and concepts. In *Proceedings—International Workshop on Advanced Information Systems for Enterprises, IWAISE* (pp. 31–37). doi: 10.1109/IWAISE.2008.13
- Council of Europe Framework Convention on the Value of Cultural Heritage for Society (CETS No. 199), signed in Faro on 27 October 2005. Retrieved from <https://www.coe.int/en/web/conventions/full-list/-/conventions/rms/0900001680083746>
- Ferrari, A., Punie, Y., & Brecko, B. N. (Eds.). (2013). *DIGCOMP: A framework for developing and understanding digital competence in Europe*. EU Publications Office. Retrieved from: <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC83167/lb-na-26035-enn.pdf>
- Gutierrez, K. (2016). Facts and stats that reveal the power of elearning. Retrieved from <https://www.shiftlearning.com/blog/bid/301248/15-facts-and-stats-that-reveal-the-power-of-elearning>
- Hennink, M., Hutter, I., & Bailey, A. (2011). *Qualitative Research Methods*. Thousand Oaks, CA: Sage.
- Hinnosaar, M., Hinnosaar, T., Kummer, M., & Slivko, O. (September 25, 2017). Does Wikipedia Matter? The Effect of Wikipedia on Tourist Choices. *ZEW - Centre for European Economic Research Discussion*, Paper No. 15-089. doi: 10.2139/ssrn.2766248
- Jemielniak, A., & Aibar, E. (2016). Bridging the Gap Between Wikipedia and Academia. *Journal of the Association for Information Science and Technology*, 67(7), 1773–1776. doi: 10.1002/asi.23691
- ICEF. (2018). The continuing expansion of online learning in the US. ICEF Monitor. Retrieved from: <http://monitor.icef.com/2018/05/continuing-expansion-online-learning-us/>
- O'Sullivan, D., (2009) *Wikipedia: A New Community of Practice?* Surrey, England: Ashgate Publishing.
- Petrucchio, C. (2012). Wikipedia as training resource for developing digital competences. In L. M. Pérez Cervi, O. Paredes, & J. Tornero (Eds.), *Current Trends and Future Practices for Digital Literacy and Competence*, (pp. 76-83). Hershey, PA: IGI Global.
- Pickard, A. J. (2007). *Research methods in information*. London: Facet.



- Santambrogio, A. (2016). *ROIvolution: Gestire la multicanalità e incrementare il business con l'Ecosistema di Comunicazione*. Milano: FrancoAngeli.
- Staub, T , & Hodel, T. (2016). Wikipedia vs. Academia: An Investigation into the Role of the Internet in Education, with a Special Focus on Wikipedia. *Universal Journal of Educational Research*, 4(2), 349-354. doi: 10.13189/ujer.2016.040205
- Wenger, E. (2010). *Conceptual tools for CoPs as social learning systems: boundaries, identity, trajectories and participation. Social learning systems and communities of practice*. London, United Kingdom: Springer.
- Yin, R. K. (2014). *Case study research: Design and methods*. Thousand Oaks, CA: Sage.

## Websites, social media and Wiki

- “Communities4Heritage” Project in the 2018 European Year of Cultural Heritage. Retrieved from: <http://annoeuropeo2018.beniculturali.it/en/eventi/patrimonio-culturale-patrimonio-comunita/>
- [https://www.unite.it/UniTE/Home/Communities4Heritage\\_per\\_il\\_patrimonio\\_culturale\\_Workshop\\_e\\_Tavola\\_rotonda](https://www.unite.it/UniTE/Home/Communities4Heritage_per_il_patrimonio_culturale_Workshop_e_Tavola_rotonda)
- <https://www.facebook.com/media/set/?set=a.2290088277891661&type=1&l=5bcd-cf6320>
- Guardiagrele Wiki Project (in the Communities4Heritage Project). Retrieved from: [https://it.wikipedia.org/wiki/Progetto:GLAM/CDE\\_UniTeramo/Guardiagrele\\_Wiki](https://it.wikipedia.org/wiki/Progetto:GLAM/CDE_UniTeramo/Guardiagrele_Wiki)
- [https://outreachdashboard.wmflabs.org/courses/Università\\_di\\_Teramo/Guardiagrele\\_Wiki](https://outreachdashboard.wmflabs.org/courses/Università_di_Teramo/Guardiagrele_Wiki)



## HUMAN ACTIVITY RECOGNITION WITH SMARTPHONES AND ITS ECONOMIC IMPLICATIONS

Anita Đurašinović

Student, Faculty of Economics in Osijek, Croatia  
adurasinovic@gmail.com

Marijana Zekić-Sušac

Full Professor, Faculty of Economics in Osijek, Croatia  
marijana@efos.hr

Adela Has

M.A, Assistant, Faculty of Economics in Osijek, Croatia  
adela.has@efos.hr

### Abstract

*This paper suggests models for human activity recognition with the use of artificial neural networks and decision trees. Today, smartphones are very popular which makes the use of smartphone sensors most suitable and cost-effective tools for measuring human activities. Human recognition technology can be used in healthcare (recording data about elderly people and preventing their falls etc.), in recording people's everyday activities, location etc. The purpose of this paper is to model human activity recognition through several goals: (1) to describe technology, types and approaches of human activity recognition, the challenges of its applications, and (2) to create a machine-learning model that will be able to recognize human activity by using artificial neural networks and decision trees. The dataset on human activity recognition from the website Kaggle.com was used, which consisted of more than five hundred input variables and the output variable expressed in six categories: laying, sitting, standing, walking, walking downstairs and walking upstairs. Both neural network and decision tree methods were trained on the same training subset and their accuracy on the same test subset was measured and compared. Besides testing model accuracy, the importance of input variables was also analyzed. The results showed that the most accurate model was obtained by neural networks with 74.45% of accurately recognized human activities, whereas the decision tree model accuracy was 67.88%.*



*Possible applications of human recognition technology are numerous, like personal biometric signature, care of elderly people and infants, localization, industrial production etc. There are certain limitations of using this type of technology like user sensitivity (due to different ways of doing the same movements), location sensitivity, the complexity of the activity (if users do many activities at the same time), energy limitations, source limitations, an insufficient number of subjects for training.*

**Keywords:** decision trees, human activity recognition with smartphones, human activity recognition technologies, neural networks, sensors in smartphones

## Introduction

Human activity recognition is the ability of a certain device to identify various movements of a human. These devices can be based on cameras or various sensors (Technavio, 2014). Activity recognition technology applications are numerous such as health care, illness prediction, and exercise tracking. This technology can help to detect and prevent any type of abnormal activities in patients after operations like, for example, falls and Parkinson disease or epilepsy (Lu et al., 2016).

The purpose of this research was to model human activity recognition through several goals: (1) to describe technology, types and approaches of human activity recognition, as well as the challenges of its applications, and (2) to create a machine-learning model that will be able to recognize human activity by using artificial neural networks and decision trees. In the theoretical background, the problem of human activity recognition will be explained, as well as technology used in this area including cameras, sensors and machine learning models. To create models based on artificial neural networks and decision trees, the Kaggle dataset on human activity will be used in Statistica Datamining software. The neural network and decision tree models will be tested and their results will be compared.

## Activity recognition sensors

Considering that smartphones are computers that are becoming more popular every day, and built-in sensors allow application in health care, social networks, security, monitoring environment, transport, and other domains, a new research area is developed - mobile phone sensing. Until now, human activity recognition has mostly targeted elderly people, athletes, and patients with chronic diseases. Activity recognition systems have 3 main components: (1) low-level sensing modules - that continuously collect relevant information about



activities through microphones, accelerometers, etc., (2) module for processing properties and selection - that processes raw data into properties that help in activity recognition, and (3) classification module - that uses properties to get to the conclusion which activity a human is doing (Sunny et al., 2015).

According to Anguita et al. (2013), sensors for activity recognition tracking can be in the environment or wearable. Some wearable sensors are put on different parts of the body like waist, wrist, chest, thighs, etc. to get good results. Many smartphones have built-in accelerometers, GPS, light sensors, temperature sensors, gyroscopes, barometers, etc. These sensors provide a rich source of data of the users' life like walking, running, sitting, etc. Smartphones, because of their unobtrusiveness, low sensor installation cost, easy use, become the primary platform for human activity recognition. Accelerometers are sensors that monitor the event of acceleration of a smartphone where reading includes three axes (Anguita et al., 2013). Gyroscopes measure phone rotation based on smartphone movement according to  $x$ ,  $y$ , and  $z$ -axis. These sensors help in applications related to navigation and games that include data related to rotation. Barometers measure the atmospheric pressure of the environment they are in. Air pressure is different according to altitude or even places that are on the same altitude but different structures. Compass represents a tool that detects direction based on Earth's North and South poles using magnetism (Xing and Hanghang al., 2014). Attal et al. (2015) have summarized the previous research conducted in the area of human activity recognition. They have found 18 papers that deal with a number of human activities. Some papers such as Karantonis et al., 2006 (in Attal et al. 2015) include only two activities (walking and falling), most of them deal with recognizing five to ten activities such as sitting, standing, lying, running, scrubbing, working at a PC, vacuuming, brushing teeth, watching TV, while the largest number of activities is included in the paper of Moncada-Torres (2014) which included 16 different human activities. They have placed accelerometers on chest, thigh and ankle, although other authors also used waist, wrist, hip, necklace and other places of human body. The classification accuracy of models tested in previous research varied ranging from 89% to 100% (Attal et al., 2015).

This type of research is conducted in a controlled environment where high accuracy rates are achieved. For example, 100% accuracy is achieved in Yeoh's (2008) research. Sensors were attached on the thigh and wrist, and activities like sitting, laying, standing and speed walking were investigated. The lowest accuracy rate (89,08%) had Moncada-Torres's (2014) research where 16 daily activities were measured, and the sensors were attached on the chest, thigh, and ankle.



According to Xing and Hanghang al. (2014), activities that sensors measure can be classified in different ways. They can be classified based on complexity like walking, running, walking downstairs, entering an elevator, etc., or can be connected to certain body parts like typing or waving a hand, connected to health like falling, exercise, rehabilitation, etc., location like food, shopping, watching TV, etc. After data from sensors is collected, the next step is pre-processing (to reduce noise that is maybe caused by users or sensors and so that data can be segmented) before any further calculations. The machine learning methods that prevail in previous research is in human activity recognition are decision trees because of their low complexity and excellent interpretation.

## Approaches in human activity recognition

Activity recognition is being implemented by studying video sequences or photographs, and to classify input data correctly in the first category, human activities are categorized according to their complexity in (1) gestures, (2) atomic actions, (3) human-to-object interaction or human-to-human interaction, (4) group activities, (5) behaviour and (6) events (Vrigras et al., 2015).

In creating the ideal database these points should be taken into consideration: (1) input data should be photographs and/or video sequences, (2) there should be enough data amount, (3) input data should be good quality (high quality), (4) large number of subjects that are doing the activity, (5) large number of action classes, (6) change in illumination, (7) big variations in intraclass (pose variations), (8) photographing under partial occlusion of human structure, (9) complex background (Vrigras et al., 2015).

## Human activity recognition technology - areas of application

Areas of application of activity recognition include the automotive industry, consumer electronics, transit sector, video game industry, defense, healthcare, and retail. Certain companies that develop activity recognition technology include Intel, Qualcomm, Microchip, GestSure, SoftKinetic, etc. (Technavio, 2014).

According to Sunny et al. (2015), applications of activity recognition technology include: tracking daily human activities (number of steps that the user did, number of stairs, calories burnt, hours of sleep, traveled distance, quality of sleep, etc.), personal biometric signature (certain movements are specific for an individual, for example, way of lifting a hand), elderly and infant care (to prevent injuries,



remind the elderly to take medication, monitor children's sleep, predict children's needs, detect autism), localization (a replacement for GPS because GPS signal inside buildings and under surface can be very weak), industrial manufacturing (enables workers to do more difficult jobs as an extension of their body), etc.

Challenges of human activity recognition sensors include: user sensitivity - people can do movements differently for the same activities which can be a problem for the training and testing phase; location sensitivity - when reading accelerometer data, the reading depends if a user walks while holding a phone in their hand or in their pocket); insufficient number of subjects for training - there must be a lot of variations of subjects which is hard because it is not easy to coordinate people of different ages and body shapes (Xing et al., 2014); activity complexity - includes people that are doing more activities at the same time which can confuse the classifier that is set to recognize one activity (Sunny et al., 2015).

## Subject of research

This paper tests machine learning methods in recognizing human activity captured with smartphones. The dataset used in this paper is "Human Activity Recognition with smartphones" from the website Kaggle.com (Kaggle, 2018). Thirty participants were included in the research (age 19 to 48) that performed daily activities and they had Samsung Galaxy S2 with built-in sensors around their waist. The dataset consists of 10.299 cases and 562 variables, more specifically 561 continuous inputs and 1 categorical output variable. The output variable is expressed in six categories describing human activity: *Walking, Walking Upstairs, Walking Downstairs, Sitting, Standing and Laying*.

In order to train, test and validate artificial neural networks, the data was divided into three subsamples such that 60% of data was used for training, 20% for testing (while optimizing parameters) and 20% for final validation of the model. The decision tree method was trained on the 80% of data, and validated on the same validation subsample as neural networks. The number of cases in each subsample is presented in Table 1.

Table 1. Subsampling procedure in modeling

Subsample	Neural network models	Decision tree models
Train	60% (6.179 cases)	80% (8.239 cases)
Test	20% (2.060 cases)	
Validation	20% (2.060 cases)	20% (2.060 cases)
Total	100% (10.299 cases)	100% (10.299 cases)



## Methods of research

For background and previous research, secondary research methods were used, to be more precise, internet sources and scientific papers that explain, in detail, human activity recognition, and smartphone applications for such uses. The empirical research was conducted by using two machine learning methods: artificial neural networks and decision trees, available in Statistica Datamining software package.

## Neural networks

Artificial neural networks “are computers whose architecture is modelled after the brain” (Maind et al., 2014). Hundreds of simple processing units (i.e. neurons) are connected together in a neural network and send signals to each other. The structure of a neural network consists of an input layer, one or more hidden layers and an output layer. If a neural network contain more hidden layer, it is considered a deep learning neural network. Each input unit send it weighted value to a unit in a hidden layer. The units in the hidden layer receive a sum of weighted inputs, and transform it according to an activation function. Changhau (2017) says that the purpose of an activation function in a deep learning context is „to ensure that the representation in the input space is mapped to a different space in the output“. Furthermore, Changhau (2017) notes several commonly used activation functions, such as sigmoid, tangent hyperbolic, ReLU and Softmax. He explains that the Sigmoid function is a special case of a logistic function with a characteristic S-shaped curve and is defined by the formula (Changhau, 2017):

$$\sigma(x) = \frac{L}{1 + e^{-k(x-x_0)}}, \quad (1)$$

where  $e$  is the natural algorithm (Euler’s number),  $x_0$  is x-value of the Sigmoid’s midpoint,  $L$  is the curve’s maximum value,  $k$  is the steepness of the curve. An alternative for the Sigmoid function is the hyperbolic tangent function defined by the formula (Changhau, 2017):

$$\tanh(x) = \frac{1 - e^{-2x}}{1 + e^{-2x}}. \quad (2)$$



The architecture of a typical multi-layer perceptron neural network is presented in Figure 1.

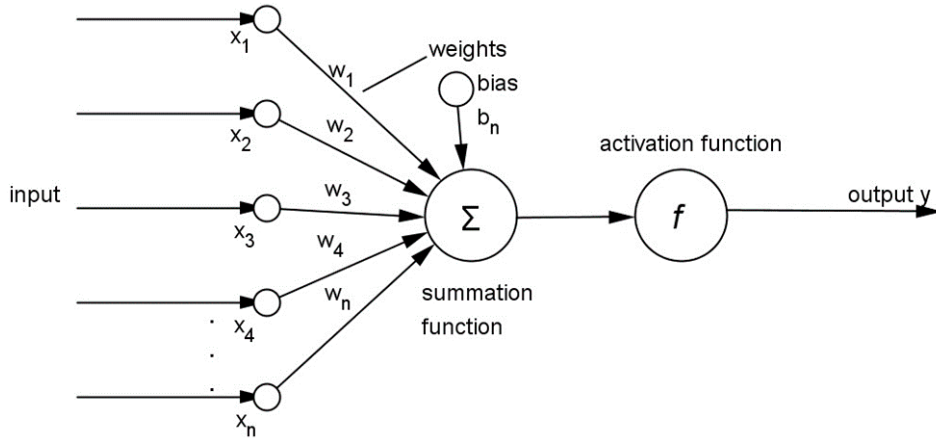


Figure 1. The architecture of a multi-layer perceptron neural network (Zekić-Sušac et al., 2014)

In the neural network model of this research, tangent hyperbolic and logistic activation functions were used in the hidden layer. For each function, seven different neural network architectures were tested such that the number of hidden units varied in each architecture. The number of hidden units varied from 20 to 80.

## Decision trees

The decision tree, as a “white box” method aimed primarily for classification and regression works by splitting the input vectors at each node according to a function of a single input. The most commonly used algorithm is classification and regression tree (C&RT) suggested by Breiman et al. (1984). It repeats the splitting process for every input variable using each node as a new parent node until the tree reaches its maximum size. After that, it starts to prune the tree using the Gini index in a cross-validation procedure to select the right-sized tree. The Gini index is defined as (Apté et al., 1997):

$$Gini(t) = 1 - \sum_i p_i^2 \quad (2)$$



where  $t$  is a current node and  $p_i$  is the probability of class  $i$  in  $t$ . The C&RT algorithm has some limitations such as biasness regarding the variable selection (Grömping, 2009).

In our research the algorithm used for decision tree method was classification and regression tree (C&RT). The tree was pruned on misclassification error and the Gini measure was used to determine the pruning.

## Findings

The most accurate neural network had structure 591-75-6 with logistic activation function and 75 hidden neurons. It was observed that the accuracy was rising if the number of hidden neurons increased. The decision tree method has produced a lower accuracy. The number of nodes in each branch of the decision tree was 28, and the total classification rate was 67.88%. The highest classification rate was for the activity *walking*, and the smallest for *laying* and *sitting*.

Table 2. shows classification accuracy rates for the best architectures of both models. With 74.45% accuracy, the neural network model outperformed the decision tree model.

Table 2. Classification accuracy rates for certain categories for both models

	Laying (%)	Sitting (%)	Standing (%)	Walking (%)	Walking downstairs (%)	Walking upstairs (%)	Total classification rate (%)
<b>Neural networks</b>	77.38	62.43	77.28	89.08	60.69	77.29	74.45
<b>Decision trees</b>	51.93	51.56	82.62	86.83	57.59	76.95	67.88

It can be seen in Table 2. that the accuracy rate for the activities *laying*, *sitting*, *walking*, *walking downstairs*, *walking upstairs* was greater in the neural network model (77.38%, 62.43%, 89.08%, 60.69%, and 77.29% respectively), whereas for the activity *standing*, the more accurate model were decision trees with the accuracy of 82.62%.

The t-test of the significance in proportions shows that the difference between the total classification rate of the neural network and the decision tree



model is significant on the 5% level ( $p=0.000$ ), meaning that the neural network model is significantly more accurate than the decision tree model.

## Discussion and economic implications

The results obtained in this research show that machine learning methods are able to recognize human activity with a reasonable accuracy, although there are possibilities for improvement. The more accurate, neural network model, can serve in various domains, such as healthcare in preventing certain accidents, etc. Also, it can be implemented in robotics to perform certain activities that are dangerous for people (such as moving around places with high radioactivity). Human activity recognition technology also finds its application in the entertainment industry. Video game industry becomes more popular and realistic every year and there are advancements towards better, more entertaining, realistic and interactive user experience.

However, there are also discussions if a certain activity is healthy for a person, if there is a line in robot development to look and act like human beings or animals and will a more realistic user experience bring to video game addiction and detachment from the real world. Sensors in homes can bring a sense of security because they can give information if an intruder is approaching, etc. But, home networking can make a house more vulnerable due to its potential threat of hackers. Every system, although complex, is vulnerable to these threats.

With a large dataset like the one used in this paper, there are certain challenges, like network testing time. Testing time increases with increasing the number of hidden neurons, and the decision tree divides into a large number of children nodes. This is the case with personal computers that are not very powerful compared to powerful computers in scientific institutions.

The models suggested in this paper can be implemented and have a significant economic implications regarding such as reducing the cost of human labour by replacing humans whose job is to detect movement and to provide signal for certain actions regarding the movement, for example in security of companies and institutions, military service, traffic control, etc. Besides that the implementation of suggested models can save the possible accidents, therefore reduce the cost of health treatment, insurance, and other related costs. In that way, machine learning models are a valuable technology improvement that has a high return on investment.



## Conclusion

Human activity recognition is implemented with studying video materials or photographs, and the activities are categorized by their complexity, which falls into categories of gestures, atomic actions, human-to-object interactions or human-to-human interactions, group activities, behavior, and events. There are various human activity recognition technology applications, like tracking daily activities, personal biometric signature, elderly and young people care, localization, industrial manufacturing, etc.

In this paper, the two machine learning methods, artificial neural networks and decision trees were tested in order to suggest a model that will be able to recognize human activity. Six activities were measured: *walking, walking downstairs, walking upstairs, sitting, standing and laying*. The results show that the more accurate model was the neural network model with an accuracy rate of 74.45% while the accuracy rate of the decision tree model was 67.88%. The accuracy rate can be improved in future research by testing more advanced machine learning algorithms, such as convolutional neural networks, and other methods that can be executed within Big Data environments and therefore gain higher speed and accuracy. There are certain challenges with this technology like user sensitivity (because of different ways of doing the same movements), location sensitivity, activity complexity (if the users do various activities at once), energy and source limitations, an insufficient number of training subjects. However, the economic benefit of using machine learning models in human activity recognition is high, with an increasing trend of their potential to save costs and human lives.

## References

- Anguita, D., Oneto, L., Parra, X., Reyes-Ortiz, J. (2013). A Public Domain Dataset for Human Activity Recognition Using Smartphones. Verleysen, M. (Eds.) *ESANN 2013 proceedings, European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning*. 24-26 April 2013. *i6doc.com publ.*, ISBN 978-2-87419-081-0. Bruges (Belgium). (pp. 437-442). Available from <http://www.i6doc.com/en/livre/?GCOI=28001100131010>
- Apté, C., & Weiss, S. (1997). Data mining with decision trees and decision rules. *Future generation computer systems*, 13(2-3), pp. 197-210.
- Attal, F., Mohammed, S., Dedabrishvili, M., Chamroukhi, F., Oukhellou, L., Amirat, Y. (2015). Physical Human Activity Recognition Using Wearable Sensors. *Sensors*, 15, 31314–31338. doi:10.3390/s151229858



- Breiman, L., Friedman, J., Olshen, R., and Stone, C. (1984). *Classification and Regression Trees*, Belmont, CA: Wadsworth International Group.
- Changhau, I. (2017). *Activation Functions in Neural Networks*. Retrieved from: [https://isaacchanghau.github.io/post/activation\\_functions/](https://isaacchanghau.github.io/post/activation_functions/).
- Grömping, U. (2009). Variable importance assessment in regression: linear regression versus random forest. *The American Statistician*, 63(4), pp. 308-319.
- Kaggle, Human Activity Recognition with Smartphones. (2018). Retrieved from: <https://www.kaggle.com/uciml/human-activity-recognition-with-smartphones>,
- Lu, D., Guo, J., Zhou, X., Zhao, G., Bie, R. (2016) Self-learning Based Motion Recognition Using Sensors Embedded in a Smartphone for Mobile Healthcare. Yang, Q., Wei, Y., Challal, Y. (Eds.). *Wireless Algorithms, Systems, and Applications. 11th International Conference, WASA 2016. Proceedings. 08-10.08.2016*. MIT: USA. (pp. 343-355).
- Maind, S. B., Wankar P. (2014). Research Paper on Basic of Artificial Neural Network. *International Journal on Recent and Innovation Trends in Computing and Communication*. 2(01), 96-100. Retrieved from: <http://www.ijritcc.org/download/Research%20Paper%20on%20Basic%20of%20Artificial%20Neural%20Network.pdf>
- Sunny, J., Mary George, S., Kizhakkethottam, J. (2015). Applications and Challenges of Human Activity Recognition using Sensors in a Smart Environment. *IJIRST-International Journal for Innovative Research in Science & Technology*. 2(04), 50-57. Retrieved from: <http://www.ijirst.org/articles/IJIRSTV2I4024.pdf>
- Technavio, *Top 18 Gesture Recognition Technology Companies*, Retrieved from: <https://www.technavio.com/blog/top-18-gesture-recognition-technology-companies>.
- Vrigkas, M., Nikou, C., Kakadiaris, I.A. (2015). Review of Human Activity Recognition Methods. *Front. Robot. AI*. 2(28), 1-28. doi: 10.3389/frobt.2015.00028.
- Xing, S., Hanghang, T., Ping, J. (2014). Activity Recognition with Smartphone Sensors. *SINGHUA SCIENCE AND TECHNOLOGY*, 19(03), 235-249. Retrieved from: <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=6838194>.
- Zekić-Sušac, M., Pfeifer, S., Šarlija, N. (2014). A Comparison of Machine Learning Methods in a High-Dimensional Classification Problem, *Business Systems Research*, 5(3), 82-96.



## LIBRARY CATALOGUE IS NOT A COMMUNITY! USER CONTRIBUTIONS TO ONLINE SERVICES OF ARCHIVES, LIBRARIES AND MUSEUMS

Isto Huvila

Professor, Department of ALM, Uppsala University, Uppsala, Sweden  
isto.huvila@abm.uu.se

### Abstract

*The importance to provide users with a possibility to contribute to the online services of archives, libraries and museum and the chronic lack of popularity of such functions are two parallel truisms that contradict with each other. This paper reports of a pilot study of user motivations to contribute to online services of ALMs. The findings suggest that reasons to contribute vary considerably between individual contributors but also that many of the services provided by memory institutions are not necessarily considered by users as relevant arenas of engagement. It seems that the users and institutions alike have difficulties to pinpoint the role of the existing services. Two possible ways forward could be to focus on developing services with specific social relevance in particular well-defined contexts, and establishing, framing and communicating the social relevance of existing services in more explicit terms.*

**Keywords:** user motivations, crowdsourcing, commenting, archives, libraries, museums, public sphere

### Introduction

The importance to provide users with a possibility to contribute to the online services of archives, libraries and museums (ALMs) and the chronic lack of popularity of such functions are two parallel truisms that contradict with each other (Huvila, 2015). Commenting and contributions have been suggested to provide means to engage users, democratise ALMs, perform their role as public (memory) institutions (Jansson, 2017), improve collections and collection metadata (Graf et al., 2018), and to cut costs of the curation of the collections (Huvila, 2015). A number of case studies of projects eliciting and analysing user comments (e.g. Huvila, 2008; Liew, 2014; Ridge, 2014; Biella et al., 2015) can be found in the literature but significantly less is known about the motivations of



why users contribute to these services (exceptions e.g. Kipp et al., 2017; Liew, 2015). A similar lack of knowledge of motivations applies also to other forms of participation in the work of heritage institutions (e.g. Cushing, 2018). Engagement with ALMs can be at least partly motivated by same incentives than participation in other online services (cf. Crowston and Fagnot, 2018; Kipp et al., 2017; Semaan et al., 2015; Brabham, 2012) and communities, and commenting in a physical environment (e.g. Winter, 2018) but at the moment, little is known about the respective significance of different motivations and especially about motivations that are related to the public role of the institutions.

The aim of this paper is to survey the field and provide a starting point for future studies of user motivations to contribute to online services of ALMs. The study is based on an analysis of findings from an exploratory pilot study conducted as an online survey in Sweden and Finland.

## Material and data collection method

The material for the study was conducted using an online survey targeted to individuals who had commented or contributed at different online services provided or hosted by ALMs including blogs, wikis, Facebook, Instagram and, for instance, Flickr accounts, without ruling any specific social media services out, maintained by these types of institutions. Commenting was specified in the invitation to include commenting, writing reviews and other types of contributions when individuals create or share new information related to the contents of the online service. Invitations to participate were distributed to relevant Finnish and Swedish ALM-related mailing lists and communities on major social media sites including Facebook, GoodReads and LibraryThing. In addition, major online services in the two countries, including Finna, Kirjasampo, Helmet, eKirjasto, Bibblan svarar, bokcirklar.se, makupalat.fi, platsr.se and Kysy kirjastonhoitajalta were contacted and asked to distribute the invitation in their channels. The survey questions focused on the motivations to comment and platforms where respondents made contributions (open ended questions), attitudes towards and views of comments and commenting (questions on a five-point Likert-like scale) and demographics.

Altogether (n=) 38 respondents took the survey. The mean age of respondents was 45.9 years with the oldest born in 1947 and youngest in 1999. 78.9% (30/38) of the respondents were female. They were highly educated with 57.9% (22/38) having earned a graduate degree. The mean of self-perceived social class of the respondents on scale from 0 to 10 was 6.1 (SD 1.9). 23.1% (9/38) of the respondents filled in the survey in Swedish and the rest in Finnish.



As a whole it is apparent that the data represents a very small convenient sample with an unknown bias. In spite of the limitations, it is still useful for a preliminary analysis of what types of motivations and attitudes towards contributing in online services held by ALMs individuals might have.

## Analysis

The data was analysed by the author using descriptive statistics in SPSS 25.0. Open-ended answers were analysed using content analysis. The results of the analysis of the statements in a five-point Likert-like scale are reported in Table 1.

*Table 1.* Statements on opinions and views on comments and commenting.

<b>Statement</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>
I am commenting regularly (in one or multiple services)	38	2.34	1.32
My comments are sincere	37	4.65	0.54
Me and others have an equal discourse power in commenting	37	3.68	1.06
I can comment freely on my own discretion without being restricted by moderators of the service or by other people	37	3.62	1.26
My viewpoint is influenced by other people's comments	37	2.86	1.21
Other people's viewpoints are influenced by my comments	37	3.16	0.93
My comments are read by people from different social groups	37	3.22	0.92
Other people's comments seem generally well justified	37	3.30	0.78
The possibility to remain anonymous can eliminate worries about commenting freely	37	3.89	1.17
The possibility to remain anonymous make commentators more equal to each other	37	3.27	1.19
The possibility to remain anonymous can decline the sense of responsibility of commentators	37	4.08	0.92
Comments are mostly respectful	37	3.51	0.99
Comments need to be moderated more than at the present	37	3.05	0.91
Other people's comments seem generally trustworthy	37	3.35	0.92
Commenting complements the contents of the service you are using	37	4.00	0.88
Commenting prompts the services you use to become better	37	3.76	0.95
The possibility to comment is an instrument that contributes to the freedom of speech.	37	4.19	0.88
The possibility to comment is an instrument that contributes to democracy	36	3.81	0.95
Commenting improves the reliability of the services you use	37	3.54	0.93
Commenting renews the contents of the service I am using	36	3.58	1.02



The analysis shows that the most of the respondents considered that the comments are sincere, that the possibility to comment is an instrument that contributes to the freedom of speech, the possibility to remain anonymous can decline the sense of responsibility of commentators, and that commenting complements the contents of the service. At the same time, however, the most of the respondents indicated that they were not commenting regularly (even if there was some variation), or that their viewpoint would be influenced by other people's comments.

A categorisation of different motivations indicated by the respondents are reported in Table 2.

*Table 2.* Categorisation of the motivations to contribute.

<b>Motivation</b>	<b>Mentions</b>
Usefulness of comments	4
Interest in content	3
Community participation	3
Sharing of own experiences	3
Correcting mistakes	3
Strong opinions on the contents	3
Promote own opinions	2
Asking questions/information	2
Ease of commenting	1
Promote archives, libraries or museums in social media	1
Possibility to influence	1
Adding more information	1
Feels like a right thing to do	1
Contributing as a pastime activity	1

Among the most frequently mentioned motivations, there seems to be a fairly clear trend towards utilitarian and interest driven rationales together with an eagerness to share views when personal opinion on a particular item is especially positive or negative.

Services where respondents contribute are listed in Table 3.



*Table 3.* Online services where respondents have contributed.

<b>Service</b>	<b>Mentions</b>
Facebook	22
Online catalogue	13
Literature sites	8
Institutional websites	6
Kysy kirjastonhoitajalta ( <a href="http://www.kirjastot.fi/kysy">www.kirjastot.fi/kysy</a> )	5
Instagram	5
Blog	5
Twitter	2
Kirjasampo ( <a href="http://www.kirjasampo.fi">www.kirjasampo.fi</a> )	2
Discussion forums	2
Youtube	1
Flickr	1
E-book portal	1

The most popular services mentioned by the respondents were Facebook and different online catalogue services with a commenting functionality. It is apparent from the data that some of the respondents answered on the basis of the contributions they had made on other sites than services hosted or maintained by ALMs including commercial literature sites such as GoodReads and private blogs. However, on the basis of the comparison of the responses between such respondents and others, it is unlikely that this bias would have a major effect on the findings of this study. A close reading of the open ended answers reveals, however, that respondents did not necessarily consider that the services provided by ALMs are especially relevant arenas for commenting and contributing. This view was supported by a series of comments on the survey itself where individuals asked for a possibility to take a survey on why they did not contribute to these particular services but did it elsewhere. There are also indications in the data that many of the respondents are archives, library or museum professionals with a direct vocational motivation to interact with these particular services.

## Discussion and conclusions

The findings underline the earlier observation that a more systematic understanding of the motivations of contributing and commenting in the context of the web services of ALMs beyond anecdotal evidence from specific contexts and communities is needed. The significance of specific motivations vary a lot



between individual contributors and respondents see both opportunities and threats (similarly to earlier studies, e.g. Harju and Sainio, 2018) but there is still a rather strong consensus that commenting and contributing is relevant both as a form of engaging in content-related interests and as a social activity. Together the both findings relating to how commenting and contributing are perceived and the motivations suggest that the principal public value of the activities would relate, according to the respondents, to the production and elaboration of content rather than to the public value of an on-going discourse on these specific sites. This is not necessarily surprising in the light of how ALMs have been framed in the literature as institutions with documentation as their foundational cultural technique (Pagés, 1955; Buckland, 2017). Content production, or rather the use of things as documents, is how ALMs engage in public discourse rather than the other way round.

From the perspective of the development of participatory online services, probably the most significant finding of this study is that the services provided by memory institutions are not necessarily considered by users as relevant arenas of engagement. They are first and foremost conceived as findings aids and information repositories (as e.g. in Messo and Peltonen, 2017). The finding is in line with earlier observations of the uneven and generally low levels of participation in the online services provided by ALMs (e.g. Harju and Sainio, 2018). As one of the survey participants noted, a (particular) library catalogue “is not a community”. The requests, even if anecdotal, of the possibility to describe reasons of not contributing can be related to similar views. However, as the successful, both public and commercial initiatives to attract contributions from the public (e.g. Kipp et al., 2017; Ridge, 2014) demonstrate, the problem is not that it cannot be done. It is rather to understand and design effective incentives for participation, and defining and communicating a workable concept of the function of the online platform for its users. If the service is a catalogue for its users, the incentives for contributions cannot be the same as they would be for a community site. Incentives such as visible acknowledgements for significant contributions on the search listings, active elicitation of contributions as parts of events, or a possibility to earn minor rewards could be possible approaches to engage users in these contexts.

Apart from influencing the willingness to contribute, the particular ways of how an online service is perceived by its users have other repercussions. As demonstrated by the earlier literature, the experience and characteristics of the online space influences the discourse in them (Semaan et al., 2015; Janssen and Kies, 2004). Similarly, it has an impact to what extent the particular arenas can be expected to constitute a public sphere or a part of it, and to what extent they



remain as external to it. Quoting Raud (Bauman and Raud, 2015), it would be “really sad if [the] hope for the possibility of the public sphere turned out to be just an illusion contributing to the greater glory of the ‘system’ in the long run” (Bauman and Raud, 2015, p. 97) even if, or especially if, the system or activity would be either deliberately or unconsciously disguised and perceived as a public sphere.

In conclusion, the findings confirm the earlier suggestions that a more systematic understanding of user motivations is indeed needed for unraveling the potential and limitations of commenting and contribution functions in memory institutions’ online services. Otherwise it will be difficult to engage in mutual exchange and interpretation of cultural heritage (cf. Economou, 2015) and making this exchange a part of realising the public role of the institutions. The current results provide a basis for developing such studies. At the same time, the analysis seems to suggest that the users and institutions alike have difficulties to pinpoint the function and role of the existing services. Two possible ways forward could be to focus on developing services with specific social relevance in particular well-defined contexts, and establishing, framing and communicating the social relevance of existing services in more explicit terms.

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## References

- Bauman, Z., & Raud, R. (2015). *Practices of selfhood*. Cambridge: Polity.
- Biella, D., Sacher, D., Weyers, B., Luther, W., Baloian, N., & Schreck, T. (2015). Crowdsourcing and knowledge co-creation in virtual museums. In N. Baloian, Y. Zorian, P. Taslakian, & S. Shoukourian (Eds.), *Collaboration and Technology: 21st International Conference, CRIWG* (pp. 1-18). Yerevan, Armenia.
- Brabham, D. C. (2012). Motivations for participation in a crowdsourcing application to improve public engagement in transit planning. *Journal of Applied Communication Research*, 40(3), 307–328.



- Buckland, M. (2017). Before the antelope: Robert pagès on documents. *Proceedings from the Document Academy*, 4(2), article 6. Retrieved from <http://ideaexchange.uakron.edu/docam/vol4/iss2/6>
- Crowston, K., & Fagnot, I. (2018). Stages of motivation for contributing user-generated content: A theory and empirical test. *International Journal of Human-Computer Studies*, 109, 89–101.
- Cushing, A. L. (2018). 'We've no problem inheriting that knowledge on to other people': Exploring the characteristics of motivation for attending a participatory archives event. *Library & Information Science Research*, 40(2), 135–143.
- Economou, M. (2015). Heritage in the digital age. *A Companion to Heritage Studies*, (pp. 215–228). Wiley-Blackwell.
- Graf, A., Fulton, C., Jackson, A., Barre, K. L., Walsh, J., Tilley, C., Lucky, S., & Gorichanaz, T. (2018). Everyday documentation of arts and humanities collections. In L. Freund (Eds.), *Building & sustaining an ethical future with emerging technology: Proceedings of the 81st ASIS&T annual meeting* (pp. 680–683). Vancouver, BC, Canada.
- Harju, E., & Sainio, T. (2018). *Kulttuurilaitosten digitaalinen yleisötyö - kooste verkkokyselyn vastauksista*. resreport, Opetus- ja kulttuuriministeriö, Helsinki.
- Huvila, I. (2008). Participatory archive: towards decentralised curation, radical user orientation and broader contextualisation of records management. *Archival Science*, 8(1), 15–36.
- Huvila, I. (2015). The unbearable lightness of participating? Revisiting the discourses of 'participation' in archival literature. *Journal of Documentation*, 71(2), 358–386.
- Janssen, D., & Kies, R. (2004). *Online forums and deliberative democracy: Hypotheses, variables and methodologies*. Tech. Rep. 2004/01, E-Democracy Centre, Université de Genève, Genève.
- Jansson, I.-M. (2017). Organization of user-generated information in image collections and impact of rhetorical mechanisms. *Knowledge Organization*, 44(7), 515–528.
- Kipp, M. E. I., Beak, J., & Choi, I. (2017). Motivations and intentions of flickr users in enriching flick records for library of congress photos. *JASIST*, 68(10), 2364–2379.
- Liew, C. L. (2014). Participatory Cultural Heritage: A Tale of Two Institutions' Use of Social Media. *D-Lib Magazine*, 20(3/4). Retrieved from <http://www.dlib.org/dlib/march14/liew/03liew.html>



- Liew, C. L. (2015). Collaborative construction of digital cultural heritage: A synthesis of research on online sociability determinants. *D-Lib Magazine*, 21(11/12).
- Messo, J., & Peltonen, R. (2017). Finna - käyttäjät ja trendit 2016. *Signum*, 49(2), 13.
- Pagés, R. (1955). *Problemes de classification culturelle et documentaire*. Paris: Ed. documentaires industrielles et techniques.
- Ridge, M. (Ed.) (2014). *Crowdsourcing our Cultural Heritage*. Farnham: Ashgate.
- Semaan, B., Faucett, H., Robertson, S., Maruyama, M., & Douglas, S. (2015). Navigating imagined audiences: Motivations for participating in the online public sphere. In D. Cosley, A. Forte, L. Ciolfi, & D. McDonald (Eds.), *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing, CSCW '15*, (pp. 1158–1169). New York: ACM. doi: 10.1145/2675133.2675187
- Winter, M. (2018). Visitor perspectives on commenting in museums. *Museum Management and Curatorship*, 33(5), 484–505.



## CONNECTING THE DOTS BETWEEN LIBRARIES, MEDIA AND PUBLIC OPINION IN SWEDEN

Kalle Karlsson

Bachelor Student, Faculty of Librarianship, Information, Education and  
IT, University of Borås, Borås, Sweden

Karlsson-kalle@hotmail.com

### Abstract

*The purpose of the study is to examine how libraries are described in Swedish news media and thereby discern whether there is unity in the debate and if not, how it is influenced by different interests. By conducting a systematic search aimed at the timespan 2013 to 2018 encompassing the four largest newspapers in Sweden a manageable quantity of articles emerged. Relevance was assessed through a predetermined set of criteria. Relevant articles were analyzed using quantitative content analysis in which theme was a key variable. The study shows thematically how libraries are described and represented in Swedish news media. It pinpoints the most circumscribed themes and how they correlate with different categories of writers, types of texts and libraries. Themes concerning the library's social roles and responsibility, literacy and availability emerged. One of the most interesting correlations was that different groups of writers tend to engage strongly in the library from their own perspectives, indicating its relevance as both an institution and physical place. The study shows that the debate is characterized mainly by consensus, while interests occasionally differ and in some cases even suggest the rather limited perspectives of different stakeholders. Although correlations emerged, further research is needed to affirm causality. Furthermore, this study cannot determine whether the media reflects public opinion, and if so to what extent, or if it influences and changes it. The study gives preliminary insights into public expectations concerning libraries in contemporary society and could serve as a useful tool for library planning. This study provides unique insights into the current Swedish media climate and illustrates the roles of the modern library and how it is viewed and valued by different stakeholders. Thus, it contributes to the body of research through adding another dimension.*

**Keywords:** libraries, media studies, public opinion.



## Background

Recent research has identified digitalization, changing collections and a broader social responsibility as key issues for contemporary libraries (Michnik, 2018; Styrelsen for bibliotek og medier, 2010; Connaway and Faniel, 2015). In the trade magazine "Biblioteksbladet" the Secretary General of the Swedish library association considered current expectations vis-à-vis libraries (Linder, 2018). On a similar note, the journalist Per Svensson (2018) stated in a newspaper article that Swedish libraries are tangled up in an "identity crisis". Thus, different stakeholders seem to identify similar challenges for contemporary libraries. Although the Swedish library law (*Bibliotekslag*, SFS 2013:801) provides a framework for library strategies it is interpreted in different ways. Likewise Swedish library plans<sup>1</sup> often describe public libraries as the "municipality's living room" furthering uncertainty about its place in society.

In order to approach the "identity crisis" described above, this study focuses on the expectations different stakeholders hold on the library. Since news media aims both to reflect and generate public opinion as well as depict societal issues it was chosen as the source from which to examine public views of libraries. The paper is based upon a previous study by Karlsson and Hänninen (2018) conducted at the University of Borås. Previous research by Shaw (2010) and Galluzzi (2014) have been important inspirations for this paper, especially with regard to methodological considerations. Although used throughout the entire paper, Shaw's study was especially useful when assessing the relevance of the articles collected and Galluzzi's study when developing the coding scheme, especially for the themes. Specific implications from these studies will be discussed further below.

## Purpose

The purpose of the study is to examine how libraries are described in Swedish news media and thereby discern whether there is unity in the debate and if not, how it is influenced by different interests.

## Methodology

The data was collected from the four largest newspapers<sup>2</sup> in Sweden on the basis of circulation (Tidningsutgivarna, 2018, p.8). Articles from both the print-

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<sup>1</sup> Documentation of a specific library's operation.

<sup>2</sup> Dagens Nyheter, Svenska Dagbladet, Expressen and Aftonbladet.



ed and online versions of each paper were collected from the Swedish database Mediearkivet (Retriever Research). As in the study by Shaw (2010, p.558) the search term, in this case *bibliotek* which is the Swedish word for library, had to occur at least three times in each article. This was asserted by using a count operator in the search string. The number of articles rendered were 1374 and to evaluate their relevance the study implemented two additional criteria which were also previously used by Shaw (2010, p.559). These were that the overall focus of the articles had to be on libraries and that they had to be about the institution, thus articles concerning idiomatic expressions such as private collections or brand names were discarded. After applying these criteria and deleting duplicates the total number of articles were 404, all of which were analyzed applying quantitative content analysis.

The parameters registered and used in the analysis were *Type of text*, *Section (within the newspaper)*, *Newspaper*, *Theme*, *Type of library* and *Author*. For medial definitions the Swedish association Mediekompass (n.d) was consulted, while library terms were defined by the Swedish national library (Kungliga biblioteket, 2017a) as well as by Galluzzi (2014) and Shaw (2010). To some extent the definitions were also based on what Bergström and Boréus (2012) call previous genre- and discourse knowledge. The framework for the category *Theme* was based upon the categorization developed by Galluzzi (2014, p.52) but was gradually redefined during data collection as recurring terms and topics were noted and implemented in the coding scheme. Therefore, the final categorization differs considerably from Galluzzi's (2014) although a few similarities remain, such as *Collection* vis-a-vi *Conservation/Holdings/Catalogue* and *Digitalization* versus *Digital/Digitization*. Instead of replicating Galluzzi's categorization I aimed to create categories that represented the collected articles as closely as possible, an approach supported both by Bergström and Boréus (2012, p.88) and Shaw (2010, p.559). A general aspiration was to make the process "systematic and analytic, but not rigid" (see Altheide in Shaw, 2010, p.559). Devising a coding schedule always entails some level of subjective interpretation (Bryman, 2011, p.282, p.297). Definitions from established institutions and previous research were used in the hopes of minimizing this effect. In this study the risk for bias is probably greatest in the category for *Theme* as it contains buzzwords extracted during the data collection and require some assessment when classifying articles. The coding was, however, a part of the original study conducted by Karlsson and Hänninen (2018) and carried out within limited time lapses. Both researchers initially coded together to identify and clarify the coding instructions and since the pilot test was successful it was incorporated into the full study. The final categories were as follows.



**Theme:** Meeting Place, Education, Administration & Management, Reading, Collection, Milieu,<sup>3</sup> Digitalization, Activities, Outreach & Availability, Culling & Censorship, Research, Politics & law.

**Author:** Miscellaneous library sector, Librarian, Journalist, Researcher, Politicians & Civil Servants, Cultural worker, Miscellaneous.

**Type of text:** News article, Reportage, Short paragraph, Column, Debate article, Editorial, Interview, Review, Letter to the editor.

**Section:** News, Debate (Section), Editorial (Section), Culture, General, Miscellaneous.

**Type of library:** Public Library, National Library, Hospital Library, School Library, Special Library, Academic Library, Unspecified.

**Newspapers:** Dagens Nyheter, Svenska Dagbladet, Expressen, Aftonbladet.

All the articles were encoded and only one value from each category was allowed. If an article treated several types of libraries without a clear emphasis on one, the value Unspecified was chosen. Many articles took up several themes but it was rarely difficult to determine the main theme, although the researchers verified their interpretations with each other in a few cases.

## Findings & discussion

The study centers around the themes discerned and how they intertwine with groups of authors, different newspapers and articles as well as sections within them. From these findings patterns concerning different stakeholders' views and expectations emerge. The most circumscribed themes were as follows below.

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<sup>3</sup> Milieu refers to the social setting in libraries.



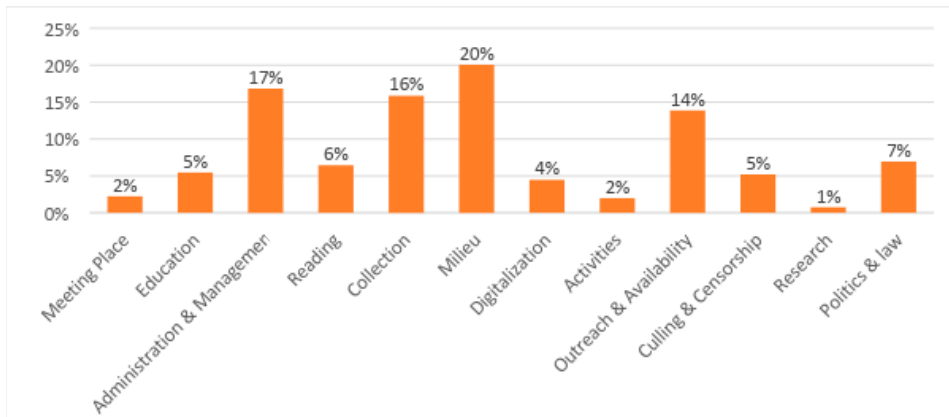


Figure 1. Shows the total frequency of themes from the 404 articles analyzed.

Contemporary research has identified traditional values such as literature mediation and the library's physical space as highly valued which correlates particularly to the themes *Collection* and *Milieu* (Svensk biblioteksörening, 2011; Museums, Libraries and Archives, 2010; Connaway and Faniel, 2015, Evjen and Audunson, 2009). These are mentioned as key issues in the background section above together with *Digitalization* which is not often mentioned in the studied material. Another current aspect of libraries in Sweden is the increase in the number of activities (Kungliga biblioteket, 2017b). As shown above, this is one of the least mentioned themes. Furthermore, according to Michnik (2018, p.31) the library as a meeting place is frequently mentioned in contemporary research but in this study it's one of the least discussed themes. This is also found to be the case in a doctoral thesis by Åse Hedemark (2009) and in a report by the Benton Foundation (1997). This could indicate a discrepancy between the research community vis-a-vi other stakeholders. Another feasible theory is that meetings as such are connected to other services, such as literature mediation and outreach services, which could mean that meetings are viewed as side-effects rather than as a primary service.



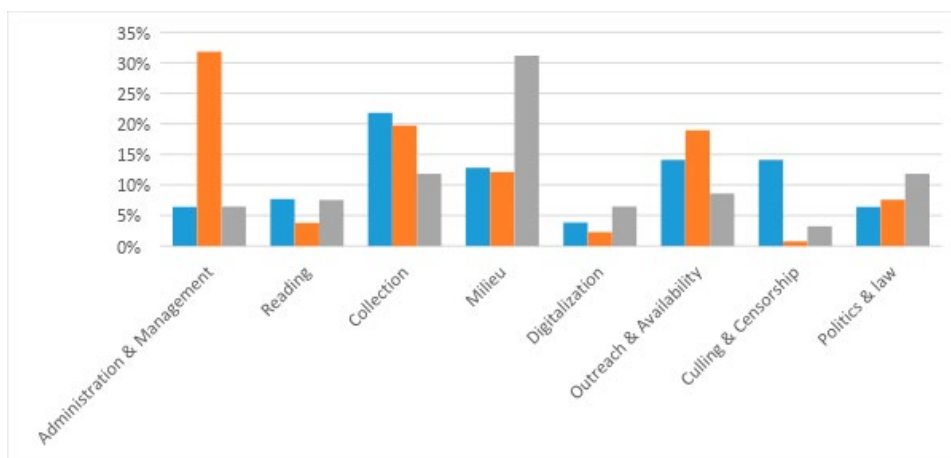


Figure 2. Shows in percent a selection of how themes are divided within the most circumscribed themes.

With regard to the types of texts, the data shows an emphasis on *Short Paragraphs* (33%), *Debate Articles* (23%) and *News Articles* (19%). *Short Paragraphs* are brief reports on current events. News articles are similar but more elaborate and lengthy in scope. Both are written by journalists with requirements on objectivity. *Debate Articles* are contrarily often written by a more diverse group of authors, subjective and often characterized by personal engagement and opinions (Mediekompass, 2018). As they are the second most common type of text in the studied material this indicates passion concerning libraries during the studied time period. However, since the format spurs debate between several authors one topic or event could generate multiple articles. Even if this is the case in the studied material one or several authors have felt obliged to respond, thus expressing opinions about libraries.

Furthermore, the interplay between the most frequent type of texts and themes provides some insights. Of the articles covering *Administration & Management* 62 % are short paragraphs. In the theme *Milieu* 36 % of the articles are *Debate Articles* and 31 % of the *Debate Articles* concern *Milieu*. The theme *Collection* is represented in 22 % of news articles, 20 % of short paragraphs and 12 % of *Debate Articles*. Logically, *Administration & Management* is closely tied to short paragraphs, since the theme entails straightforward topics such as openings, closures, budgets and awards and the format is brief with a focus on actuality (Mediekompass, 2018). In comparison, Mediekompass (2018) defines *Debate Articles* as texts where a wide range of authors express distinct opinions. The relationship between *Debate Articles* and *Milieu* could accordingly indicate strong



sentiments regarding topics and issues associated with this theme. However, the writers of *Debate Articles* are not necessarily representative of their affiliation as they are often authorities or experts within their fields (Hedemark, 2009, p.41).

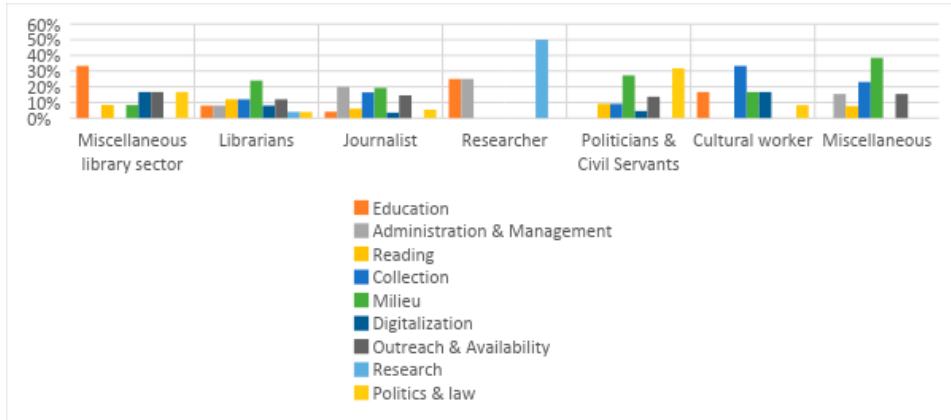


Figure 3. Shows a selection of themes within groups of authors.

As previously mentioned one of the most distinct correlations were between authors and themes which gave insights into how different stakeholders perceive libraries. The figure above shows in percent how different authors write about libraries in the studied material, for instance that 50 % of the articles written by researchers are mainly about research. *Librarians* (24%), *Politicians & Civil servants* (27%) and the category *Miscellaneous* (38%) write about milieu to a large extent. The latter entails authors of either unknown or uncategorized affiliation and thus incorporate a wide range of stakeholders, for instance patrons from the general public. The data also shows that the category *Librarians* cover a wide array of themes and mostly take up *Milieu* (24%) while *Miscellaneous library sector* focuses on fewer and less frequently occurring themes, such as *Digitalization* (17%) and *Education* (33%). Michnik (2018, pp. 29-30) maintains that perceptions and expectations regarding libraries differ between stakeholders but also that the views of politicians tend to be more inconsistent due, for example, to ideological differences.

As for the patron perspective, Museums, Libraries and Archives (2010, p.7) and Svensk biblioteksörening (2011, p.7) show that library aspects related to the themes *Collection*, *Milieu* and *Outreach & Availability* are highly valued by their respective respondents. The majority of articles were published in Dagens Nyheter (40%) and Svenska Dagbladet (38%) rather than in Expressen (13%) and Aftonbladet (8%). Finally, the vast majority of the articles treated *Public Libraries* (46%) or *Unspecified* (37%).



## Conclusions

As argued by Hedemark 2009 (p.167) mass media is an arena for debate, a source of information and a creator as well as reflector of public opinion. Whether the publications in this study reflect or shape public opinion has been a constant consideration and remains undetermined. In either case correlations with contemporary research have been established. It seems that the library is still perceived largely in terms of “traditional” aspects such as its collection and physicality, relating to the themes *Collection* and *Milieu* in this study, which is supported not only by Museums, Libraries and Archives (2010) and Svensk biblioteksförening (2011) but also Connaway and Faniel (2015, p.21) who state that libraries should embrace their own uniqueness.

To a large degree the debate is characterized by consensus. Although stakeholders view libraries from different perspectives, their views tend to overlap, for instance in the case of both *Milieu* and *Collection*. Still, differences have emerged which indicate that the importance of specific library aspects are regarded differently by patrons and stakeholders. As described by Nitecki and Abels (2013) as well as Svensk biblioteksförening (2011) each tends to view libraries from their own perspectives. The study shows that a third of the themes are the main focus in (67 %) of the articles and that public libraries are represented in 46 % of the articles. The latter is also a result in the study by Galluzzi (2014, p.56, p.72). In comparison, this could suggest either a narrow view or consensus regarding libraries and their role in Sweden. However, as stated by Hedemark (2009, p.167, p.41) news media both shape and reflect public opinion and authors are not necessarily representative of their affiliations. Due to its quantitative approach, the study cannot pinpoint values and opinions but rather which aspects of library operations are prioritized in a news media context. These are in accordance with issues described by contemporary research (e.g. Michnik, 2018; Styrelsen for bibliotek og medier, 2010; Connaway and Faniel, 2015). Future research could explore these connections further, and encompass values and opinions regarding libraries as well as connections to the general discourse about our contemporary and highly digitalized society.

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## References

- Benton Foundation. (1997). Buildings, books, and bytes: Libraries and communities in the digital age. *Library Trends*, 46(1), 178-223.
- Bergström, G., & Boréus, K. (2012). *Textens mening och makt*. (3.ed). Lund: Studentlitteratur.
- Bibliotekslag (SFS 2013:801) Retrieved 2018-04-05 from the webpage of the Swedish parliament [http://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/bibliotekslag-2013801\\_sfs-2013-801](http://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/bibliotekslag-2013801_sfs-2013-801)
- Bryman, A. (2011). *Samhällsvetenskapliga Metoder*. (2.ed). Malmö: Liber
- Connaway, L.S., & Faniel, I.M. (2015). Reordering Ranganathan: Shifting user behaviours, shifting priorities. In L.S Connaway(Ed), *The Library in the Life of the User: Engaging with People Where They Live and Learn*. (pp.1-32). Retrieved from OCLC: s webpage <https://www.oclc.org/research/publications/2015/oclc-research-library-in-life-of-user.html>
- Evjen, S., & Audunson, R. (2009). The complex library: Do the public's attitudes represent a barrier to institutional change in public libraries?. *New Library World*, 110(3-4), 161-174. Doi: 10.1108/03074800910941356
- Galluzzi, A. (2014). Libraries and public perceptions: A comparative analysis of the European press. Methodological insights. *JLIS.it*, 5(1), 43-76. Retrieved from <https://www.jlis.it/article/view/8987>
- Hedemark, Å. (2009). *Det föreställda folkbiblioteket : En diskursanalytisk studie av biblioteksdebatter i svenska medier 1970-2006* (Doctoral thesis, the institution for LAM at Uppsala Universitet, Uppsala.) Retrieved from <http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-99897>
- Karlsson, K., & Hänninen, A. (2018). *Bibliotek i media: en kvantitativ innehållsanalys av biblioteksdebatten år 2013-2018*. Unpublished material.
- Kungliga biblioteket. (2017a). *Offentliga bibliotek*. Retrieved 2018-04-05 from <http://www.kb.se/bibliotek/Bibliotek/>
- Kungliga biblioteket. (2017b). *Bibliotek 2016*. Retrieved 2018-04-05 from <http://www.kb.se/bibliotek/Statistik-kvalitet/biblioteksstatistik/Bibliotek-2016/>
- Linder, K. (2018). Släpp nostalgien och blicka framåt. *Biblioteksbladet*, (2): pp.40. Retrieved 2018-04-05 from <http://biblioteksbladet.se/etidningen/nr-2-2018/>
- Mediekompass. (2018). *Texter i tidningen*. Retrieved 2018-04-05 from <http://www.mediekompass.se/lektionstips/texter-i-tidningen/>
- Michnik, K. (2018). *Samhällets allt-i-allo: Om folkbibliotekens sociala legitimitet*. (Doctoral thesis, University of Borås, Borås). Retrieved from <http://urn.kb.se/resolve?urn=urn:nbn:se:hb:diva-13839>



- Museums, Libraries & Archives. (2010). *What do the public want from libraries?* Retrieved from <https://www.artscouncil.org.uk/participating-and-attending/what-do-people-want-libraries-0>
- Nitecki, D. A., & Abels, E. G. (2013). Exploring the cause and effect of library value. *Performance Measurement and Metrics*, 14(1), 17-24. Doi: 10.1108/14678041311316103
- Shaw, L. (2010). Representations of librarianship in the UK press. *Aslib Proceedings*, 62(6): 554-569. Doi: 10.1108/00012531011089676
- Styrelsen for Bibliotek og Medier. (2010). *Folkebibliotekerne i vidensamfundet* (rapport fra Udvalget om folkebibliotekerne i vidensamfundet). Retrieved from <https://slks.dk/publikationer/folkebibliotekerne-i-vidensamfundet/>
- Svensk Biblioteksforening. (2011). *Olika syn på saken: folkbiblioteket bland användare, icke-användare och personal* (Svensk biblioteksforenings rapport 2011:2). Retrieved from <https://www.biblioteksforeningen.se/rapporter/olika-syn-pa-saken/>
- Svensson, P. (2018, 2 februari). Allt ska få plats på bibblan – men kanske inte böckerna. *Dagens Nyheter* [DN].
- Tidningsutgivarna. (2018). *Branschfakta 2018 (juni)*. Retrieved 2018-11-29 from <https://tu.se/mediefakta/faktasamlingen-svenska-mediehus/>



## COMMUNITY ENGAGEMENT IN ACADEMIC LIBRARIES: WARBOOKPEDIA.BA INITIATIVE AT THE FACULTY OF PHILOSOPHY IN SARAJEVO

Džejla Khattab

Senior Teaching Assistant, Department of Comparative Literature and Library Science, Faculty of Philosophy, University of Sarajevo, Sarajevo, Bosnia and Herzegovina  
dzejla.khattab@ff.unsa.ba

Nadina Grebović Lendo

Head of Library  
nadina.grebovic-lendo@ff.unsa.ba

Ajla Demiragić

Assistant Professor, Department of Comparative Literature and Library Science, Faculty of Philosophy, University of Sarajevo, Sarajevo, Bosnia and Herzegovina  
ajla.demiragic@ff.unsa.ba

### Abstract

*Embedded librarianship, which has grown from an emerging trend to a well-established programs in many libraries, incites librarians to focus on gaining access to the customer communities through active collaborations with faculty and administrators (Shumaker, 2009), and emphasizes the importance of building strong working relationships with groups and individuals who need the librarian's information expertise (Shumaker, 2012). This paper provides the perspective from academic libraries viewpoint, and accentuates that community engagement initiatives should not be limited only to public libraries. Drawing on the community involvement initiative at the Faculty of Philosophy Library in University of Sarajevo, this paper demonstrates that academic libraries can effectively enable interactions between students, scholars and the public. Wikipedia, the free encyclopedia built collaboratively using wiki software and one of the most visited reference site on the web, will be used to foster academic librarian's community engagement activities in creating Warbookpedia.ba domain, reconciling physically*



*disparate information resources in an online space. War literature is seen as a possible vehicle for initiating and facilitating reconciling processes in the society. The research will hopefully assist to improvement of the quality of knowledge available in free online resources such as Wikipedia, linking the content with verified resources, maintaining the centrality of librarianship to knowledge management in the knowledge society and knowledge based economies. The research adopts and investigates transformative learning necessity in academic environment, showing that stronger relationship librarians built with user, move towards a more integrated highly focused and specialized research results. The discussion of the outreach activities in this article will hopefully provide guidance and suggestions for academic librarians who are interested in community engagement and encourage other similar initiatives.*

**Keywords:** academic libraries, community engagement, embedded librarianship, the Library of the Faculty of Philosophy in Sarajevo, Wikipedia

## Embedded librarian in higher education

The new role of academic librarians as educational partners in higher education is more important than ever. Growing need for enhanced undergraduate research opportunities offered by faculty, which will contribute to student retention and employment opportunities, encourages academic librarians to undertake community engagement activities in order to strengthen institutions capacity in transposing their expertise into real economic and social improvements. According to Dewey: "Librarians are in the business of research support but, on most campuses, have little direct contact with research centers" (2004: 9), which is a critical problem for many academic librarians.

At the same time, contributing to Wikipedia has been incorporated into teaching in higher education, giving students valuable experience of collaboration in a diverse environment, fostering critical thinking, effectively communicating information to a broad public audience and appreciating the role of access to information in a democratic society (Infield and Adams, 2013). Community engagement opportunities for academic libraries can be summarized as „writing and reference, technical tasks, linked open data, project coordination, high-speed publishing, learning communities, and the support of teaching, learning, and research“ (Stephan, B. et. al., 2016: 2). This paper intends to discuss on the concept of embedded librarianship particularly in higher education institutions, emphasizing that specialized services have existed in academic branch libraries since their inception. In higher education institutions context, relationship between embedded librarian, faculty members and students is very essential. „It will lead to the librarian assuming the role of team member, rather than



traditional stand-alone service provider“ (Shumaker, 2009: 240). This paper is seeking to demonstrate that embedded librarian in the context of community engagement activities in higher education, can provide a highly-customised and value-added contribution.

## Purpose of the study

Formulated concept of embedded library services involves much more than the transfer of traditional library operations into new physical and virtual locations. Rather, it involves focusing on the needs of one or more specific groups, building relationships with these groups, developing a deep understanding of their work, and providing information services that are highly customized and targeted to their greatest needs. „In effect, it involves shifting the basis of library services from the traditional, transactional, question-and-answer model of reference services to one in which there is high trust, close collaboration, and shared responsibility for outcomes.“ (Shumaker and Talley, 2009: 9) Embedded librarianship emphasises on the importance of forming a strong working relationship between a librarian and a group or team of people who need the librarian’s information expertise (Shumaker, 2012). To demonstrate the concept of “knowledge mediation” in academic institution, students of the Department of Library Science at the Faculty of Philosophy in Sarajevo, librarians and faculty members intend to create a community around open access and collaborate in providing free, open, trusted and verified information gathered online in unique network location. Wikipedia, the free encyclopedia built collaboratively using wiki software and one of the most visited reference site on the web, will be used to foster academic librarian’s community engagement activities in creating Warbookpedia.ba domain.

Embedding librarians in academic departments and programs is one way to expand library services within new information landscape. This article describes the background and process for embedding librarians and provides a case study from the library which successfully has been embedded in academic departments. This paper seeks to document the initiative developed in one of the major academic libraries in University of Sarajevo, aiming to enhance the library’s role in promoting knowledge exchange which supports sustainable development around the world. The Library of the Faculty of Philosophy has long recognized the significance of its position in Society. As the leading academic library of the University of Sarajevo, it has a rich collection of resources that are of great interest to communities beyond its local community. The concept of knowledge



mediation is one that many universities across the globe have embraced in order to make a sustained contribution to the economic, social and cultural well-being of society. „As open access has an unmistakable goal of increasing public access to research emanating from universities and other research organizations, it is clearly a significant tool for facilitating knowledge exchange within the academic context.“ (Sidorko and Yang 2011).

## Warbookpedia.ba initiative in the context of reconciliation in the post-conflict society

Post-conflict governments in Bosnia and Herzegovina did not achieve the task of creating truth and reconciliation commissions that document traumatic pasts, which reveals knowledge not only sought and used for understanding past violence, but also for paving a way towards the reconstruction of post-conflict societies. While the principal goal remains producing a societal shift from patterns of human rights violations and heinous crimes towards the future founded on the rule of law and universal condemnation of past atrocities, perhaps even in the spirit of reconciliation, text and narrative seems to be the primary medium (Scheub, 2005: 13).

Literature has historically played an important role as witness-bearer to incidents of mass violence, especially when other forms of documentation have been missing, like in Bosnia-specific case. In transition from violent past towards a peaceful future, fiction is seen suitable for serving the goals of transitional justice (cf. Demiragić and Hodžić, 2014). „... the conventional distinction that is often postulated - that between document and fiction, between transitional justice mechanisms *per se* and artistic engagements with past atrocities - does not seem to be entirely plausible, at least when seen from inside of a transition itself. Indeed, at the level of the medium of text itself, “[a]ny representation of trauma is to a certain degree ‘fictitious’ in its attempt to recreate a narration beyond the collapse of language and meaning the traumatic experience originally produced” (Kopf, 2012: 72). More than just supplementing authentic testimonies, fiction can add an important dimension to the interrogation and understanding of atrocities of the war.

Identifying and gathering the metadata of literary works published during 1992-1995 war in unique online location, can contribute to the process of reconciliation and building stable peace in post-conflict transitional society of Bosnia and Herzegovina. Warbookpedia.ba initiative will result in identifying and gathering dispersed information resources that represent the base collection of liter-



ature published in Sarajevo during 1992-1995 war. This paper is seeking to model best practice for working with collections that have been underrepresented on the international scene up till now. The paper will hopefully provide a model for representing the collection of fictional works published during the 1992-1995 war, starting from Sarajevo under siege as a case study. The research identified total of 54 works. Sarajevo case study will represent a base level of Bosnian culture for which information should be available in the global context. Further initiatives need to be developed for gathering the whole collection of works including other cities in BiH known for significant publishing efforts (Banja Luka, Tuzla, Mostar, Zenica, Ljubuški, Tešanj, Fojnica etc.), as well as cities among Balkan region in which Diaspora operated (Zagreb, Ljubljana, Beograd etc.) Research identified some items published in 1997, but were created during the war, like in case of Karim Zaimović (1971-1995), whose short stories collection „The Secret of Raspberry Jam“ was published posthumously. We also included „Zlata's Diary“ by Zlata Filipović, as an example of non-fiction intention of creating a narration of traumatic experience. Research also resulted in identifying significant works published in serials as one of the major vehicles for addressing respond to desperate circumstances. Warbopedia.ba initiative will be the starting point for documenting coping strategies and the creativity people adopted, which tells the story about the life of citizens during the siege of Sarajevo. Similar initiatives also need to be developed in the niche of cultural events and exhibitions to complete this insight of vital interest for the reconstruction of post-conflict society.

The paper examines the library's role in community engagement initiatives in academic surrounding, that serve to promote community access to collections, highlighting the library's partnership with scholars and students in developing information resources and improving access to information for the global community of online users. By identifying, grouping and promoting rich war production, we are witnessing that literature and culture can be developed in extreme circumstances. While the libraries burn in flames, literary works are being actively created.

## Wikipedia and Wikidata fostering community engagement

Wikimedia community, the editors and developers who create and maintain the various projects and resources of the Wikimedia Movement (that includes Wikipedia, Wikimedia Commons, Wikidata, GLAM-Wiki etc.) has seen an increasingly close relationship between library communities, related to public access to knowledge and devotion for openness. This is evident from the IFLA'



Wikipedia and Libraries Opportunity Papers which explore the potential for active collaborations between Wikipedia editors and libraries to advance the mutual mission of sharing knowledge with the world. Wikimedia knowledge platforms can be used in many technical and social contexts, allowing for dissemination of knowledge in many different formats. The relationships between cultural heritage organizations (GLAM) and the Wikimedia communities, through early partnership focused on uploading digital content and editing activities, has shifted the focus from the „platform for exposing collection to a broader public audience, into a growing part of the heritage professional toolkit.“ (Stinson, Fauconnier and Wyatt, 2018)

The principal platform for sharing data in the Wikimedia community – Wikidata, was launched in 2012 as a machine-readable store for all „Wiki projects“, providing a ready-made platform that anyone can use to create, publish, and use Linked open data. A language-independent, linked, open, structured database Wikidata started as a platform for identifying the relationship between articles in different language and Wikipedias that are about the same topic. The project uses semantic three part statements (object, property, subject) to describe the relationship between these concepts, creating a web of relationships between knowledge. Wikidata describes Wikimedia’s knowledge in relation to other Wikimedia projects. Moreover, it can act as a hub connecting many unique concepts across many different projects – it has the potential to offer a “universal crosswalk” between different language and professional vocabularies.“ (Stinson, Fauconnier and Wyatt, 2018: 24). Professional vocabularies rely on heavy practices to create authoritative information. On the other hand, Wikidata has low editorial overhead and a universal scope, offering the opportunity to allow metadata created by experts to reach beyond its initial niche. At the first Wikidata Conference, van Veen (2017) suggested Wikidata could be both a linking hub and source of library authority data. Institutions now can take advantage of Wikidata to augment the professional vocabularies to Wikidata concepts allowing for the institution to depend on a reliable source for authority control while connecting that authority to other datasets.

Preparation of the project included a workshop during which students of the Department of Library Science were introduced to the role of the literature in transitional justice efforts in Bosnia-specific context, along with the workflow of the process. Following identification and gathering of partly archival material of literary works that represents the basic collection of literature published in Sarajevo under siege during 1992-1995 war, from the Library of the Faculty of Philosophy and The National and University Library of Bosnia and Herzegovina, the materials were analysed and prepared for scanning of snippets. Project included the



enhancement of existing articles and creation of new articles about defined items. The project also focused on creating a dataset of entities related to the literature published in Sarajevo under siege using Wikidata. This included the enhancement of existing data, links to bibliographic data stores such as the Virtual International Authority File (VIAF) and connecting Wikipedia page to Wikidata.

Wikidata's editing interface uses autocompletion to suggest matching items for the values of most statements. This makes it easier to create and edit LOD and contributors are not required to comprehend LOD principles before they can create a new item where one does not exist, or add a statement to an existing item. During the workshops, to add a statement for a given item, the desired value already existed in Wikidata, or needed to be added, which led to an opportunity to show the creation of a new item from scratch. While these actions individually can seem small, they increase the amount of open data and help create a community practice. Using Wikidata to create structured data is a way local communities can have a global impact.

Students enrolled in editing tasks such as entering multiple values for a single statement, adding qualifiers like start and end dates to statements, and adding references to provide verifiability for statements. Our intention is to encourage librarians along with their users to collaborate on editing tasks and to provide guides with suggested instance of values and recommended properties for the data types we covered.

## Conclusion

The success of the initiative is demonstrated in many ways including the devoted commitment to make information available to the public, to provide extended access to library resources, and to increase library visibility. The paper provides a practical example for academic libraries attempting to play an active role in knowledge mediation and community engagement. This work will hopefully assist librarians in naming and facilitating dynamic relationship and learning processes that shape the effectiveness of community engagement practice.

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## References

- Allison-Cassin, S. & Scott, D. (2018). Wikidata: A platform for your library's linked open data. *Code4Lib* 40.
- Demiragić, A. & Hodžić, E. (2014). The Bleak Visions of Literary Justice for Survivors of Srebrenica: Examining the Fictional Narratives of Srebrenica Genocide in Light of the Insights from Transitional Justice. In: P. D. Rush & O. Simić (Eds.) *The Arts of Transitional Justice* (pp. 135-154)
- Dewey, B. I. (2004). The Embedded librarian: Strategic campus collaborations. *Resource Sharing & Information Networks* 17(1), 5-17.
- Infeld, D., & Adams, W. (2013). Wikipedia as a Tool for Teaching Policy Analysis and Improving Public Policy Content Online. *Journal of Public Affairs Education*, 19(3), 445-459. Retrieved from <http://www.jstor.org/stable/23608965>
- Kopf, M. (2012). The Ethics of Fiction: African Writers on the Genocide in Rwanda. *Journal of Literary Theory*(6), 72.
- Shumaker, D. (2009). Who let the librarians out? Embedded librarianship and the library manager. *Reference & User Services Quarterly*, 48(3), 239-257. Retrieved from <https://journals.ala.org/index.php/rusq/article/viewFile/3364/3610>
- Shumaker, D. and Talley, M. (2009). Models of embedded librarianship: Final report. Chicago: Special Libraries Association. Retrieved from <http://www.sla.org/pdfs/EmbeddedLibrarianshipFinalRptRev.pdf>
- Shumaker, D. (2012). *The Embedded Librarian: Innovative Strategies for Taking Knowledge Where It's Needed*. Medford: Information Today.
- Stinson, A.D., Fauconnier S. & Wyatt L. (2018) Stepping Beyond Libraries: The Changing Orientation in Global GLAM-Wiki. *JLIS.it* (9), 3, 16-34. doi: 10.4403/jlis.it-12480.
- Sidorko, P. E. & Yang, T. T (2011) Knowledge exchange and community engagement: an academic library perspective. *Library Management*(32), 6/7, 385-397. doi: 10.1108/01435121111158538
- Scheub, H. (2005). Now for a Story. In K. Bilbija, J. E. Fair, C. E. Milton & L. A. Payne (Eds.) *The Art of Truth-Telling about Authoritarian Rule*. Madison: University of Wisconsin Press.
- Stephan, B., Franks, R., Heilman, J., Joseph, M., McDonald, V., Raunik, A., Ridge, M. & Robertson, M. (2016). Opportunities for Academic and Research Libraries and Wikipedia. Retrieved from: <https://2016.ifla.org/wp-content/uploads/sites/2/2016/08/112-IFLAWikipediaAcademicandResearchLibrariesDiscussionDRAFT.pdf>
- Van Veen, T. (2017). Wikidata as Universal (Library) Thesaurus. [video file]. Retrieved from: [https://www.youtube.com/watch?v=1\\_NxKBnCOHM](https://www.youtube.com/watch?v=1_NxKBnCOHM)



## USING MACHINE LEARNING FOR ANOMALY DETECTION IN STREAMING DATA

Stefani Majić

Master Student, University of Osijek, Osijek, Croatia  
stefani.majic@gmail.com

Marijana Zekić Sušac

Full Professor, University of Osijek, Osijek, Croatia  
marijana@efos.com

Adela Has

Assistant, University of Osijek, Osijek, Croatia  
ahas@efos.com

### Abstract

*Lately, there has been an enormous increase in the amount and availability of streaming data which brings new technological challenges and opportunities. Streaming data is a real-time, continuous sequence of items that are ordered implicitly by arrival time or explicitly by timestamp. The actuality of this paper lies in an ever-increasing amount of available data because of the increase in using Big Data and the Internet of Things. The aim of this paper is to explore the use of machine learning algorithms for detecting anomalies in streaming data. Early anomaly detection is valuable, but hard to perform reliably in practice. The paper presents an overview of previous research in this area, algorithms, tools, and methods as well as the problems of deploying and implementing machine learning algorithms on streaming data. In the empirical part of the paper, the support vector machine and principal component analysis were performed to identify anomalies in streaming data. The research has been conducted on two datasets to cover two of the biggest areas for anomaly detection- computer security and IoT sensors (HVAC). The importance of this research lies in its implications for industries. Detecting threats within network traffic as well as learning detecting anomaly in sensing readers would provide many useful features in logistics, marketing, advertising and game development industry. One of the advantages of the support vector machines is that they can be applied to a set of data with a low proportion of anomalies since in real life no system would allow a large*



*number of abnormal data due to security and high costs. The created model shows an accuracy of 96,4% on validation data. Although this area has been explored for quite some time, there is still plenty of room for development if the exponential increase in data volume is considered. Therefore, it can be assumed that this topic is still to be discussed.*

**Keywords:** machine learning, anomaly detection, streaming data, Support vector machines, PCA

## Introduction and background

With the exponential growth of IoT, sensors and data collection in real-time, the amount of streaming data is also growing. In all given information, it is needed to identify the significant ones and those that do not match any sample, that is, to separate anomalies that might harm the whole system. The biggest usage of machine learning is anomaly detection, as evidenced by the interest of many researchers and theoreticians in that area such as Hill (Hill, 2010), Burbeck (Burbeck, 2007) and Davy (Davy, 2006) who explored the possibilities of deploying machine learning algorithms to detect anomalies in data which constantly transmits through the network. While developing this paper, a comparative analysis of machine learning methods for detecting anomalies was performed as well as identifying the challenges and difficulties that can be encountered during their implementation. The purpose of this work is to compare machine learning methods for detecting anomalies, to identify the advantages and disadvantages, and build an anomaly detection model.

## Streaming data

Streaming data is a sequence of real-time, continuous-stream items ordered either implicitly by arrival time or explicitly by timestamp (Golab and Ozsu, 2003). It is marked by the inability to control the arrival of items in the sequence and the inability to fully save the whole stream locally. Streaming data examples are sensor data, internet traffic and transaction logs (web applications log or credit card traffic). By detecting anomalies in streaming data, system security can be ensured by detecting attacks. But one needs to be careful while observing the target variable because the data coming from a data stream does not follow a stationary probability distribution, instead, it can change and evolve over time. Concept drift means that the statistical properties of the target variable, which the model is trying to predict, change over time in unforeseen ways. This caus-



es problems because the predictions become less accurate with time. (Widmer and Kubat, 1996) Concept drift can be spotted in the prediction of customer behavior in web shops. Why is that a good example of potential concept drift? If a prediction on a weekly or a monthly base is taken to develop a predictive model consistent with RMSE and precision prediction, and if the model uses inputs such as amount of money spent on promotion, various discounts and other inputs, after some time the model is becoming less and less accurate. The reasons can be found in the appearance of a new competitor or seasonal discounts because there are bigger discounts in winter during the holidays than in any other season. Nevertheless, the trend can depend also on current week day, accessibility of supplements or inflation rates. A great way in resolving concept drift is to recognize what it is and what are the noises in data. Some algorithms are prone to react on noises as on concept drift while some algorithm are quite inert to noises by adjusting to the changes too slow (Tsymbal, 2004).

## The issues of handling streaming data

Queries over streams, known as long-running, continuous, standing, and persistent, run continuously over a period of time and incrementally return new results as new data arrive. It is impossible to control the order in which items arrive and it isn't feasible to locally store an entire stream. According to Golab and Tamer Özsu (2003), the unique characteristics of data streams and continuous queries dictate the following requirements of data stream management systems:

- The data model and query semantics must allow order-based and time-based operations
- The usage of synopses or digests as approximate summary structures because of the inability to store the whole stream. As a result, the queries over the approximate summary structures cannot return exact answers
- Applications that monitor streams in real-time must react quickly to unusual data values.
- Long-running queries may encounter changes in system conditions throughout their execution.
- Shared execution of many continuous queries is needed to ensure scalability.

Platform for processing and analyzing streaming data needs to be scalable, allow receiving data from different sources, transfer and store data in high speed. There are two main problems affecting processing and analyzing data streams – time and space. With the increase of data amount a problem of data storing ap-



pears. Usually it is not possible to store all data but a relative small subset. Analyzing of the stream needs to be close to real-time with minimal time spent on one record. Methods need to adapt to large data bandwidth so that they update at the same rate at which the data arrives. Otherwise, a large inventory of data waiting for processing will be created. This often means that only main memory is used so the methods should be one-pass.

## Methods and instruments

Methods to detect streaming data anomalies can be divided into projection-based, regression based, classification (support vector machines and tree-based), density-based, distance-based, clustering-based, and methods using time series predictions. Density-based methods estimate the probability distribution and in non-parametric methods probability density for each point where the points lying in areas with low probability density are declared as anomalies. Distance-based methods define anomalies based on how far they lie from their nearest neighbors. Support vector machines create a normal class by using support vectors and as an anomaly is considered every data value that is not inside the defined boundaries. Clustering-based methods group the data in clusters and an anomaly is a value either too far from any cluster or forming untypical clusters. Tree based methods construct regression or classification trees to define anomalousness based on how well the points map the tree. Methods based on prediction errors define points as anomalous if the predicted value is significantly different from the observed ones. Based on that, the regression makes the predictions based on attributes of the data, while methods based on time series use auto-regression where the prediction of the next data point is affected by the values of preceding data. Projection-based methods project data onto another lower-dimensional space and points with high reconstruction errors are defined as anomalous. For analyzing the datasets and creating the right predictive model, the support vector machine and principal component analysis are used.

Support vector machines (SVM) are an approach for classification where support vectors form the class boundaries (Davy et al, 2006). According to Zekić-Sušac (2017), if  $x_i \in R^n$  is a set of a training data, and  $y_i \in \{+1, -1\}$  is the real output, the SVM maps the input  $x$  onto an  $m$ -dimensional feature space using a nonlinear kernel function  $k$ , and then a linear model is constructed in the feature space. In case of a nonlinear problem, the non-negative Lagrange multipliers  $\alpha$  can be searched by optimizing the function (Zekić-Sušac, 2017):

$$f(x) = \sum_{i=1}^l (\alpha_i - \alpha^*) k(x_i, x) + b \quad (1)$$



In anomaly detection, one-class SVM can be used to define the normal class and points falling outside the given boundaries are defined as anomalies. Davy et al. (2006) construct SVMs from kernels since they are insensitive to data dimension and do not require fitting the data to a certain statistical distribution. A normal class is constructed and its boundaries are defined such that most points lie inside the boundaries. They use data points classified as normal to train the class boundaries. Data without labels could also be used if it is assumed that number of anomalies is very small because they would not have a big impact on the model. The method is incremental, new vectors can be added and old ones removed. Adding and removing vectors are iterative processes and although they are expected to converge very quickly, there is a possibility that this would become a bottleneck in computation. A very useful property of SVM, so called kernel trick, is that it can create a non-linear border of decision so that it projects data in the space through multiple dimensions, that is, data that cannot be split with a line in the original space is transferred into a high-dimensional space to be easily divided with the help of hyperplanes that would look as curves if returned to the original space. Data can even lie on the border of a hyperplane (soft borders), which helps to stop the overfitting because of the noises.

Principal Component analysis (PCA) is a technique used to reduce dimensions of datasets by projecting data points into the directions of maximal variance within data space (Microsoft, 2017). Those directions are eigenvectors of data covariance matrix. Only the eigenvectors with the highest eigenvalues are selected. Eigenvalue is an equivalent to the variance of a new variable obtained by projecting data into eigenvectors. Their ratio is the ratio of explanatory importance of the factors with respect to the variables. If a factor has a low eigenvalue, then its contribution to the explanation of variances in the variables is low and can be ignored as redundant. PCA is used for face recognition and text classifications.

## Software tools used to perform experiments

There are numerous software tools for creating the machine learning models, analyzing, and visualizing data. For this paper Power BI and Azure Machine Learning (ML) have been used. Power BI tool has been used for data visualization prior to modeling phase. It is a Microsoft tool for interactive data analysis and visualization. Power BI is an evolution of add-ins like Power Pivot, Power Query and Power view with three main points - dashboards, reports and visualizations.



Report is based on one database with dynamic visualizations for the given data. Dashboard uses reports and visualizations to tell a story about the data.

Azure ML Studio is a collaborative drag-and-drop tool used to build, test and deploy predictive analytics solution on data. It has an ability to publish models as web services that can easily be consumed by custom applications or BI tools. ML studio consists of the following components: projects, experiments, web services, Jupyter notebooks, datasets, and trained modules. The workflow of machine learning in the Azure ML Studio is shown in Figure 1.

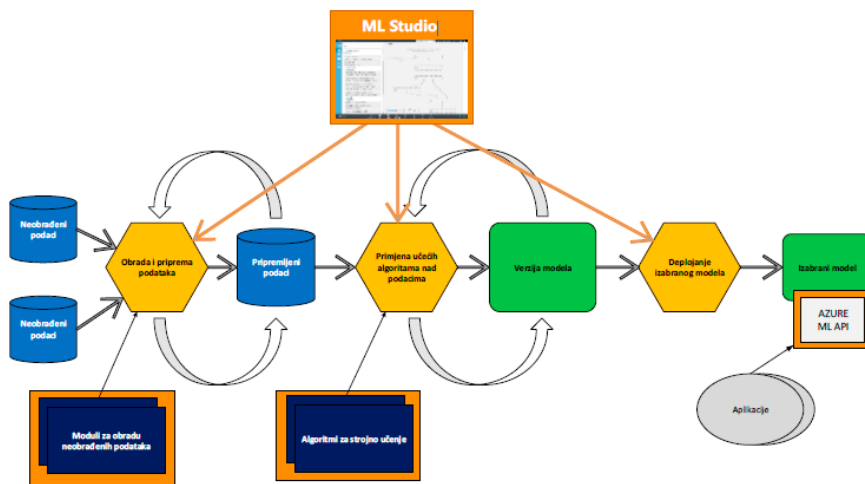


Figure 1 Machine learning proces in ML Studio

## Dataset and modeling procedure

For analyzing the usage of machine learning in anomaly detection two datasets have been selected – computer network traffic and IoT sensors. Computer network traffic address the problem of computer security. In that datasets almost half IP addresses were threatened. The second example is made on IoT sensor data as an Intrusion Detection System (IDS), a system that by monitoring finds malicious activity or activity that violates the common behavior of the system. SVM and PCA methods were used on both datasets. The Root Mean Square Error (RMSE) and F-score were used to be minimized in the training phase, while the accuracy rate is used for the ultimate performance evaluation of the model. Accuracy, the ratio of the number of correct predictions and the



total number of predictions, is calculated as  $Accuracy = (TP + TN) / (TP + TN + FP + FN)$ , where true positive (TP) are correctly identified case, false positive (FP) incorrectly identified case, true negative (TN) correctly rejected case and false negative (FN) are incorrectly rejected case.

Computer Network Traffic dataset can be found on the official site of Stanford University or on Kaggle site (Kaggle, 2018). Database contains 20803 records and 4 variables:

- date – record date, contains values from 01.07.2006 till 30.09.2006 in the form gggg-mm-dd.
- l\_ipn – local IP address, integer categorical variable with values from 0 to 9
- r\_asn – remote ASN, integer variable for identification of remote ISP
- f – number of connections per day

According to Stanford (Stanford, 2018), the days containing abnormal activities are: 24.08. (IP 1), 04.09. (IP 5), 18.09. (IP 4), 26.09. (IP 3), and 26.09. (IP 6). Since the datasets doesn't contain a flag about what is an anomaly, a new categorical variable *label* with values 0-anomaly and 1-normal has been added. In Figure 2 the relationship between the IP and anomalies is shown, where can be spotted that certain IPs are not affected by anomalies. Green color shows the normal class while red the anomaly.

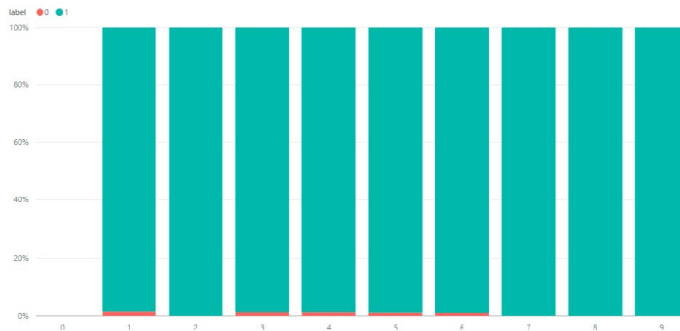


Figure 2. Normal and anomalous data in dataset

The number of anomalies in the dataset is very small in comparison to the normal class, therefore during the separation of the dataset for training and validation it is necessary to assure that both subsets have approximately even number of anomalies inside them.



IoT sensor dataset is available on Microsoft Cortana Intelligence Gallery (Microsoft, 2018) and contains 406516 records with 9 variables, out of which only 5 input variables have been selected due to missing values:

- light – light sensor readings
- room\_temp – temperature sensor readings
- air\_con – air conditioner sensor readings
- heater – heat sensor readings
- label – categorical variable with 1 for normal class and 0 for anomaly

This dataset has an approximately even relationship between anomalies and normal class (see Figure 3). Number of normal class records is 203569 and anomalies 202947.

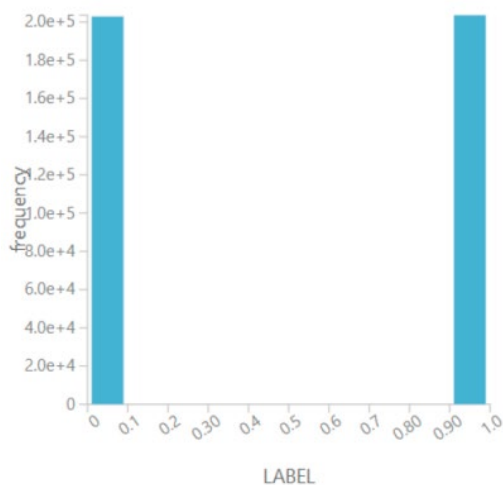


Figure 3. Histogram of normal and anomalous data

Each dataset was divided using stratified split - 70% for training and 30% for testing taking in consideration the variable label. From the initial datasets 15 records were taken out for computer network traffic and 100 records for IoT sensor. The number of cases in each subsample is shown in Table 1.

Table 1. Subsampling procedure

Subsample	Computer Network Traffic dataset	IoT Sensor dataset
Train subsample	70 % (14552 cases)	70 % (284491 cases)
Test subsample	30 % (6236 cases)	30 % (121925 cases)
Total sample	100% (20788 cases)	100% (406416 cases)



## Modeling procedure

In the phase of anomaly detection model development, one-class SVM and PCA-based anomaly detection were used. Because of the dataset structure, a one-class SVM has been selected where the SVM model is ready for the normal class ( $label=1$ ) and the threshold is set on 0.5 making an anomaly every record that is less or equal to 0.5. PCA attempts to approximate subspace containing normal class. The subspace falls within the orthonormal vectors associated with top eigenvalues for covariant matrix. For every new record, first his projection on eigenvectors is created and then the normalized error of reconstruction is calculated. The higher it is, the easier the record is labeled as anomalous. For SVM a parameter range has been set for  $\eta = 0.001, 0.01, 0.1, 1$ , and  $\epsilon = 0.00001, 0.001, 0.01$ . For PCA the parameter range is used as well, and the oversampling parameter for randomizing PCA on 2,4,6,8,10. Both algorithms use *Tune Model Hyperparameters* which uses the untrained model, training and validation data and performs random sweep for 20 iterations with the random seed of 235458. F-score is used for measuring classification performance and RMSE for regression performance.

## Findings

After training and testing the models, the results have shown that the one-class SVM achieves better accuracy than PCA in both datasets. For the Computer network traffic dataset, the accuracy of the SVM model is 96.4%, while the accuracy of the PCA model is 1.1%. It is assumed that by further optimization the PCA model can gain better results. For the IoT sensors data, the SVM model also shows better results than the PCA model. The accuracy of SVM is 83.6%, which is higher than the accuracy of PCA (49.9%). The results of the SVM and PCA model on each dataset are presented in Table 3.

Table 3. Results of SVM and PCA on each dataset

Model	Computer Network Traffic dataset accuracy	IoT Sensor dataset accuracy
SVM	96.4%	83.6%
PCA	1.1%	49.9%

Since the SVM showed better results it was deployed as a web service and tested on the previous taken out records (15 for computer network traffic and 100 for IoT sensors). The SVM model for computer traffic network has correctly identified an anomaly in 67% cases and in 87% all cases has correctly determined



the record's class. In 2 out of 15 cases, the model was incorrect. For testing on IoT sensors records, the model identified the class correctly in 89% cases – observing only anomalies in 82.5% cases and for normal class in 93.3% cases.

## Discussion and economic implications

Observing the results, the SVM model score better than PCA showing an 87% accuracy for network traffic with potential for optimization. Because we are dealing with streaming data, there are many computing challenges as the inability to store the whole stream and go through the same record multiple times. Many methods introduced in paper assume that the data is normalized which is not the case with streams and are not capable to work on high-dimensional data due to increasing the execution time. The performed experiment shows benefits of one-class SVM for anomaly detection when dealing with dataset containing little anomalous records. Because real systems cannot allow themselves to have a lot of anomalies, this feature shows itself as very useful. SVM has also disadvantages such as execution speed. When used for IoT dataset the execution time took much longer because there is no way to control the number of vectors directly. One of the solution is to construct artificial samples for training model which can be tricky since it's not easy to assume the data distribution. Presumably, SVM and PCA have great potential in anomaly detection. Models created for this paper have space to improve and optimize. We assume that with more advanced optimization procedures, a higher level of accuracy can be expected.

If implemented in practice, the model can be of great benefit for reducing the cost of data processing, since data with anomalies have a lower rate of usefulness. When detected on time, the anomalies could be more efficiently removed and some costly activities that are needed to remove the incorrect decisions in the later phases of data processing could be avoided. Thus, the suggested models have significant economic implications in the area of data processing and decision making.

## Conclusions

The paper presents a research in the area of modeling anomalies in streaming data using machine learning methods: SVM and PCA. After the conducted research, it can be concluded that both methods show great potential for this area. Considering the size of network traffic dataset, we can presume that if the data-



set had more anomalies, the model could even score a higher accuracy. The only spotted deficiency of SVM while creating the model was the speed of execution, which was the most obvious while building the IoT sensor data model. The area of anomaly detection has a lot more room for progress. After the conducted research, the remaining open questions are the possibility of model optimization and how would the created models work on new data in real-life scenarios. In further research it would be beneficial to explore how one-class SVM performs in area of computer vision and robotics. In the world where the data amount is growing with each day and that same data cannot be always stored, detections of anomalies in streaming data is of the most importance and directly influences the cost of data processing.

## References

- Barga R., Fontama V., Tok W. H. (2014). Predictive analytics with Microsoft Azure Machine Learning: Build and deploy actionable solutions in minutes. Apress.
- Burbeck K, Nadjm-Tehrani S. (2007). Adaptive real-time anomaly detection with incremental clustering. Information Technology Report, 12. Retrieved from: <https://www.ida.liu.se/labs/rtslab/publications/2007/BurbeckNadjm07.pdf>
- Davy, M., Desobry, F., Gretton, A., and Doncarli, C. (2006). An online support vector machine for abnormal events detection. Signal processing, 86(8), 2009-2025. Retrieved from: <https://dl.acm.org/citation.cfm?id=1159461>
- Golab L., Tamer Özsu M. (2003). Issues in Data Stream Management. Retrieved from: <http://www.mathcs.emory.edu/~cheung/papers/StreamDB/SlidingWindows/2003-Issues-in-data-stream-management.pdf>
- Hill, D. J., and Minsker, B. S. (2010). Anomaly detection in streaming environmental sensor data: A data-driven modeling approach. Environmental Modelling & Software, 25(9), 1014-1022. Retrieved from: <https://dl.acm.org/citation.cfm?id=1808816>
- Kaggle, Computer Network Traffic Dataset, <https://www.kaggle.com/crawford/computer-network-traffic>
- Lee H., Roberts S.J. (2007). On-line Novelty Detection: Using the Kalman Filter and Extreme Value Theory. Retrieved from: [http://www.robots.ox.ac.uk/~sjrob/Pubs/LeeRoberts\\_EVT.pdf](http://www.robots.ox.ac.uk/~sjrob/Pubs/LeeRoberts_EVT.pdf)
- Mayer D. (2017). Support Vector Machines, FH Technikum Wien, Austria. Retrieved from: <https://cran.r-project.org/web/packages/e1071/vignettes/svmdoc.pdf>



- Microsoft, Azure Machine Learning Studio, Retrieved from: <https://studio.azureml.net/>
- Power BI microsoft.com. Retrieved from: <https://powerbi.microsoft.com/en-us/documentation/powerbi-service-dashboards/>
- PCA-based Anomaly Detection, MSDN microsoft.com. Retrieved from: <https://msdn.microsoft.com/library/azure/c3822fa5-1095-4c72-bd1e-fd43d285153a>
- Schölkopf B., Platt J. C., Shawe-Taylor J, Smola A. J. (2000). Estimating the Support of a High-Dimensional Distribution. Retrieved from: <https://www.microsoft.com/en-us/research/wp-content/uploads/2016/02/tr-99-87.pdf>
- Stanford, Computer Network Traffic Dataset, <http://statweb.stanford.edu/~sabatti/data.html>
- Tsymbal A. (2004). The problem of concept drift: definitions and related work. Retrieved from: <https://www.scss.tcd.ie/publications/tech-reports/reports.04/TCD-CS-2004-15.pdf>
- Tan, S. C., Ting, K. M., and Liu, T. F. (2011). Fast anomaly detection for streaming data. In *IJCAI Proceedings-International Joint Conference on Artificial Intelligence*, 22, pp. 1511.
- Zekić-Sušac, M. (2017). Machine learning in energy consumption management. Zadnik-Stirn, L., Drobne, S. (Eds.), *Proceedings of the 14th International Symposium on Operations Research in Slovenia* (pp. 7-17).
- Zheng A. (2015). *Evaluating Machine Learning Models*, O'Reilly Media



## TEACHING AND LEARNING WITH EXTENDED REALITY TECHNOLOGY

Jeffrey Pomerantz

Associate Professor of Practice, Coordinator of Online Programs,  
School of Library and Information Science, Simmons College, Boston,  
Massachusetts, USA

jeffrey.pomerantz@simmons.edu

### Abstract

*Extended Reality (XR) encompasses a wide range of technologies along a continuum with real environments at one end and fully immersive virtual environments at the other. Virtual Reality and Augmented Reality are points along this continuum, as is the “real world.” As their cost has decreased and ease of use has increased, XR technologies have become increasingly widespread, and are one of the most active areas of innovation in pedagogy in higher education. To explore the potential of these new technologies in higher education, EDUCAUSE and Hewlett-Packard collaborated on an exploratory evaluation of XR technologies for instruction and research in higher education. The Campus of the Future project sought to identify educational activities that lend themselves to the use of XR technologies, and the most effective XR technologies for achieving various learning goals. XR technology enables users to gain experience of things that may be rare, dangerous, remote, or simply not physical. By dramatically expanding the range of tasks and activities with which a learner can gain concrete experience, XR technology enables active and experiential learning where it may not have previously been possible. This paper then goes on to articulate several learning goals identified by the Campus of the Future project that XR technologies are effective for helping to meet, and the mechanisms by which those technologies are able to help meet those learning goals.*

**Keywords:** augmented reality, extended reality, higher education, learning goals, teaching and learning, virtual reality



## Introduction

Extended Reality (XR) encompasses a wide range of technologies along a continuum with real environments at one end and fully immersive virtual environments at the other. Virtual Reality and Augmented Reality are therefore just points along this continuum, as is the “real world”: The real world is at one end, VR is at or near the other, while AR spans a range in between (Milgram & Kishino, 1994; Milgram, et al., 1995).

As their cost has decreased and ease of use has increased, XR technologies have become increasingly widespread, and are having a dramatic impact on pedagogy in higher education. Indeed, XR technologies are currently one of the most active areas of innovation in pedagogy in higher education.

To explore the potential of these new technologies in higher education, EDUCAUSE and Hewlett-Packard collaborated on an exploratory evaluation of a range of technologies for instruction and research in higher education, the *Campus of the Future: 3D Technologies in Academe* project (Pomerantz, 2018). This project focused on a subset of 3D technologies concerned with simulations, modeling, and production: VR, AR, 3D scanning, and 3D printing. The project sought to identify educational activities that lend themselves to the use of XR technologies, and the most effective XR technologies for achieving various learning goals. This paper focuses even more narrowly, on XR technologies: specifically on the VR and AR technology deployed in the *Campus of the Future* project.

## Project Description

The *Campus of the Future* project was an exploratory evaluation (Newcomer, et al., 2015). The project sought to identify the range of current uses of XR technology for teaching and learning in institutions of higher education, and, more broadly, to identify uses of XR technologies that hold the greatest potential for achieving teaching and learning outcomes. The evaluation questions motivating this project were as follows:

- What educational activities lend themselves to the use of XR technologies?
- What are the most effective XR technologies for various learning goals?

This project was not the first effort to integrate XR technologies into educational experiences. A significant body of prior work exists in both K–12 and higher education; a full review of this literature would be too lengthy for this



paper (see, for example, Castaneda, et al., 2017; Merchant, et al., 2014; Radu, 2014). For the most part, however, this prior work reports on the integration of XR technologies into individual courses, though the range of courses is quite broad: from the sorts of technical courses one might expect, such as programming, game and app development, and other computer science courses, to perhaps less obvious subjects such as courses on visual arts, biodiversity, and cultural studies (Hancock, 2014). The *Campus of the Future* project is, however, the broadest project to study the integration of XR technologies into education that we are aware of, spanning a larger and more diverse sample of institutions and learning environments and reaching a larger number of users.

The institutions that participated in the *Campus of the Future* project were selected because they were already on the cutting edge of integrating XR technology into pedagogy. These institutions were therefore not representative, nor were they intended to be representative, of the state of higher education in the United States. These institutions were selected precisely because they already had a set of use cases for XR technology available for study (though naturally additional uses emerged at nearly all institutions over the course of the project). The reason for selecting a non-representative sample such as this was to identify the leading edge of the use of this technology in higher education and to thereby attempt to project the future of XR technology in higher education.

Participating institutions were expected to use the provided technology to conduct an active exploration of XR technologies in the classroom. These explorations naturally involved both faculty, staff, and students at each institution, as it is faculty who develop course syllabi and assignments, while staff in IT units and campus centers for teaching and learning provide technology support to those faculty. Participating institutions also included graduate and/or undergraduate students in these explorations, either to address a component of their coursework or as teaching assistants.

HP has a longstanding Education division, which routinely partners with educational institutions on innovative projects. HP has also been developing XR technology for several years. The *Campus of the Future* project is in fact not HP's first project in this space: A collaboration between HP and Yale University predates this project by a year and was, in a way, a pilot for this project. At the start of the 2016–17 academic year, HP provided Yale with 5 Sprout Pro G2 computers and 20 Dremel Idea Builder 3D printers (the same pieces of equipment received by participants in this project), and student- and faculty-led project teams were selected to participate. The projects were selected by a faculty steering committee with one major criterion in mind: Could the experiences—and, in some



instances, the results of these endeavors—point to new ways of thinking and creating for artists, designers, researchers, scholars, and scientists? The results, experiences, and lessons learned from the Yale project were detailed in the report *A Year in the Blender: Practical Applications of 3D in Virtual, Mixed and Printed Forms* from Yale University's Blended Reality Applied Research Project, as well as on a project blog. Many of the lessons learned by Yale during the Blended Reality project, both the good and the bad, played out over the course of this project.

## Methodology

The *Campus of the Future* project was an exploratory evaluation (Newcomer et al., 2015) and as such utilized a mixed methods approach. The use of multiple methodologies was necessitated by several factors:

- The duration of the project, which spanned more than a year, June 2017 - July 2018.
- The emergent nature of the projects at participating institutions: Every participating institution came to the project with a plan for how the XR technology would be used, but these plans inevitably changed over the duration of the project.
- The existence of multiple forms of documentation for projects at many participating institutions -- and, occasionally, a lack of documentation for some emerging uses of XR technology.
- The fact that participating institutions were engaged in learning how to use XR technology while simultaneously implementing it, and while the research was ongoing -- a classic case of "building the plane while flying it."

Three primary mechanisms were used for data collection during this project. First, a start-of-project survey. This was an in-depth survey to collect data about the intended uses of XR technology at each institution. Respondents were asked to provide syllabi and other teaching materials for analysis, as well as to articulate the learning objectives and evaluation criteria for the course or courses at the institution in which XR technology would be used. Content analysis was conducted on documents provided by project participants as part of their responses to the start-of-project survey, to identify these intended uses and learning objectives.



The second data collection method during this project was biweekly status report surveys. These were lightweight surveys that participants were asked to fill out throughout the course of the project. These surveys asked participants about their progress, successes, delays, setbacks, or anything unexpected that instructors experienced over the previous two weeks.

Finally, in-depth interviews were conducted. These were semi-structured interviews with the project leader, and in many cases, members of the project team at all participating institutions. Project participants were asked to provide more depth of detail about their teaching using the provided XR technology -- for example, unexpected or unplanned uses or outcomes that emerged, processes developed over the course of the semester, either by the instructor or by students, and lessons learned.

## Pedagogical Uses of XR Technology

One of the most powerful affordances of XR technology is its ability to support and promote shared experiences and collaboration, particularly between users who are not physically collocated. This leads to arguably the most significant outcome of the use of XR technologies in higher education: their ability to enhance active and experiential learning.

Experiential learning is learning through doing, and then thinking about what one has done (Dewey, 1938). Kolb & Fry (1974) conceive of learning as a 4-stage cycle, in which “concrete experience is the basis for observation and reflection” (p. 34). These observations enable the learner to develop “abstract conceptualizations,” which then inform decisions and action in future situations. A critical component of experiential learning is therefore “metacognition,” where a learner deliberately reflects on their experiences and observations, assesses their current understanding, and articulates further information needs (National Research Council, 2000).

The experiential learning process generally benefits from an instructor facilitating the learner’s reflection and self-assessment, and helping the learner to connect the concrete to the abstract, and the abstract to the concrete. This facilitation function is not necessarily enabled by XR technology. What is enabled by XR technology, however, is the experiential part of experiential learning. By dramatically expanding the range of tasks and activities with which a learner can gain concrete experience, XR technology can enable active and experiential learning where it may not have previously been possible.



It is precisely this ability to provide hands-on experiences that makes XR technologies useful for teaching and learning. Augmented Reality can enable interaction with things that are not physical, such as electromagnetic lines of force (Schneider & Radu, 2018). Virtual Reality can enable interaction with things that are distant (Amar, 2018), dangerous (Farra, et al., 2015), or otherwise inaccessible (Reilly, 1990). In short, XR technology provides learners with hands-on experience of things that were previously inaccessible to hands.

An answer to the first evaluation question motivating the *Campus of the Future* project is therefore this: Experiential approaches to teaching and learning lend themselves to the use of XR technologies.

The answer to the second evaluation question motivating this project is more complex. What are the most effective XR technologies for achieving various learning goals? It almost goes without saying that it depends on the learning goal. There are of course as many learning goals as there are disciplines, as many as there are instructors, as many as there are students. And it is surely also true that the *Campus of the Future* project did not identify all possible uses of XR technologies. Nevertheless, we can at least start to answer this evaluation question: Table 1 identifies some learning goals from projects at participating institutions that XR technologies are effective for helping to meet, and the mechanisms by which those technologies are able to help meet those learning goals.

*Table 1.* Some learning goals that XR technologies are effective in helping to meet

<b>Learning goal</b>	<b>Mechanism</b>
Develop ethical awareness	Simulations designed to require empathy or communal approaches to solve
Develop analytical skills	Simulations designed to structure the achievement of learning goals
Develop systems thinking skills	Simulations designed to structure analytic and synthetic problem-solving
Gaining practice in complex tasks	Iteration of simulated experiences and shared simulations
Self-confidence in practical tasks	Iteration of simulated experiences
Develop strategies for collaboration	Shared simulations
Develop scientific literacy	Interaction with objects too large or too small to interact with in the physical world



Develop artistic literacy	Interaction with materials difficult or impossible to manipulate in the physical world, and the ability to iterate designs
Develop product design skills	Iteration of design work
Develop spatial and 3D visualization skills	Iteration of design work
Develop communication skills	Collaboration with others on shared experiences and/or simulations
Develop storytelling skills	Get experience creating stories for new media
Develop teaching and mentoring skills	Collaboration with peers on shared experiences and/or simulations
Increase student ownership of their own learning	Learning new skills to use the technology, conceptualizing one's own uses for the technology

Again, there are a nearly infinite number of possible learning goals, of which these are only a few. Like any technology, XR has many uses, not all of which have probably even been discovered yet. Still, the *Campus of the Future* project identified a diverse set of learning goals, across a wide range of disciplines, for which XR technologies are effective.

## Conclusion

The *Campus of the Future* project was not the first effort to integrate XR technologies into educational experiences, but it is the broadest such project that we are aware of, spanning a larger and more diverse sample of institutions and learning environments and reaching a larger number of users. XR technologies hold a great deal of promise for teaching and learning, through their ability to provide concrete hands-on experience where that may not have previously been possible. This project is a significant first step toward establishing a baseline of empirical evidence about XR technologies for education. We now call for a broader research agenda to expand on this work: to investigate which educational activities lend themselves to the use of XR technologies broadly, and to identify the most effective XR technologies for specific learning goals.

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## References

- Amar, A. (2018, September 17). Exploring Sacred Centers through Virtual Reality. *EDUCAUSE Review*. Retrieved from <https://er.educause.edu/blogs/2018/9/exploring-sacred-centers-through-virtual-reality>
- Castaneda, L., Cechony, A., & Bautista, A. (2017). *All-School Aggregated Findings, Virtual Reality, 2016-2017*. Seattle, WA: foundry10. Retrieved from <http://www.foundry10.org/research/5b1ee1b0d709885a1144a0d7>
- Dewey, J. (1938). *Experience and Education*. New York: Macmillan.
- Farra, S. L., Miller, E. T., & Hodgson, E. (2015). Virtual reality disaster training: Translation to practice. *Nurse Education in Practice*, 15 (1), 53-57. doi: 10.1016/j.nepr.2013.08.017
- Hancock, C., Hichar, C., Holl-Jensen, C., Kraus, K., Mozafari, C., & Skutlin, K. (2014). Bibliocircuitry and the Design of the Alien Everyday. *Textual Cultures: Texts, Contexts, Interpretation*, 8(1), 72-100. doi: 10.14434/TCv8i1.5051
- Kolb, D. A., & Fry, R. (1975). Towards an applied theory of experiential learning. In C. Cooper (Ed.), *Theories of Group Process*. London: John Wiley & Sons.
- Merchant, Z., Goetz, E. T., Cifuentes, L., Keeney-Kennicutt, W., & Davis, T. J. (2014). Effectiveness of virtual reality-based instruction on students' learning outcomes in K-12 and higher education: A meta-analysis. *Computers & Education*, 70, 29-40. doi: 10.1016/j.compedu.2013.07.033
- Milgram, P., & Kishino, F. (1994). A Taxonomy of Mixed Reality Visual Displays. *IEICE Transactions on Information Systems*, E77-D (12), 1321-1329. Retrieved from [https://cs.gmu.edu/~zduric/cs499/Readings/r76JBo-Milgram\\_IEICE\\_1994.pdf](https://cs.gmu.edu/~zduric/cs499/Readings/r76JBo-Milgram_IEICE_1994.pdf)
- Milgram, P., Takemura, H., Utsumi, A., & Kishino, F. (1995). Augmented reality: a class of displays on the reality-virtuality continuum. In H. Das (Ed.), *Proc. SPIE 2351, Telem manipulator and Telepresence Technologies* (pp. 282-292). doi: 10.1117/12.197321
- National Research Council. (2000). *How People Learn: Brain, Mind, Experience, and School*, Expanded Edition. Washington, DC: National Academies Press. doi: 10.17226/9853
- Newcomer, K. E., Hatry, H. P., & Wholey, J. S. (2015). *Handbook of Practical Program Evaluation* (4 edition). San Francisco: Jossey-Bass.



- Pomerantz, J. (2018). *Learning in Three Dimensions: Report on the EDUCAUSE/HP Campus of the Future Project*. ECAR Research Report. Louisville, CO: EDUCAUSE. Retrieved from <https://library.educause.edu/resources/2018/8/learning-in-three-dimensions-report-on-the-hp-educause-campus-of-the-future-project>
- Radu, I. (2014). Augmented Reality in Education: A Meta-review and Cross-media Analysis. *Personal and Ubiquitous Computing*, 18(6), 1533–1543. doi: 10.1007/s00779-013-0747-y
- Reilly, P. (1990). Towards a virtual archaeology. In K. Lockyear & S. Rahtz (Eds.), *CAA 90: Proceedings of Computer Applications and Quantitative Methods in Archaeology* (pp. 133–139). Oxford, UK.
- Schneider, B., & Radu, I. (2018, August 28). Using Augmented Reality to Promote Making with Understanding. *EDUCAUSE Review*. Retrieved from <https://er.educause.edu/blogs/2018/8/using-augmented-reality-to-promote-making-with-understanding>
- Sinclair, B., & Gunhouse, G. (2016). The Promise of Virtual Reality in Higher Education. *EDUCAUSE Review*. Retrieved from <https://er.educause.edu/articles/2016/3/the-promise-of-virtual-reality-in-higher-education>



## CHALLENGE ACCEPTED: AN OVERVIEW OF DATA SCIENCE PRACTICES AND COMPETENCIES OF DANISH LIBRARIANS

Alina Stoicescu

Cand.Scient.Bibl., University of Copenhagen, Copenhagen, Denmark

alinamstoicescu@gmail.com

### Abstract

*The purpose of this paper is to present the current data science landscape in Danish academic libraries. Denmark's libraries are noteworthy both in a Scandinavian context and on a global scale. In today's competitive research environment, the need for librarians to be knowledgeable about all things digital is growing. Data-savvy librarians are able to better assist their patrons with the resources they need for their research, as well as extract useful insights from library data. Data science as a discipline aims to provide solutions for managing the steeply growing amount of data in the world. Due to their educational background and inquisitive approach to information and knowledge, librarians are well-positioned to use data science in their work. Yet how prepared are they to work with data science? Areas discussed within this paper are data science competencies, data librarianship as a profession and the three roles of data librarianship. Methodology – This paper is based on the author's Master thesis, which collected quantitative and qualitative data on librarians working with data science in Denmark. Uncovering a complete picture of this phenomenon required surveying members of the Danish Union of Librarians' "Data Science" professional group, as well as interviewing two relevant actors in the field: an information specialist in charge of a data lab, and the lead data scientist at the Danish Bibliographic Centre. Results – The results of the study present the data science competencies held by research librarians in Denmark and provide evidence of the existence of a growing Danish professional community focused on data librarianship. Originality – This paper is among the first theoretical initiatives to address the topic of data science in relation to librarianship in Denmark. It aims to follow up on a wider international discussion of data science applications in libraries, a topic that has increasingly come to the attention of librarians in the USA. Through the current research, we can paint a picture of the current Danish situation at the 'dawn' of this phenomenon in Denmark. Practical implications – This creates a starting point for future discussions around data science in research libraries. By presenting the current situation concerning Danish initiatives around data science applications in libraries and librarians' data competencies, the author hopes to inspire librarians and library leaders all over Europe to start using data science to take their work further.*



*Conclusion – The paper uncovers the existence of several initiatives around data librarianship in Danish research libraries, an existing community of research librarians working with data science methods inside their libraries, as well as a growing interest from librarians towards improving their competences in this area. By presenting the societal context and perspective of data librarianship in Denmark, this paper proposes data science as a potential source for a new librarian identity.*

**Keywords:** data competencies, data librarianship, data science, Denmark, librarian roles, research libraries

## Introduction

In the whirlwind of rapidly expanding knowledge, librarians remain one of the few entities which can point users towards trustworthy sources of information. And yet, there seems to be a growing public perception that the Internet is making libraries obsolete (Galluzzi, 2013). It is no wonder, then, that over the past few decades, libraries have needed to reinvent themselves and their role of information professionals. Data-savvy librarians are able to better assist their patrons with the resources they need for their research, as well as extract useful insights from library data.

This paper argues that research librarians are well placed to take new roles around data and data science. By focusing the discussion on a Danish context, I am looking to paint a picture of data science competencies and practices in Danish research libraries, and inspire more librarians to take the leap towards acquiring data skills.

## Research question

In order to find out more about the data science landscape in Danish research libraries, the following research question has been formulated:

“What are some of the Danish academic librarians’ initiatives and competencies around data science?”

In order to answer the research question, it was necessary to get information on data science workshops and trainings aimed at librarians in Denmark and on the data science-specific competencies that they have. To uncover a more complete picture, it was important to also take into account the activities happening outside of the libraries themselves.



## Methods

A triangulation of methods was employed in order to assure the comprehensiveness of the data and avoid bias. This study employed a humanistic design, and getting qualitative data on the phenomenon was important, as it allowed delving deeper into the ‘why’ of the phenomenon.

Firstly, empirical evidence was used in the form of questionnaire responses from a highly relevant sample - the Danish Union of Librarians’ Data Science professional group. The questionnaire design was based on a cross-sectional, single-stage approach. It contained five sections with both open and closed (multiple-choice) questions. The purpose of the questionnaire was to learn about the participants’ professional background, experience with data science and interest in further skills acquisition. It was distributed between March and June 2018.

Secondly, two semi-structured in-depth interviews were used to uncover some of the challenges of working with data science in academic libraries. The participants’ professional background provided two perspectives: that of the information specialist coordinating the University of Copenhagen’s humanistic data lab (HUMLab), and that of the lead data scientist that is developing the data strategy at the Danish Bibliographic Centre.

## Data Science in libraries

First off, what is data science? From a broad perspective, data science is “the art and science of acquiring knowledge through data.” (Ozdemir, 2016, p.4) A mix of methods from sciences such as statistics, computer science and domain-specific knowledge, data science takes proven-to-work methods and blends them in new ways in order to deal with today’s data.

By applying data science methods to different disciplines, one is able to use data to explore, better understand a certain area of study or to predict outcomes. Stanton suggests that a data scientist will be most involved in what he calls “the four A’s” of data: data architecture, data acquisition, data analysis, and data archiving (Stanton, 2012). Due to the large amounts of data that data scientists work with, it is necessary for them to have the capacity to simplify, be critical about, and effectively communicate the results of their data analysis.

Sounds familiar? That is because these are some of the same roles that research librarians deal with in their daily work: simplifying and organizing large amounts of information, being critical of sources, and having the capacity to



effectively communicate with patrons. But is this overlap of roles sufficient to allow librarians to take on a data scientist role?

I believe that yes it is, should they wish so, as curiosity and having a data-centric approach are critical towards being a good data scientist. A data-oriented thought process seems to be more important than any specific educational degree or tool a data scientist might use. (365DataScience, 2017).

## Danish librarians' journey towards digital methods

In Denmark, libraries have prepared for the beginning of the Information age ever since the 90s. The Danish government and the Ministry of Culture tried to anticipate the upcoming need for integrating new technologies in order to support the democratic processes of society.

The "Cultural Network Denmark" project launched in 1995 was a call for culture-related projects which explored possibilities of expanding the dissemination of culture and knowledge into the digital environment. Institutions such as The Royal Library and the University Library in Aarhus started bringing their data into the digital environment, and in this way, shaping the information seeking behaviour of the citizens.

The "New Public Libraries Act" of 1996 states that libraries "shall endeavour to make available computer programmes and other electronic materials" and that basic services have to be provided free of charge. (Larsen & Statens bibliotekstjeneste Denmark, 1996, p.22) In 1996, 4 out of 5 research libraries offered Internet access and online searching services.

The above is proof of Denmark's plan to evolve traditional librarianship and prepare it for the Information age. An early adoption of these technologies positively modified the information behaviour of Danish library users and led to libraries being perceived as a valuable part of the public infrastructure. This in turn allowed for higher budgets to explore initiatives around new technologies at the beginning of the new millennium.

The previous strategic work done during the 90s materialized into Denmark's current library law, which supports the concepts of digital space and technology as an information tool. One of the big changes from the previous library law is the emphasis on a "hybrid" library structure, which combines the traditional library space with a digital library. Providing digital services had grown in impor-



tance starting with the year 2000, and many users were welcoming and expecting a diversification in the services portfolio of the libraries.

As for the research libraries, they have three interlinked roles which characterize and influence their development after the year 2000: becoming a learning centre (supporting the educational institution by providing learning materials and tools), a knowledge centre (creating knowledge for the society as part of research groups), and holding an important role in society as a meta-knowledge institution (being responsible for organising and evaluating knowledge).

In 2011, the Danish Agency for Libraries and Media reinforced their recommendations regarding the role of libraries in the knowledge society. It is emphasized that apart from facilitating access to knowledge, libraries also mediate IT tools and quality data collections that citizens can use to build their own value-creating knowledge products and become independent problem solvers in the society. (Danish Agency for Libraries and Media, 2011)

Thus, there are four emerging professional identities of research librarians: “archive detective, educational sparring partner, generic knowledge expert, and co-creator.” (DEFF, 2009, p. 29) These roles are a mixed consequence of, on one side, research librarians being more qualified to assume an educator role, and on the other side, research libraries adopting a value-creating (rather than knowledge storing) capacity. Danish research librarians’ roles can be divided into two groups: librarians that focus on their educational role, serving as a generalized information professional in their collaboration with students and researchers; the second group focuses on their role as domain specific knowledge co-creator.

As the field of Danish librarianship shifted towards digital practices, LIS education followed accordingly. The Department of Information Studies at the University of Copenhagen has been an iSchool since 2017, aiming to “provide students with the required skills and knowledge to analyse and design today’s digital information and communication technologies, with a special focus on the cultural and social contexts of those technologies.” (Department of Information Studies, 2017)

## Roles of data science in the library

Because of rapid technological advances, with each passing year the expected technical level of information schools’ graduates has increased. In order to understand what skills and competences are required of graduates, it’s necessary to see what role data science can have in a library context.



Cheap and accessible data storage combined with the use of data as an economic commodity has created a problem. Larger amounts of data come with extra challenges when it comes to storing, processing and analysing it. There are rightful concerns that most of research data is improperly managed, which leads to loss of knowledge. Luckily, inside research institutions, librarians have been providing support for research data ever since the 1960s. (Kim, 2016, p. 162)

Data curation services, data stewardship, data management plans, and data repository services are not foreign terms in academic libraries; libraries have been assisting researchers with their data management for some time, and they are in an appropriate place to do so: “Librarians have increasingly become experts in data management because of their combined knowledge of new data sharing standards, information science, and the Semantic Web [...] information literacy has always been a topic of interest to research librarians, and it is natural that their role is expanding to include topics surrounding data curation and access.” (Haendel, Vasilevsky and Wirz, 2012)

As these types of services have been successfully used within research libraries to get the most out of their research data, it is clear that libraries as an organization are in a good position to fulfil this role. As research data grows and becomes more numerous and complex, data science is a logical field to get inspired from when trying to decide which new services to offer.

To do that, librarians need to be competent in the following areas: data architecture, data acquisition, data analysis, data archiving; when working with data science, these areas translate into the following skills: applied maths, statistics and scientific practice skills; data engineering and data manipulation skills; data science innovation skills; developing data science capability; domain expertise; data science oriented programming; understanding of data science analysis lifecycle.

## Data librarian as a profession

Considering the above, how can data science be used in a library? To sum up the position of librarians in relation to data: librarians are professionals whose skills bring solutions to some of the problems we face in today’s “Big Data” world. They “facilitate and enable data discovery and retrieval; add value to the data through cataloguing, indexing, and metadata; and [...] “provide for re-use [of data] over time through activities including authentication, archiving, management, preservation, and representation.” (Gordon-Murnane, 2012, p. 33) These are skills that librarians have been using to work with printed materials



for decades. Furthermore, they do “not only educate the community on data and information literacy, but conduct their own research on how the scientific community can best rise to the data challenge.” (Haendel et al., 2012)

Data science can be applied in a library setting in three areas: as an educational tool, towards the students and faculty; as part of the research process, e.g. a service to help the researchers; and internally, to improve the library collections and systems. That is because “data science exists more or less on a spectrum, and depends on an institution’s size and mission.” (Burton, Lyon, Erdmann and Tijerina., 2018, p. 7)

All in all, librarians can be a useful ally in a variety of data projects due to their ability to transfer their research and reference skills to a variety of areas and subjects. In this sense, Affelt (Affelt, 2015, p. 191) claims that just like “lone wolf data scientists” can transfer their skills to a variety of subjects, librarians are also good at working with unfamiliar subjects; their professional background gives them the communication and teamwork skills and the curiosity necessary to approach a variety of data questions.

## The three levels of data librarianship

I would like to make the distinction that three “levels” of librarianship can be defined depending on librarians’ role around data and data science.

*The first level - ‘data-savvy librarians’;* that is, librarians that *know of* data. They might be familiar with the concepts and tools around data science and the data lifecycle, enough so that they can guide users on how to acquire data science capabilities to use in their own research projects.

*The second level - ‘data librarians’;* that characterizes librarians *whose subject is* data; this might mean being involved in a research data management service, or otherwise being ‘subject specialists’ in data, as well as providing instruction and support for the users in areas related to data science.

*The third level - ‘data science librarians’.* This would characterize highly technically skilled librarians that *work with data science* within the library, e.g. by making data science products for the library’s collections.

With the importance that data holds for our society today, it makes sense that all library staff will benefit from having awareness and knowledge of good data practices. While some librarians will become specialized in this area, the



rest of the team is still involved with data in one way or another – an understanding of it will improve their overall librarian competencies.

Librarianship has grown alongside increasingly complex modern data. It is a profession in which the competencies and skills required are being constantly updated in order to keep up with the technological advancements. Because of this, there is no clearly set path for a data science librarian to follow in his career, and this allows persons with different specializations to bring their background skills and knowledge into the library; it can make for a very interesting librarian profile.

For an academic librarian, acquiring data science skills allows him to be up to date with the requirements of working with complex research data, which can make his collaboration with researchers more fruitful. Having a data science oriented mind-set can prepare and inspire librarians to come up with more innovative data-oriented services, aimed at researchers and students alike. With that in mind, let's take a look at how Danish librarians are welcoming data science into their libraries.

## Data science in Danish research libraries

There are currently 39 major research libraries all around Denmark, of which university libraries present the most engagement around data science.

Denmark's national library, The Royal Danish Library uses data science in order to increase the availability of their historical and cultural data. Their "Digital Cultural Heritage and Media" department has some initiatives towards making their materials more readily available for use by researchers; furthermore, the IT Development and Infrastructure department is looking into improving online access to their collection and optimizing library processes.

Several universities in Denmark have founded data labs in order to provide students and researchers with opportunities for improving their data literacy and to encourage better research data practices across their departments.

For example, the University of Copenhagen's library has established several data labs which provide students and researchers with access to equipment and expertise aimed at developing data skills and facilitating inter-disciplinary collaboration. The three labs provide services to the Faculty of Social Sciences, the Faculty for Natural and Health Sciences, and to the Humanities and Law Faculty.



The Danish Technical University's library holds research data management workshops, and has been supporting librarians interested in data science by hosting the first two "Data Scientist Training for Librarians" in Europe in 2015 and 2016. The activities of DST4L span along three days in which librarians attend hands-on workshops in a range of data science areas, such as data collection, metadata handling, data cleaning, web scraping, version control and collaborative software, and data visualization.

The creation of data labs and data-oriented services requires librarians to have the opportunity to increase their competences in this area. Within the Danish Union of Librarians, the Data Science (DS) Professional Group's activity is aimed at supporting librarians in the field of data librarianship, data science and data management. The group regularly holds workshops, meetings and study groups about data management, Data Discovery, text and data mining and analysis, APIs, Open Data, and more, as well as hands-on workshops on data software such as GitHub, Jupiter Notebook, NVivo and Voyant Tool.

## Librarian competencies

When questioned upon the programming languages that they had experience with, most of the respondents listed Python. JavaScript, HTML and SQL were also mentioned by several respondents. Regarding data science software, the answers were comprised of several categories: data cleaning tools (OpenRefine), network analysis and visualization software (Gephi, Vos Viewer), code editors (Atom, Oxygen XML Editor) data visualization software (Tableau, Plot.ly), collaborative platforms (GitHub) and web scrapers (Netvizz, NCapture). Some respondents admitted that their interest in data science is more theoretical and comes from a need to learn to speak the researchers' and students' language when it comes to more technical aspects of data work.

The above responses show that the respondents are already knowledgeable around different data science-relevant tools and topics; they also confirm their involvement in the areas of Stanton's "four A's of data" (data architecture, data acquisition, data analysis, and data archiving).

As for how Danish librarians work with data science, the following quotes exemplify the existence of the three levels of data librarianship within Danish libraries:



Data-savvy librarians: “I use the [DS] group to gather knowledge and hopefully learn something so I can be at the forefront of my researchers’ needs in the field”; “[I work with] data validation in PURE and documentation of research.”

Data librarians: “We are building a teaching offer that will cover [data] harvesting, analysis and visualization”; “Support for colleagues about understanding Shell and DOS environments”; “Teaching in NVivo.”

Data science librarians: “Through development projects”; “I try to take tasks - such as data cleaning, export data [...] and enrich and clean data”; “Data management of unstructured data.”

As can be seen, the different levels of data librarianship affect the involvement with data science; some of the DS group members do not actively work with data science, but have interest in the area and a wish to be “savvy” around this topic. Other respondents exemplified the ways they already use data science, either by supporting the researchers or being an active part of data science work and developments within the libraries.

## Challenges

Overall, questionnaire respondents stressed their wish for hands-on opportunities to learn data science; some admitted to facing a skills gap when participating in I.T.-targeted data science workshops, and they wished for more librarian-adapted courses. Certification was also mentioned, suggesting that a formal acknowledgement of their skills could help their ideas and initiatives be heard more clearly within their organizations.

Data librarians’ competences can easily go unnoticed within the array of services of a research library. Being vocal about their competences can go a long way towards offering visibility to the data librarians and their services.

Another difficulty that librarians face in the area of skills acquisition is the lack of a clear professional path that one can follow, especially from a competency-acquiring viewpoint. “Identifying the specific knowledge and skills required to be a data professional” (Bern, 2005, p. 8) is just one piece of the puzzle. The questionnaire responses indicate that upon self-reflection, the respondents felt that they had not reached their desired competence level in certain areas (e.g. Python). But how can librarians know which of their competences are at a satisfactory level and which they should still develop? The HUMlab team at the University of Copenhagen measure their competencies using a colour-coded system:



red for an inadequate level, yellow for medium, and green for a satisfactory level; this model is easy to apply within a library service or as a self-assessment tool for individual librarians along their data science journey.

## Conclusion

The existence of data labs within academic libraries, professional groups such as the Data Science group as well as the interest shown towards the Data Scientist Training for Librarians stands as a proof that there is a growing community around data librarianship in Denmark.

Librarians' involvement and data competencies can be classified under 3 categories: data-savvy librarians, data librarians, and data science librarians, all of which are present among research librarians in Denmark.

Providing more hands-on learning opportunities will help increase data competencies within academic libraries, and help librarians make data more accessible to the users.

A lack of clear professional path and skills recognition within their workplace mean that librarians working with data science need to be loud about their competences in the workplace. Increasing recognition of the importance of preparing librarians to deal with today's digital and big data world allows them to work at overcoming the challenges. The LIS school in Denmark has recently become an iSchool, and modified its curriculum appropriately to support competence building around the digital environments.

All the above point towards concrete initiatives blooming around data science in Danish academic libraries. As Danish librarians increase their data science competencies, this will probably start to show on an organizational level, through the development of more data-oriented services and spaces.

I believe data science can provide libraries with a new role in today's society. If librarians can demonstrate their value in building and interacting with a wide array of data products, it will boost libraries' image as an information expert in our society.



## References

- 365DataScience. (2017). *Can I Become a Data Scientist: Research into 1,001 Data Scientist Profiles*. Retrieved from <https://365datascience.com/research-into-1001-data-scientist-profiles/#2>
- Affelt, A. L. (2015). *The accidental data scientist, big data applications and opportunities for librarians and information professionals*. Medford, New Jersey: Information Today, Inc.
- Bern, P. H. (2005). *You're A What ??? Taking Stock of the Data Profession*. Conference Presentation of IASSIST 2005.
- Burton, M., Lyon, L., Erdmann, C., & Tijerina, B. (2018). *Shifting to Data Savvy : The Future of Data Science In Libraries*. Pittsburgh, PA
- Danish Agency for Libraries and Media. (2011). *The Public Libraries in the Knowledge Society*. Retrieved from [https://slks.dk/fileadmin/publikationer/publikationer\\_engelske/Reports/The\\_public\\_libraries\\_in\\_the\\_knowledge\\_society.\\_Summary.pdf](https://slks.dk/fileadmin/publikationer/publikationer_engelske/Reports/The_public_libraries_in_the_knowledge_society._Summary.pdf).
- DEFF. (2009). *The Future of Research and the Research Library: A Report to DEFF*. Denmark's Electronic Research Library, 1–70.
- Department of Information Studies. (2017). *About the department*. Retrieved from <https://informationstudies.ku.dk/about/>
- Galluzzi, A. (2013). Libraries and public perceptions: A comparative analysis of the European press. *Methodological insights. JLIIS*, 5(1), 43-76. Retrieved from <https://www.jlis.it/article/view/8987>
- Gordon-Murnane L. (2012) Big data: A Big Opportunity for Librarians. *Online*. 36 (5), 30-34.
- Haendel, M. A., Vasilevsky, N. A., & Wirz, J. A. (2012). Dealing with Data: A Case Study on Information and Data Management Literacy. *PLoS Biology*, 10(5), e1001339. <https://doi.org/10.1371/journal.pbio.1001339>
- Kim, J. (2016). Who is Teaching Data: Meeting the Demand for Data Professionals. *Journal of Education for Library and Information Science Online*, 57(2), 161–173. doi: 10.3138/jelis.57.2.161
- Larsen, G., & Statens bibliotekstjeneste (Denmark), G. (1996). *State-of-the-art of information technologies in Danish libraries*. Statens bibliotekstjeneste.
- Ozdemir, S. (2016). *Principles of Data Science* (1. ed.). Birmingham: Packt Publishing.
- Stanton, J. (2012). *An Introduction to Data Science*. Syracuse University, 1–157. Retrieved from [https://storage2.ischool.syr.edu/media.ischool.syr.edu/oldmedia/documents/2012/3/DataScienceBook1\\_1.pdf](https://storage2.ischool.syr.edu/media.ischool.syr.edu/oldmedia/documents/2012/3/DataScienceBook1_1.pdf)



## TRANSFORMATION OF LIBRARY MANAGEMENT FOR THE SOCIAL INCLUSION: CASE ANALYSIS OF THE HOOD RIVER COUNTY LIBRARY DISTRICT

Issei Suzuki

Doctoral Student, Graduate School of Library, Information and Media  
Studies, University of Tsukuba, Tsukuba, Japan  
s1830503@s.tsukuba.ac.jp

Masanori Koizumi

Assistant Professor, Faculty of Library, Information and Media Science,  
University of Tsukuba, Tsukuba, Japan  
koizumi@slis.tsukuba.ac.jp

### Abstract

*The purpose of this research is to illustrate the referendum for the formation of the library district in the United States that functions as a mechanism to clarify library management according to the needs of the local community. The library district forming through a referendum transforms library management according to the needs of the ethnic minority such as Hispanic people. However, the financial stability of the previous study regarding the library district has been attracting attention. By analyzing the case of transforming the library management through a referendum, we contribute to the research field of library science and public management. In the research method, detailed case analysis was conducted from the perspectives of the public library, Hispanic and local Community. The subject of the case analysis is the library district of the Hood River County where the highest level of Spanish-speaking households live in Oregon State formed in 2010. In conclusion, the Hood River County Library District transformed its management after they conducted the referendum. First, referendums were opportunities to recognize the need to enrich the library service to Hispanic people after the formation of the library district, as there were few votes from areas where there are large numbers of Hispanic. Next, in order to establish a management system that provides library services to Hispanic people, the director and staff have further strengthened their ties with the community. Finally, library services to Hispanic people were provided through the partnership with local companies and NPOs, which led to the promotion of social inclusion by providing literacy services. It is clear that the referendum for the formation of the library district made it possible to elicit the potential needs for public libraries which were hard to see before the*



*formation became apparent and led to the promotion of social inclusion of Hispanic people through library services.*

**Keywords:** case analysis, ethnic minority, hood river county, library district, referendum, social inclusion

## Introduction

In the United States, the legal basis of public libraries has diversified dramatically since the late 20th century. According to statistics completed by the Institute of Museum and Library Services (2018), there are 9,057 public libraries in 2016, which were mainly managed by three legal bases. The composition ratio with the legal basis is 64.0% for General Purpose Government, 13.9% for Nonprofit Organization (NPO), and 15.4% for Library District (Institute of Museum and Library Services, 2018). The percentage of library districts in public libraries of legal basis increased by 8.9% from 6.5% in 1992 to 15.4% in 2016, exceeding NPOs in 2010 and became the second position after the general-purpose government.

The library district is one form of a special district. It has the tax levy and bond authority for a single purpose of library management. The main reasons for the formation of the library district, as exemplified by the New York State Library are “*Improved Funding*” and “*Predictable Funding*” (New York State Library). Many of the previous studies also focus on the stability of the financial resources of the library district. The forming process and the actual status of management have not been clarified. As mentioned above, in order to form a library district, it is necessary to implement a referendum and acquire a vote in favor. Rubin pointed out in the “*Foundations of Library and Information Science*” that in the United States, taxpayers have been increasingly opposing which are involved in public institutions such as libraries in the past decades, due to recession in 2008 (Rubin, 2016). Under such circumstances, taxpayers strongly think that they will be obliged to pay another form of tax for the library district. Therefore, it is not going to be easy for the library district to form.

In addition, the referendum for the formation of the library district is not limited to library users. It is also an opportunity to present thoughts on non-user’s libraries through voting. We focused on the minorities that did not use the library service and clarify the influence of their voting actions to the subsequent formation of the library management.

In the State of Oregon, which is the target area of this case analysis, mainly due to the fiscal deterioration of the county government, the ratio of the general-purpose government to public library’s legal basis decreased by 19.2% from



1992 to 2016. At the same time, the percentage of library districts increased by 20.3% (Institute of Museum and Library Services, 2018).

Oregon State is a region where the population growth rate of Hispanic is progressing fast in the United States. The Oregon Community Foundation completed the *“Latinos in Oregon: Trends and Opportunities in a Changing State”*. The Hispanic population has increased, has become a stronger workforce than white workers, and contribute greatly to the state economy (Oregon Community Foundation, 2016). However, in limited occupational opportunities, they are facing low wages and poverty. Therefore, giving them wider educational opportunities and job opportunities is a challenge. Under these circumstances, the *“Library Service and Technology Act (LSTA) Five-Year Plan”* that was created by the State Library of Oregon pointed out that the library services to Hispanic people are not enough. Library services to them are listed in the LSTA subsidized program (State Library of Oregon, 2008, 2012, 2017). LSTA is a program wherein the Federal Government provides grants to all types of libraries (American Library Association). It is the provincial library that determines the grant destination. The State Library distributes it to the libraries which provide library services that are consistent with the Federal Government’s LSTA support objectives.

In the referendum for the formation of the library district, it is difficult to win the vote of those Hispanic people who do not fully enjoy the library services. In this paper, we will clarify the influence of these Hispanic people to the subsequent library management by voting in the referendum. Therefore, we illustrate the formation of the library district through the referendum which will clarify its significance.

## Literature Review

Previous studies on the library district had been advocated for advantages based on the mechanism such as stability of finance and utilizing economies of scale by expanding service area (Brawner, 1993, Hennen, 2002). In recent years, the stability of the finance was attracting attention. As a result, active empirical research has been carried out although it holds only in quantitative comparison based on the statistical data between the library district and the other legal basis (Elliott, 2013, Goldman, 2018). It has not been carried out in detail to clarify the formation process and the actual status of management by the library district. It is important to study the number of library districts that are increasing while the general-purpose government’s finance is decreasing. By analyzing the case of



transforming the library management through a referendum, we contribute to the research field of library science and public management.

## Research Purposes

We will clarify the significance of the referendum for the formation of the library district. First, it is to show the influence of the Hispanic people in the formation of the library district through voting acts on library management after the referendum. Second, to show the management system that serves the Hispanic people. Third, we are also going to show the actual state of the library service to the Hispanic people.

## Research Methodology

In the research method, detailed case analysis was conducted from the perspectives of the public library, Hispanic and local community. The subject of the case analysis is the library district of the Hood River County which was formed in 2010 in the State of Oregon where the highest level of Spanish-speaking household lives. In the State of Oregon, the Hispanic population is increasing. At the same time, in addition to traditional industrial forestry, the high-tech industry has also grown in recent years (The Oregon Community Foundation, 2016). The Hispanic people have begun to play a vital role to respond to the labor demand of the community.

Social inclusion of minority such as Hispanic people is a major issue faced by contemporary society. Generally, it focuses on government policy and law as a means to solve the problem. In this research, it is essential to pay attention to the community level and demonstrate that public libraries in the community play a significant role in social inclusion through library services.

## Two Referendums for the Formation of the Library District

The Hood River County Library was established in 1908 centered on local women and opened in 1912 when funds of the county government were supported. After that, it was managed by the county government for 98 years (Hood River County Library District, 2016). However, since 2010, county government could not spend on public library due to financial difficulties (Nielsen, 2014).



Historically, the Hood River County government's 40% general fund sources were timber related income. However, timber revenues declined by 2,000,000 dollars in 2010, it was forced to cut public services, and it was not possible to provide financial resources to the public library (Hood River County Library, 2010a). The county government is obliged to provide prisons, public health, and other services under the state law in the State of Oregon (The Oregonian, 2010). However, the public library was not included in those mandated services as it was a legal service that could be reduced.

Under such circumstances, the county commissioners and the library supporter group proposed the formation of the library district with tax levy as a new local government in order to maintain the library's opening (Parker et al., 2014). Therefore, the county commissioners implemented the referendum ballot (Measure 14-37) in May 2010 to allow the charge of property tax of 0.7 dollars (70 cents) per 1,000 dollars for the assessed property value of the residents in the Hood River County. This tax rate was set to provide substantial library service and opening hours mainly for property tax revenue of the library district. However, the result showed that only 46.14% (2,944 people) were in favor of the voters and 53.86% (3,437 people) were in opposition. As a result, the library was forced into closure in July 2010 (Library Journal, 2010).

After that, in November 2010, the tax rate of property tax was changed to a low tax rate of 0.39 dollars (39 cents) per 1,000 dollars for the assessed property value of residents, and again the referendum ballot (Measure 14-39) was conducted for the purpose of reopening the public library. Aside from the property tax, this tax rate indicates volunteer service and financial resources such as donations, grants and user fees which are necessary for library management (Hood River County Library, 2010b). As a result, 52.93% (4,492 people) were in favor of the voters and 47.07% (3,994 people) were in opposition. At the same time, five library board members were elected from the residents and the library district was formed (Nielsen, 2014).

However, this result did not necessarily mean that it has gained the approval of many residents primarily in the Odell area where the Hispanic population is large and where the opposition votes was high in the first and the second referendum (Hood River County, 2010a, 2010b).



## Establishment of the Library Management System for the Hispanic People

Although it succeeded in the formation of the library district, the Library District had big challenges. The library district needs to implement outreach services to the Hispanic people who were historically out of library service (Nielsen, 2013).

There are two reasons behind recognizing this issue. First, the Spanish-speaking households are at the highest level living in the Hood River County with 26.9% in 2010. Furthermore, from the result of the first referendum (Measure 14 - 37) where the formation of the library district was rejected, the library board analyzed that this area has a high number of the opposition (Nielsen, 2013). Therefore, the Hispanic people who live in that area does not feel the necessity of the library service.

When the county government was the legal basis of the public library, there was no staff specialized for outreach services, nor bilingual staff (Hood River County Library District, 2013). Also, there was a little funding for materials written in Spanish, and there were no programs to be held in Spanish. In order to solve these problems, the library district hired a new library director and shifted to library management focusing on outreach services (Nielsen, 2013). The library director has developed a partnership between the public library and the local community. Librarians become members of community groups such as business associations, chambers of commerce, and they receive advice on the establishment of strategic plans and duties of public libraries. In addition, actively attending the community is an opportunity for partnership between library district and community.

Additionally, the library district has three bilingual staff members who conduct outreach services to Hispanic people. Also, 10% of the collection development is provided for the Spanish material and the program to be held in Spanish is offered (Hood River County Library District, 2013).

## Development of the Library Service to the Hispanic People

The library district hired a bilingual staff who can speak English and Spanish to serve the Hispanic people. This person regularly participates in schools, daycares, community events and carries out aggressive outreach services in the Odell area where Hispanic people live (Nielsen, 2013). Also, the library district



acquired grant based on LSTA two years after it was formed. As a result, the library district has hired full-time staff specializing in outreach service to the Odell area (Lara, 2017).

Many programs are offered through partnerships between the library district, local companies and NPOs (Parker et al., 2014). The background is that the library district actively invites local companies and NPOs for sponsorship and partnership. These organizations use a meeting room in the library district for free and are carrying out education, conferences and events for new employees.

The Summer Reading Program consists of programs which are provided based on a partnership with local companies. Before, there was no program in Spanish. The public library only offered programs in English. However, after the formation of the library district, it also provided summer reading programs in Spanish. The library staff conducted outreach services in the market of the Odell area. In 2017, this program was sponsored by various local companies such as local restaurants, toy shops, fruit farms, cafes, cinemas and others (Hood River County Library District).

A case where a program is provided based on partnership with NPOs is the implementation of outreach service in cooperation with the FISH Food Bank (Hood River County Library District, 2013). The FISH Food Bank is an NPO that distributes food in the Hood River County which hopes residents of the Odell area to receive literacy services from the public library due to the absence of a library in the Odell area. The residents who live in the Odell area were aware that it was not easy to go to the area of Hood River County where the library is located. Therefore, the staff of the Hood River County Library District carried out outreach services and decided to form a partnership to provide space for literacy programs and lending of books.

## Discussion and Conclusion

Previous studies focused on the institutions and mechanisms of library districts. Furthermore, in recent years, empirical studies conducted have been limited to quantitative research centered on changes in revenue of library districts and other legal basis based on statistical materials. Hence, the purpose of this paper was to show the significance of the referendum for the formation of the library district. As a result of the analysis, the Hood River County Library District transformed its management after they conducted the referendum.



First, the two referendums were opportunities to recognize the need to enrich the library service to Hispanic people after the formation of the library district, as there were few votes from areas where there are large numbers of Hispanic. Next, in order to establish a management system that provides library services to Hispanic people, the director and staff have further strengthened their ties with the community as compared to before the formation of the library district. Finally, library services to Hispanic people were provided through the partnership with local companies and NPOs, which led to the promotion of social inclusion by providing literacy services.

It is clear that the referendum for the formation of the library district made it possible to elicit the potential needs for public libraries which were hard to see before the formation became apparent and led to the promotion of social inclusion of Hispanic people through library services.

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## References

- American Library Association. *Library Services and Technology Act (LSTA)*. Retrieved from <http://www.ala.org/advocacy/advleg/federallegislation/lsta>
- Brawner, L. B. (1993). The People's Choice: Public Library Districts. *Library Journal*. 118(1), 59-62.
- Elliott, M. (2013). Impact of the Public Library District Model on Local Funding of Public Libraries in New York State. *Public Library Quarterly*. 32(2), 124-137.
- Goldman, M. (2018). Strategies for Sustainable Funding: A Metadata Review of the Independent Library District Model. *Public Library Quarterly*. 37(2), 139-149.
- Hennen, T. J., Jr. (2002). Are Wider Library Units Wiser?, *American Libraries*. 33(6), 65-70.
- Hood River County. (2010a). *May 18th, 2010 Official Election Results by Precinct*.
- Hood River County. (2010b). *November 2nd, 2010 Official Election Results by Precinct*.
- Hood River County Library District. Summer Reading. Retrieved from <http://hood-riverlibrary.org/events/summer-reading/>



- Hood River County Library. (2010a). Hood River County Libraries FAQ Inside. (Supplied material from Hood River County Library District).
- Hood River County Library. (2010b). Library Mailer Back (Post Card). (Supplied material from Hood River County Library District).
- Hood River County Library District. (2013). *Full Grant Proposal Library Services and Technology Act FFY 2014*.
- Hood River County Library District. (2016). Job Announcement Assistant Director.
- Institute of Museum and Library Services. (2018). *Public Libraries Survey Fiscal Year 2016 Supplementary Tables*. 21-22.
- New York State Library. Why Consider Public Library Districts?. Library Development. Retrieved from <http://www.nysl.nysed.gov/libdev/libs/pldtools/guide/2why.htm>
- Nielsen, M. (2013). John Cotton Dana Award, Narrative, HRCLD. (Supplied material from Hood River County Library District).
- Nielsen, M. (2014). Rebirth and Renewal: How a Year of Closure Benefited Hood River County's Libraries. *OLA Quarterly*. 18(1), 9-13.
- Lara, P. (2017). Impacting Rural Hispanic Communities by Reaching Out, Connecting and Providing Services at Different Levels. *OLA Quarterly*. 22(4), 5-8.
- Library Journal. (2010). Hood River PL closes. 135(12), 17.
- Rubin, R. E. (2016). *Foundations of Library and Information Science*. 4nd ed., Chicago, American Library Association, 410.
- Parker, J. B., Harmer, W., Linville, P., & Nielsen, M. (2014). Small Libraries, Big Support. *Journal of Library Administration*. 53(7-8), 451-461.
- The Oregonian. (2010). Locking up an Oregon library, and walking away.
- The Oregon Community Foundation. (2016). *Latinos in Oregon: Trend and Opportunities in a Changing State*. 5-9.
- State Library of Oregon. (2008). *Library Service and Technology Act (LSTA) Five-Year Plan 2008 - 2012*. 8.
- State Library of Oregon. (2012). *Library Service and Technology Act (LSTA) Five-Year Plan 2013 - 2017*. 4.
- State Library of Oregon. (2017). *Library Service and Technology Act (LSTA) Five-Year Plan 2018 - 2022*. 8.



## **DIGITIZING DIASPORA COMMUNITIES: A CASE STUDY OF THE CHICAGO LITHUANIAN COMMUNITY**

Erika Weir

Masters Student, School of Information Sciences, University of Illinois at  
Urbana-Champaign, Champaign, Illinois, USA    etweir2@illinois.edu

### **Abstract**

*Collecting and representing the cultural heritage of diaspora communities has historically posed a challenge to cultural heritage institutions like libraries and archives. Shifting political and cultural contexts, have led to inconsistent interest by mainstream institutions to collect these materials. In the advent of Web 2.0 technologies, digital collections and platforms have often been offered as the latest panacea to the multitude of issues related to these collections. However, these digital spaces can often reproduce the omissions and misrepresentations historically faced by diaspora communities. This paper will critically examine these issues through the lens of the Lithuanian-American diasporic community both historically and in the context of current digital collections. Through a review of this community's representation in digital collections, I offer suggestions for how the representation digital representation of transnational diaspora communities can be improved.*

**Keywords:** *diaspora communities, cultural heritage, digital collections*

### **Introduction**

In 1908, Chicago was home to the largest Lithuanian population of any city in the world with over 50,000 Lithuanian residents (Lietuva 1908). Currently, the Chicago area still remains home to many self-identified Lithuanian-Americans who are increasingly third and fourth generation. Because Chicago represents a significant portion of the international Lithuanian community, the documentation of this community is of high preservation priority for the cultural heritage mission of Lithuanian memory institutions and field of Baltic studies as a whole. The Lithuanian Research and Studies Center (LRSC) is home to the majority of



this community's collections as well as collections documenting the worldwide Lithuanian diaspora.

Founded in 1980, LRSC consolidated many existing collections that documented the Lithuanian diaspora and immigrant experience. This included the Lithuanian World Archives, which was founded in the displaced persons camps in which many Lithuanians found themselves during WWII. As it grew, the archives adopted a collecting policy to "not only to gather material on the life of the recent exiles but to document the life of Lithuanians throughout the world" (Liulevičius 1957). LRSC now includes nine distinct departments (Figure 1). A 2008 study of Lithuanian collections in the United States by Burchinal estimated the holdings of the LRSC at over 137,800 volumes (2008). Accounting for the fact the LRSC is continuing to grow with the aging Lithuanian community, this number is expected to grow.

### **Departments of the Lithuanian Research and Studies Center**

Lithuanian World Archives

Žilevičius-Kreivėnas Musicology Archive

Dainauskas Library and Archives

Tomas Remeikis Political Science Library

Lithuanian Museum of Medicine and Archives

Stasys Budrys Photo Archive

Freedom Museum

Lithuanian Museum

Fine Art Archive

*Figure 1*

In many ways, the LRSC is characteristic of both ethnic and community archives that gained popularity in the 1960's (Daniel 2015). Like community based heritage collections, the archives of immigrant and ethnic communities strive to document their own history due to the failure of mainstream repositories in their country of birth and adopted nation to do so (Caswell 2016). In response to the development of Web 2.0 technologies, shifting migration patterns, and contested ownership of diaspora collections, many scholars have argued that digital collections could provide a solution for documenting both ethnic and community-based collections. However, much of this work has focused on the creation of online archives for communities lacking any documentation or the digitization of collections previously held at mainstream archives. This paper will explore what role digital collections play in documenting ethnic communi-



ties that have been well -established like the Lithuanian-American community in Chicago.

Using the Lithuanian-American community as a case study, this paper will explore how digital technologies can serve the needs of diaspora collections as well as address unique challenges these repositories face in attempting to make their collections more accessible through digital collections.

## Cultural Heritage of Diaspora Communities

As previously mentioned, the cultural heritage of diaspora communities is unique in that is often of interest to cultural heritage institutions based in country of birth and adopted nations. Using the definition provided by the UNESCO, cultural heritage for the purposes of this paper is defined as, “the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations” (UNESCO). This convention called for the protection of tangible cultural heritage, placed the responsibility of protection on the states whose geographic borders contained the cultural heritage in question. However, for many nations with histories of large-scale emigration, cultural heritage is not viewed as bounded by geographic borders but rather more closely related to identities of ethnicity and language use. In this way, nations with histories of large-scale diasporas have expanded the physical boundaries of their cultural heritage mission to include the physical artefacts and intangible attributes of the transnational community.

In countries of birth, diaspora communities are often referred to as emigres, expatriates, or for example, “Lithuanians living abroad”. In examining the Baltic States specifically, these groups are often explicitly and implicitly included in the collection development policies of cultural heritage institutions. For example, the Lettonica and Baltic collection at the National Library of Latvia defines its scope as: “...works about Latvia and present Baltic countries, as well as the historic space of East Prussia, their cultural heritage: history, culture, languages, peoples’ life, traditions and outstanding personalities, history of Baltic German families,” but it specifically mentions the inclusion of “Lithuanian, Latvian and Estonian exile editions” (2018). Since its renaming in 1988, the Martynas Mažvydas National Library of Lithuania has emphasized the importance of collecting “Lithuanian publications and lituanistica regardless of the place of publication” (Gudaitis, p. 159, 2007). Furthermore, since 2000, Vytautas Magnus University has been home to the Lithuanian Emigration Institute, whose mis-



sion is entirely dedicated to collecting, study of, and preservation of archival materials related to the Lithuanian diaspora.

Particularly in Lithuania, this strong focus on the cultural heritage of the diaspora can be explained by the involvement of Lithuanians living abroad in the development of the Lithuanian nation-state and later support for a free Lithuania during the Soviet era. In fact, the Martynas Mažvydas National Library of Lithuania credits the LRSC for supporting much of its post-Soviet independence acquisitions. Following Lithuania's independence in 1990, the LRSC sent 20 tons of Lithuanian books and émigré publications from the interwar period (Gudaitis 2007). The national library was severely restricted during Soviet rule from collecting these publications. Therefore, it was institutions like the LRSC, with financial support from the diaspora community, who collected and preserved these publications.

However, in the context of adopted nations, the collection of cultural heritage materials related to diaspora communities can be characterized not only by the activities of institutions like the LRSC that have been founded by immigrants, but also by the collecting activities of mainstream, institutions interested in immigrant experience of the adopted nation. In this context, the transnational community is often referred to as immigrants, ethnic communities, or for example, "Lithuanian-Americans." As previously mentioned, institutions founded by immigrant communities in their adopted nations developed in order to document their own history because of the mainstream institutions failure to do so. In the Lithuanian and Latvian contexts, the immigrant founded cultural heritage institutions can be viewed as very direct responses to Soviet limits on collection policies and their liminal status in their adopted nations. Of all the institutions that collect these materials, immigrant community institutions must explicitly focus on building collections and preservation of diaspora cultural heritage, and have therefore developed more holistic collections related to these communities. However, these institutions often struggle with staffing and funding issues that the mainstream institutions interested in these collections do not (Noorhani 2008).

In contrast, mainstream institutions in the adopted countries of immigrants often display shifting interest and collection policies related to these communities. For example, prior to the 1960's in the United States, there was very little interest in collecting the materials of immigrant communities. However, Dominique Daniel, a scholar of ethnic archives, explains that a newfound interest in immigration and ethnic identity related to "the development of social history, the civil rights movement and the rise of ethnic politics, new immigra-



tion flows, and the evolution of immigration and ethnic studies” led to the development of ethnic archives. Institutions such as the Balch Institute and the Immigration History Research Center are examples of this development (p. 176, 2014). However, because of their wide-ranging focus on all immigrant groups in the United States, these institutions displayed shifting policies about what should be considered “ethnic.” For example, the Balch Institute refused the papers of Lithuanian American attorney Alphonsus Romeika based on a definition of ethnicity “that emphasized cultural retention and activism, rather than integration and relations between immigrants and the broader society” (Daniel p.354, 2016).

Overall, the social, political, and economic contexts in which all of these institutions operate have a profound effect on their interest in and ability to collect the physical cultural heritage of diaspora communities. Shifting interests and collection development policies related to the Lithuanian-American community has at times resulted in a complete lack of interest by mainstream institutions in the U.S. and inability to collect by institutions in Lithuania. Moreover, this disinterest directly resulted in the creation of community driven institutions like the LRSC and Balzekas Museum. Currently, there is a resurgence of interest in these collections; but due to historic separation of these collections, any holistic approach to collecting requires immense collaboration between mainstream institutions in the United States and Lithuania, as well as the smaller community driven institutions. In addition, differences in institutional policies between these institutions often recreate the discrepancies that collection development policies and interests historically did. For example, a project to digitize one of the longest Lithuanian language newspapers in the United States, *Draugas*, received support from both the Martynas Mažvydas National Library and the Library of Congress (Daugirdas 2018). Despite this widespread support, the newspaper still had to solicit community donations to create a fully functional digital archive due to policy limitations of both mainstream institutions.

## Making the Case for Diasporic Digital Collections

Acknowledging the tensions implicit from this collecting landscape and a potentially geographic disparate user base, scholars have increasingly advocated for the digitization of diaspora collections. The digitization of diaspora materials and their dissemination through Web 2.0 technologies provides a potential solution for both collections with contested ownership and user bases. Although conflicting institutional ideologies has resulted in neglect far more often than



conflict of ownership in the case of Lithuanian-American collections, one can imagine cases in which the opposite could occur. For Russian émigré collections this is very much the case. Chebotarev explains that the Bakhmeteff Archive at Columbia University, which collects and preserves Russian émigré materials, has repeatedly been asked by Russian scholars to repatriate the archive's collections to mainstream Russian institutions (2005). These calls for repatriation clearly illustrate the liminal status of the transnational Russian community with respect to cultural heritage institutions in countries of birth and adopted nations. Because the transnational or migrant status gives claim to both the country of birth and adopted nation in collecting these materials, there is the potential for conflict. In response to these conflicts, Chebotarev suggests the use of web-based tools that use common standards across collections in order to provide access to geographically dispersed and contested collections. She argues, "Such a project can lead to advances in scholarship because the disputed collection will be available on the Internet without regard to where in the world the various parts are physically located. When the materials can be made available universally, 'repatriation' need no longer be an issue" (p. 51, 2005).

Projects that unite diasporic collections also have the potential to serve a diverse user base. Due to the geographically dispersed and contested nature of diasporic collections, users interested in this subject area may face increased barriers to access. Additionally, the nature of diasporas themselves result in transnational communities whose interests may remain liminal to the cultural heritage institutions in their respective nations. For this reason, many scholars have argued in favor of digital collections for their positive effects on the ability to connect and improve representation of these transnational communities. In reference to history of ethnic archives, Dominique Daniels argues that moving forward, "the ability to assemble and arrange cultural heritage from various geographic origins offers ethnic communities new ways to shape, expand and rekindle ethnic identities" (p. 11, 2015). Moreover, a qualitative study by Caswell, Cifor, & Ramirez, about the impact of the South Asian American Digital Archive (SAADA) found that, "the work of SAADA has brought to relief the varied roles that South Asian Americans have taken on in society, providing an expansive form of 'representational belonging' that moves beyond stereotype and embodies the community's diversity" (p. 75, 2016). In this regard, digital collections of diasporic cultural heritage have the ability facilitate participation by the communities they represent and therefore challenge definitions by which mainstream institutions limit their collecting scope. Although community and ethnic archives have also historically challenged mainstream institutional definitional of what is considered ethnic, immigrant, or émigré, digital collections



decrease barriers to access, expand the geographic scope, and create the potential for increased participation by community and scholarly groups.

## Representation in Digital Collections

In respect to Lithuanian diasporic collections, their representation in digital collections is most closely related to the interests of mainstream institutions. By conducting a thorough review of the digital collections of institutions which hold Lithuanian diasporic materials, I found that the collections varied greatly in type of materials represented, descriptive metadata, and the language of the metadata all of which create barriers to access for interested users of these collections. My review of digital collections is largely based on Burchinal's 2008 study of Lithuanian resources in the United States as well as the national electronic heritage portal of Lithuania – ePaveldas. Of 82 institutions in the United States that Burchinal identified as holding significant Lithuanian collections, I found that only two provided significant digital collections (ten or more items) related to Lithuanian Americans – the Library of Congress and the Newberry (see Figure 2).

Digital Collection	Approximate Number of Items	Date Range
ePaveldas	848	1886-1995
Chronicling America (Library of Congress)	3006	1913 - 1951
Chicago Ethnic Arts Project Collection (Library of Congress)	141	1977
Draugas Digital Archive	25,100	1909-2017
Chicago Foreign Language Press Survey (The Newberry)	2599	1892-1938

This small percentage of institutions with digital collections on this subject can be in part explained by the fact that Burchinal's original study was solely based on institutions that held works in the Lithuanian language. Additionally, much of what has been digitized was related to the larger digitization projects focused on ethnic materials more generally rather than Lithuanian diasporic specific materials; the exception being the Draugas digital archive. However, that project which was completed by the newspaper itself was in part inspired by the multiple requests by outside institutions to digitize their materials.

These large-scale digitization projects by American mainstream institutions have largely focused on either the foreign press (Chronicling America, Chicago Foreign Press Survey) or ethnic arts (Chicago Ethnic Arts Project). Similarly, Lithuania's digitization has also largely focused on foreign press, boasting that



the ePaveldas portal, “will result in the most plentiful digital collection of Lithuanian expatriate press.” However, the ePaveldas portal holds (in addition to sizable arts and periodical collections) much of the ephemera and photography not included in American collections. Additionally, ePaveldas and the Draugas digital archive are the only collections to include materials past the 1990’s that represent the current activities of the Lithuanian-American community.

In comparison to the collections held by the Lithuanian Research and Studies Center (see Figure 1), the digital collections focused on the Lithuanian-American community only represent a fraction of the complexity of this community, both in terms of format and nature of the content. As a result, digital collections reinforce the interests of mainstream institutions in the digital space, mirroring their shifting scopes and collection interests. Despite their ability to provide increased access across the diasporic community, these digital collections simply recreate the failures of mainstream institutions that lead to the development of community archives. For example, barriers to access are still present through their failure to provide multilingual metadata, especially when describing multilingual works. In contrast, institutions that worked collaboratively with the Lithuanian-American community have experienced success in these areas. For example, the Draugas digital archive provides bilingual content and the ePaveldas platform presents a wider range of diasporic materials in part due to the collaboration of Martynas Mažvydas National Library with the Lithuanian Research and Studies Center.

## Conclusion and Recommendations

Although digital collections provide solutions to many of the issues related to diaspora collections, digital collections more often than not reflect the same gaps caused by shifting interests and collection policies of mainstream institutions. Additionally, the physical barriers to access caused by the fractured institutional holdings of these collections is often recreated by single language or inaccurate metadata. However, unlike the collections landscape of physical holdings, community-driven efforts like the Lithuanian Research and Studies Center are largely absent from the digital space. This can in part be explained by the lack of resources and staffing that many community archives face. Despite this lack of resources, some digital collections have resulted from community driven effort like the Draugas digital archive, which made issues of the Lithuanian-American newspaper that fell outside the scope of other digital collections available online (Daugirdas 2018). They were only able to complete this project because of col-



laboration with mainstream institutions that had previously digitized portions of their total collection. Clearly, a cooperative and collaborative model that connects mainstream and community institutions can assist in producing a truly representative digital collection of diaspora communities.

Furthermore, new models of building collections can counteract the long-standing issues diaspora collections have faced. For example, the SAADA digital archive does not physically hold items but simply borrows them to be digitized which expands their collection beyond that of traditional collecting institutions. Additionally, like many other digital archives, they also support increased participation from community members by encouraging them to submit oral histories and family photographs. By pursuing inclusive models of collaboration by which digital collections are built, diaspora collections can be more accurately represented digitally than they are through traditional models of collecting by institutions. However, formulating a collaborative framework to assess these collections across regions and countries is the first step in visualizing the full potential of transnational diasporic heritage collections.

## References

- Burchinal, L. G. (2008). Lithuanian resources at selected libraries, archives and museums in the United States. *Knygotyra*, 50, 38-48. Retrieved from <http://www.journals.vu.lt/knygotyra/article/view/7911/5783>
- Caswell, M., Cifor, M., & Ramirez, M. H. (2016). "To Suddenly Discover Yourself Existing": Uncovering the Impact of Community Archives. *The American Archivist*, 79(1), 56-81. doi: 10.17723/0360-9081.79.1.56
- Chebotarev, T. (2005). Repatriation Of The Bakhmeteff Archive: Russian Dreams And American Reality. *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage*, 6(1), 44-51. doi:10.5860/rbm.6.1.241
- Chicago Is the Capital of the Lithuanians. (1908, December 11). *Lietuva*. Retrieved from [http://flps.newberry.org/article/5423970\\_3\\_0603/](http://flps.newberry.org/article/5423970_3_0603/)
- Daniel, D. (2015). Shaping immigrant and ethnic heritage in North America: Ethnic organizations and the documentary heritage. *IdeAs*, (6). doi:10.4000/ideas.1089
- Daniel, D. (2016). Interpreting American Ethnic Experiences: The Development of the Balch Library Collections. *The Pennsylvania Magazine of History and Biography*, 140(3), 335-363. doi:10.5215/pennmaghistbio.140.3.0335



- Daugirdas, J. (2018, September 28). The Draugas digital archive. Draugas News. Retrieved from <http://www.draugas.org/news/the-draugas-digital-archive/>
- EPaveldas. (n.d.). Content of the digital cultural heritage. Retrieved from <http://www.epaveldas.lt/en/apie-portala>
- Gudaitis, V. A. (2007). The Past and the Present of the Martynas Mažvydas National Library of Lithuania. *Alexandria*, 19(3), 153-166. doi:10.1177/095574900701900303
- Liulevičius, V. (1957). Tenth anniversary of the Lithuanian World Archives. *Lituanus*, 2(10). Retrieved from [http://www.lituanus.org/1957/57\\_1\\_09Archives.html](http://www.lituanus.org/1957/57_1_09Archives.html)
- Noorhani, P. (2008). Networking the cultural heritage of the Estonian diaspora: Attempts and experiences. *Knygotyra*, 50, 236-243.
- UNESCO. (n.d.). Tangible Cultural Heritage. Retrieved from <http://www.unesco.org/new/en/cairo/culture/tangible-cultural-heritage/>



## ROLES OF DATA LIBRARIANS AND RESEARCH DATA SERVICES IN ACADEMIC LIBRARIES

Asmae Zaidane

Master Student, Graduate School of Library, Information and Media  
Science, University of Tsukuba, Tsukuba, Japan  
s1726109@s.tsukuba.ac.jp

Masanori Koizumi

Assistant Professor, Faculty of Library, Information and Media Science,  
University of Tsukuba, Tsukuba, Japan  
koizumi@slis.tsukuba.ac.jp

### Abstract

*The fast emergence of concepts like data-intensive research, data deluge, and collaborative studies, gave birth to new services necessary to manage the exponentially increasing volumes of research data, namely, research data services (hereinafter RDS) (Borgman, Wallis and Enyedy, 2007; Hey, Tansley and Tolle, 2009). The need to manage research data and RDS has led many librarians to take on new roles and re-skill or upskill their competencies in order to meet the continually evolving needs of their research community, However, these roles have yet to be defined and specified considering the skills, knowledge, and attitude of librarians regarding RDS (Auckland, 2012; Cox et al., 2017). The authors investigate the role of data librarians and its evolution in RDS provided in academic libraries through conducting a theoretical analysis of existing literature and survey data as well as Research data services and research data management models. In order to examine the aforementioned elements (concept, roles and current situation of data librarians) a review of literature was undertaken, with a date limit between 2003 and 2018, The literature included is primarily articles discussing library-led research data services, data librarians and academic libraries, and the chosen articles focused on the role or situation of data librarians in RDS within academic libraries. Results show of the change the concept of “data librarian” in terms of roles, and how that reflects on the current situation of data librarians. The value of this paper is to address two gaps in the literature, firstly, the importance of providing more information about the role of data librarians within an RDS and secondly, contributing to enriching the literature in terms of addressing data librarians’ issues and perception of RDS, as to date, little research has been conducted in this aspect (Yu, 2017; Koltay, 2017).*



**Keywords:** data librarian, academic librarian, research data services, academic libraries, theoretical analysis, information professionals

## Background

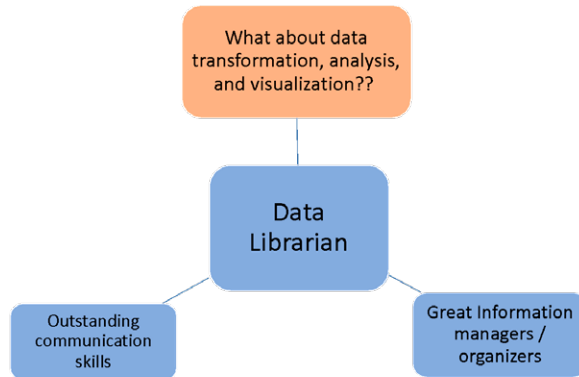
For the last two decades, emerging concepts like big data, data-intensive research, data deluge (Borgman, Wallis and Enyedy, 2007), and collaborative studies, resulted in a growing demand for a new discipline and new services that could adjust to the several research data management needs (Tenopir, Birch and Allard, 2012), therefore the birth of the “data science” concept which is on the way to become a full fledge discipline (Wang, 2018) as well as new services able to manage the exponentially increasing volumes of research data, namely, research data services (hereinafter RDS). (Borgman, Wallis and Enyedy, 2007; Swan and Brown, 2008; Hey, Tansley and Tolle, 2009).

There has been a significant debate in literature on the roles of librarians and other stakeholders in managing research data and the needed skills and training (Corrall, 2012 ; Lewis, 2010; Lyon, 2007; Donnelly, 2008), that emphasized on how RDS depends on different stakeholders or communities of interest. Federer (2016) discussed librarians’ and researchers’ implication and role in the data management process and how both stakeholders are the most important stakeholders in the RDS; A survey conducted by Tenopir et al. (2014) found that librarians and library directors are important factors towards creating an effective RDS. M. Lewis (2010) focused in his model on Researchers, student researchers and librarians skills in addition to the government implication in the success of an RDS. In their survey, Cox and Pinfield (2014) investigated the roles that librarians as a key stakeholder could take in RDS and which roles were a priority for the research community.

As great information managers and organizers, librarians might have the skills in terms of data curation and communication, but the need to integrate Research data services and deal with data science has led many librarians to take on new roles, expand their competencies and enhance their skills in order to meet the expectations of researchers and other information professionals (Osswald and Strathmann, 2012; Stanton, 2012), this manifests in the creation of a new subdiscipline, namely data librarianship and the “data Librarian” professionals (Corrall, 2012; Wang, 2018), which can be defined according to Swan and Brown (2008) as “people originating from the library community, trained and specializing in the curation, preservation and archiving of data”. Data librarians come from various backgrounds, essentially: IT, statistics, GIS, social



science and library and information science. Data librarianship can be perceived as a connection between library science and data science, as librarians must gain technical and scholarly communication expertise to perform as a data librarian.



*Figure 1.* Graph illustrating data librarians’ roles regarding data science and big data problems, adapted from “Data Science: What’s in It for the New Librarian?” by J. Stanton, 2012

Previous studies report the involvement of data librarians in the RDM life cycle (Burton and Lyon, 2017; Cox, Kennan, Lyon and Pinfield, 2017), however, data librarians’ role have yet to be defined and specified considering the required skills and knowledge in data science, and the attitude of librarians regarding research data services and research data management (RDM) (Auckland, 2012; Cox et al., 2017), previous studies have shown that a clear agreement on the definition of the data librarian’s role(s) and skills needed to perform these roles needs to be clarified (Yoon and Schultz, 2017; Tenopir et al., 2014).

## Purpose

The authors investigate the role of data librarians and their current situation in RDS provided in academic libraries through examining the definition of the concept of “data librarian” and understanding its role(s) in an RDS within an academic library. The value of this paper is to address two gaps in the literature, firstly, calling attention to the importance of providing more information about the role of data librarians within an RDS and secondly, contributing to enriching the literature in terms of addressing data librarians’ issues and perception



of RDS, as to date, little research has been conducted in this aspect (Yu, 2017; Koltay, 2017).

## Methods and procedures

In order to examine the aforementioned elements (definition, roles and current situation of data librarians) the authors adopted a methodological approach based on a theoretical analysis. A review of literature published between 2003 and 2018 was undertaken. The literature included was, primarily, articles discussing library-led research data services, data librarians and academic libraries, and the chosen articles focused on the role or situation of data librarians in RDS within academic libraries. To retrieve the relevant literature, we have used the phrases “data librarian”, “data librarian” AND “Definition”, “data librarian” AND “role”, “data librarian” AND “situation”, “data librarian” AND “RDS”, “data librarian” AND “survey”, “data librarian” AND “perception”, we run the search on diverse databases such as ACM Digital Library, Library, Information Science and Technology Abstracts (LISTA), Library and Information Science Abstracts (LISA), Library Literature & Information Science Index (EBSCOhost), Citeseer, Google Scholar, Library Science, Science Direct. We had to determine whether the retrieved literature was relevant to our research purpose; in this case, we relied on the title and abstract’s relevance to not only “data librarian” but also to “Data librarian specifically in the context of research data services”.

## Findings

Through the conducted theoretical analysis, the authors examined the definitions of the data librarian in the context of an RDS within an academic library, to provide an insight on the roles performed by data librarians and the evolution of such roles as reported in the analyzed literature, also to have a better understanding of the roles of data librarians, the authors examined eighteen models that were published for the last two decades and that were cited the most in the analyzed articles, these specific models were chosen as they were constructed for use either in a library or a research institution.



The authors illustrated the extracted data into the following:

Table 1. Research data management & services models

No.	Name of the model	Author	Year	Subject matter	Research Data services development & management										Research Data collection development & management							
					(1) Planning					(2) Training		(3) Funding	(4) Collecting		(6) Preserving / Storing							
					(1) RDM Policy (Strategy)	(2) Policy / Guidelines	(3) Standards / Requirements	(4) Human Infrastructure (RDM Team)	(5) Outreach policy	(6) Data Management Plan	(7) Staff training / Skills enhancing	(8) Business plan	(9) Sustainability plan / Sustainability & Continuity	(10) Identifying resources	(11) Selecting	(12) Archiving	(13) Institutional repositories	(14) External research repositories	(15) Others	(16) Publishing / Presentation	(17) Sharing	(18) Re-use (Repurposing)
1	The Scholarly Knowledge Cycle	Lyon	2003	RDM																		
2	DDI version 3.0 Combined Life Cycle Model	DDI	2004	RDM																		
3	The Lifecycle Model of Research Knowledge Creation	Humphrey	2006	RDS/RDM																		
4	Domain Data Deposit Model	Lyon	2007	RDS																		
5	DCC's Curation Lifecycle Model	Higgins	2007	RDM																		
6	The Integrated Scientific Life Cycle of Embedded Networked Sensor Research (ISL-CENSUR)	Pepe [et al.]	2009	RDM/RDS																		
7	The UK Research Data Service Model	Skyles	2009	RDS																		
8	Research Lifecycle	RIN /NESTA	2010	RDM/RDS																		
9	The RDM pyramid for Academic Libraries	Lewis	2010	RDS																		
10	I252 Idealized Scientific Research Activity Lifecycle Model	Patel/UKOLN	2011	RDM/RDS																		
11	Revised RDM Pyramid for Libraries	Corrall	2012	RDS																		
12	USGS Science Data Lifecycle Model	Foundeen et al.	2013	RDM																		
13	Research Lifecycle Workflow	Grigorov [et al.]	2014	RDS/RDM																		
14	A Library-Oriented Model of Institutional RDM	Cox & Pinfield	2014	RDM/RDS																		
15	The RDM Practices Model	Univ. of Sydney	2018	RDM/RDS																		
16	Research Data Service at UED	Univ. of Edinburgh	2018	RDS / RDM																		
17	RDM at the UCF	Univ. of Central FL	2018	RDM/RDS																		
18	University of Oxford RDM Chart	CEOS	2018	RDM/RDS																		

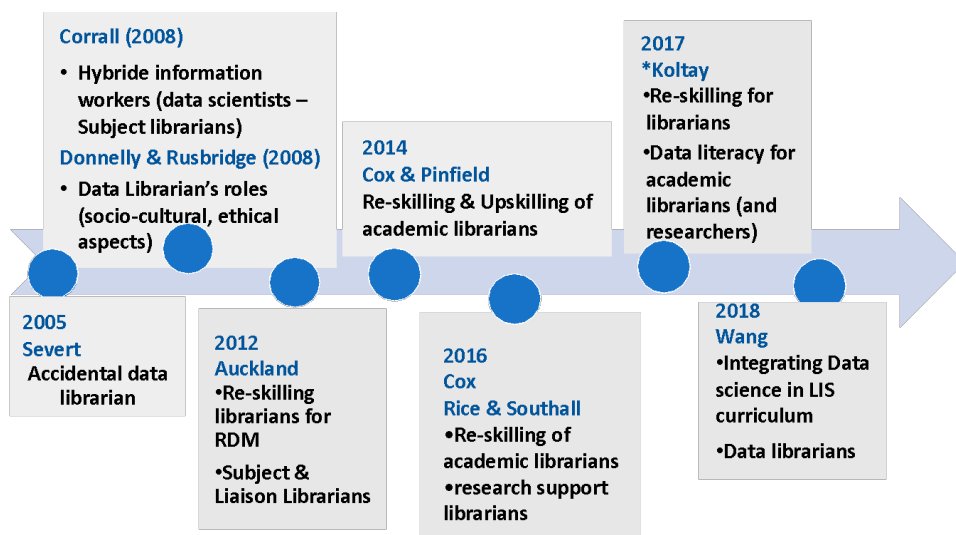


Figure 2. Timeline of data librarians' roles and definitions, as addressed by different authors



## Discussion

Through the conducted theoretical analysis, the authors examined the definitions of the data librarian in the context of an RDS within an academic library, to provide an insight on the roles performed by data librarians and the evolution of such roles as reported in the analyzed literature.

The data deluge that is extensively talked about in literature, in addition to the improvement of technology, were an incentive to the change in the type of traditional services that were offered to researchers, the changing information environment is undoubtedly impacting libraries as well, and changes in the way information is handled were necessary, "the librarian cannot sit on the fence of professional spectatorship if he/she is to meet the challenges of the changing environment" (Omekwu, 2003). As reported in literature, the origins of data librarianship as a new subdiscipline was the result of a need for managing social science data at first and then for bioinformatics data sets' management, different concepts and roles have been created for librarians in order to establish a logic extension between the roles of the traditional academic librarian and research data management's new needs.

## The evolution of data librarians in literature

Librarians that used technology for the sole reason to accomplish service goals in 1997s, and were faced later with new challenges, and various roles requiring "an updated" educational experience that would help librarians adapt to the changes and make them able to offer new services befitting of the changes. The evolution of "data librarians" and academic librarians in regard to data science can be observed through the following time line.

Cindy Severt (2005) mentioned the expression "accidental data librarian" during the IASSIST conference in Edinburgh, referring to librarians who found themselves dealing with research data without any prior training or re-skilling, as they became data librarians in order to integrate new services but still feel lacking in terms of skills. Although the emergence of concepts like big data and data science were taking place and changing the needs in terms of research support; the concept of data librarian was far from easy to integrate, in fact, many academic libraries were avoiding getting involved in research data support/services, resulting on librarians who were less informed of the implications of data librarianship in terms of skills, this is also reflected through the models' table, as it noticeable that before 2007, most models were focused on the management



of research data (RDM) skills rather than the management of the service that is responsible for RDM, for example, there was less to no interest in the staff training and skills enhancement.

Corrall (2008), brought up the concept of “hybrid information workers”, as new roles that have ambiguous status and different titles for the same job, she illustrated the growing interest in data librarians re-skilling and upskilling but still talked about data scientists and subject librarians as two different professions that are involved in RDM roles, on the other hand Donnelly and Rusbridge (2008), used the expression Data librarian in their “core skills for data management model”, focusing on the socio-cultural and ethical implication of the data librarian role (e.g.: raising awareness, negotiation skills, etc.), they have omitted some of the commonly traditional roles of the librarian, such as providing help to the research community in order to facilitate access to information, for instance “sharing” and “re-using data”, this is apparent through the RDS models’ table (the two functions (sharing, re-using) are omitted in eleven out of eighteen analyzed models, mainly those created before 2013).

In Auckland (2012) the data librarian profession was still considered a new role for librarians and she focused on subject librarians’ re-skilling to meet the new needs of researchers, nonetheless, she insisted on the continuous re-skilling of librarians in order to meet the research support needs in a continually “changing research environment”. Cox and Pinfield (2014) illustrate a big shift of interest regarding the re-skilling and upskilling of “academic librarians”, without using the appellation “data librarian”, the interest is more focused on the development and management of the research data services rather than research data management. This aligns with the changes of the research environment and information professionals’ work environment’s needs that have been taking place for the last two decades.

Cox (2016), talked about research support librarians, and focused on the skills of information professionals in dealing with the challenges of data science, he was oriented more towards the management of research data services and the research data management roles that can be taken on in an academic library’s environment. Again, this marks a shift in terms of the aspects of interest towards the librarian that engages in data science related work/projects, the interest is not only in technical or RDM oriented issues, but it has become skills and team work management. Koltay (2017) continued stressing on the importance of re-skilling and offering data literacy not only to researchers but also to data management professionals, while Wang (2018) take the discussion to a new level, the author discussed how data librarians play a critical role within



the data science “ecosystem” and their roles covers all steps of the (research) data management life cycle, including sharing, re-using, data visualization,..., and data literacy training. The author stressed more on the necessity of not only introducing data science and data literacy in the library and information science (LIS) curriculum but also making data librarians “domain specialists” in order to be able to help researchers efficiently and effectively.

## Conclusion(s)

“The ways in which we can label the roles in which information specialists are involved in data-related issues, are still evolving” (Koltay, 2015). This study is by far a comprehensive one, but the choice of articles in the timeline and the analyzed RDS/ RDM models can reflect, to an extent, a pattern of change in the interest in: data librarianship as a profession, the change of the research and professional environment and how it affects the data librarian’s roles and the interest in academic librarians as a human resources that needs a re-skilling or an upskilling in order to become a data librarian.

## References

- Auckland, M. (2012). Re-skilling for Research: An investigation into the role and skills of subject and liaison librarians required to effectively support the evolving information needs of researchers (p. 115). England: Research Libraries UK. Retrieved from <http://www.rluk.ac.uk/wp-content/uploads/2014/02/RLUK-Re-skilling.pdf>
- Borgman, C. L., Wallis, J. C., & Enyedy, N. (2007). Little science confronts the data deluge: habitat ecology, embedded sensor networks, and digital libraries. *International Journal on Digital Libraries*, 7(1–2), 17–30. doi: 10.1007/s00799-007-0022-9
- Burton, M., & Lyon, L. (2017). Data Science in Libraries. *Bulletin of the Association for Information Science and Technology*, 43(4), 33–35. doi: 10.1002/bul2.2017.1720430409
- Corrall, S. (2008). Research Data Management: Professional Education and Training Perspectives. <PowerPoint slides>. Retrieved from [https://www.academia.edu/21187260/Research\\_data\\_management\\_Professional\\_education\\_and\\_training\\_perspectives](https://www.academia.edu/21187260/Research_data_management_Professional_education_and_training_perspectives)
- Corrall, S. (2012). Roles and responsibilities: Libraries, librarians and data. In *Managing research data* (pp. 105–133). Retrieved from <http://jn2xs2wb8u.search.se>



- rialssolutions.com.ezproxy.tulips.tsukuba.ac.jp/?url\_ver=Z39.88-2004&rft\_val\_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Abook&rft.genre=bookitem&rft.btitle=Managing%20research%20data&rft.atitle=Roles%20and%20responsibilities%3A%20Libraries%2C%20librarians%20and%20data&rft.spage=105&rft.epage=133&rft.date=2012&rft.aulast=Corrall&rft.aufirst=S.&rft\_id=info%3Aid%2Fwiley.com%3AOnlineLibrary
- Cox, A. (2016). Research Data Management and the Library & Information Science professions., Retrieved from <http://conferences.sun.ac.za/public/conferences/31/papers/SULIS-Symp14-RDM-Workshop-AndrewCox.pdf>
- Cox, A. M., Kennan, M. A., Lyon, L., & Pinfield, S. (2017). Developments in research data management in academic libraries: Towards an understanding of research data service maturity. *Journal of the Association for Information Science and Technology*, 68(9), 2182–2200. doi: 10.1002/asi.23781
- Cox, A. M., & Pinfield, S. (2014). Research data management and libraries: Current activities and future priorities. *Journal of Librarianship and Information Science*, 46(4), 299–316. doi: 10.1177/0961000613492542
- Data Documentation Initiative (DDI). (2004) “DDI Version 3.0 Conceptual Model.” Working draft. Retrieved from <https://www.ddialliance.org/sites/default/files/Concept-Model-WD.pdf>.
- Donnelly, M. (2008). Research Data Management Forum: RDMF2: Core Skills Diagram. from <http://data-forum.blogspot.com/2008/12/rdmf2-core-skills-diagram.html>
- Federer, L. (2016). Research data management in the age of big data: Roles and opportunities for librarians. *Information Services & Use*, 36(1–2), 35–43. doi: 10.3233/ISU-160797
- Faundeen, J. (2013) The Evolution, Approval and Implementation of the U.S. Geological Survey Science Data Lifecycle Model. *Journal of ESience Librarianship*. 6(2) doi: .
- Grigorov, I., Carvalho J., Davidson J., Donnelly M., et al. (2014) “Research Lifecycle Enhanced by an ‘Open Science by Default’ Workflow.” Retrieved from <https://zenodo.org/record/49960#.XBVf9FxKiUk>.
- Hey, T., Tansley, S., & Tolle, K. (2009). *The Fourth Paradigm: Data-Intensive Scientific Discovery*. Washington: Microsoft Research.
- Higgins, S. (2008) The DCC Curation Lifecycle Model. *International Journal of Digital Curation* 3(1), 134–40. doi: d.



- Humphrey, C. (2006) "E-Science and the Life Cycle of Research." Association of Research Libraries, Retrieved from <https://era.library.ualberta.ca/items/3334684b-fa6a-4c9d-a74b-559fed42f9f>.
- Kellam, L., & Thompson, K. A. (2016). *Databrarianship: The Academic Data Librarian in Theory and Practice* - ProQuest. Chigago: Association of College and Research Libraries, a division of the American Library Association,. Retrieved from <https://search-proquest-com.ezproxy.tulips.tsukuba.ac.jp/docview/1808433223?pq-origsite=summon>
- Koltay, T. (2017). Data literacy for researchers and data librarians. *Journal of Librarianship & Information Science*, 49(1), 3–14.
- Lewis, M. J. (2010). Libraries and the management of research data. In S. McKnight (Ed.), *Envisioning Future Academic Library Services* (pp. 145–168). London: Facet Publishing. Retrieved from <http://www.facetpublishing.co.uk/title.php?id=046916#.VtR2MvmLSUk>
- Lyon, L. (2003) "EBank UK: Building the Links Between Research Data, Scholarly Communication and Learning." *Ariadne*, 6. <http://www.ariadne.ac.uk/issue36/lyon>.
- Lyon, L. (2007). *Dealing with data: report*. UK: University of Bath. Retrieved from [http://www.ukoln.ac.uk/ukoln/staff/e.j.lyon/reports/dealing\\_with\\_data\\_report-final.pdf](http://www.ukoln.ac.uk/ukoln/staff/e.j.lyon/reports/dealing_with_data_report-final.pdf)
- Omekwu, C. O. (2003). Information technology revolution, libraries and cultural values: issues, impacts and inevitable challenges for Africa. In *World Library and Information Congress: 69th IFLA General Conference and Council*, Berlin (p. 23).
- Osswald, A., & Strathmann, S. (2012). The Role of Libraries in Curation and Preservation of Research Data in Germany: Findings of a survey (p. 10). In *World Library and Information Congress: 78th IFLA General Conference and Assembly*, Helsinki: IFLA. Retrieved from <<https://www.ifla.org/past-wlic/2012/116-osswald-en.pdf>>
- Patel, M. (2011). *I2S2 Idealised Scientific Research Activity Lifecycle Model*. Retrieved from <http://opus.bath.ac.uk/35186/>
- Pepe, A. & Mayernik M., et al. (2009). From Artifacts to Aggregations: Modeling Scientific Life Cycles on the Semantic Web. *Journal of the American Society for Information Science and Technology*, 61(3), 567-582. doi: 10.1002/asi.21263.
- RIN, and NESTA. (2010) *Open to All? Case Studies of Openness in Research*. Research Information Network. Retrieved from [http://www.rin.ac.uk/system/files/attachments/NESTA-RIN\\_Open\\_Science\\_V01\\_0.pdf](http://www.rin.ac.uk/system/files/attachments/NESTA-RIN_Open_Science_V01_0.pdf).
- Severt, C. (2005). *Discovering a Profession: the accidental data librarian*. Presented at the IASSIST Conference, Edinburgh. Retrieved from <https://iassistdata.org/blog/discovering-profession-accidental-data-librarian>



- Sykes, J. (2009). UK Research Data Service Feasibility Study: A Briefing. Presented at the GROUP RPEG, London. Retrieved from [http://eprints.lse.ac.uk/25570/1/UKresearchDataServiceFeasibility3\\_Oct08%28LSERO%29.pdf](http://eprints.lse.ac.uk/25570/1/UKresearchDataServiceFeasibility3_Oct08%28LSERO%29.pdf).
- Stanton, J. M. (2012). Data Science: What's in it for the New Librarian? Retrieved from <https://ischool.syr.edu/infospace/2012/07/16/data-science-whats-in-it-for-the-new-librarian/>
- Swan, A., & Brown, S. (2008). The skills, role and career structure of data scientists and curators: An assessment of current practice and future needs [Monograph]. Retrieved from <https://eprints.soton.ac.uk/266675/>
- Tenopir, C., Birch, B., & Allard, S. (2012). Academic Libraries and Research Data Services: Current Practices and Plans for the Future, An ACRL White Paper. *IFLA Journal*, 39(1), 70–78.
- Tenopir, C., Sandusky, R. J., Allard, S., & Birch, B. (2014). Research data management services in academic research libraries and perceptions of librarians. *Library & Information Science Research*, 36(2), 84–90. doi: 10.1016/j.lisr.2013.11.003
- Wang, L. (2018). Twinning data science with information science in schools of library and information science. *Journal of Documentation*, 74(6), 1243–1257. doi: 10.1108/JD-02-2018-0036
- Yoon, A., & Schultz, T. (2017). Research Data Management Services in Academic Libraries in the US: A Content Analysis of Libraries' Websites. *College & Research Libraries*, 78(7), 920–933.
- Yu, H. H. (2017). The role of academic libraries in research data service (RDS) provision. *Electronic Library*, 35(4), 783. doi: 10.1108/EL-10-2016-0233



## DIGITAL TRACES OF USERS OF POLISH UNIVERSITY LIBRARIES WEBSITES

Michał Żytomirski

Doctoral Student, Department of Information, Library and Book Science,  
Faculty of Philology University of Lodz  
michal.zytomirski@uni.lodz.pl

### Abstract

*Current technological development forces many people to use digital devices both during their professional and private lives. The increasing scale of the spread of cyberspace generates new research fields for technical fields, but also for sociological and computer science (informatology). One of that field is the study of digital traces of digital devices users. This work presents preliminary results of research on users of selected websites of Polish university libraries. The current research group has exceeded 600,000 individual users and the results include their ways of using these sites and demographic, geophographic, technological and social data - the tool used for data analysis is Google Analytics. The main research goals are to find answers to the following questions: what are the ways in which users operate in the examined environment, what information goals and barriers to them guild users and who are the users themselves (without referring to personal data) The work presents a Taylor and Francis database analysis in order to find scientific papers on analyzing academic library websites using the Google Analytics tool. These studies are intended to help the development of knowledge about the academia community mainly in terms of its needs related to searching for scientific information.*

**Keywords:** academic community, cyberspace, digital footprints, google analytics, university libraries.

### Introduction and analysis of the Taylor and Francis database

Every second, more than 64,000 Gigabytes of data are sent in internet (InternetLiveStats, online) - this is the equivalent of memory of approximately 130 laptops with a standard capacity. A significant part of the data collection are digital traces, in definitional terms it is referred to as "change in the binary code of the teleinformation system, as well as a digital device capable of processing, sending, collecting data packets, resulting from external (physical) or internal (remote) interference" (Kasprzak 2015, p. 23).



In November 2018 about 4 billion 80 million people had access to the Internet (InternetLiveStats, online), while the population of humanity at the same time was estimated at about 7.5 billion (US Census, online). This means that currently about 55% of the entire population has access to the Internet - it should be noted that the growth rate of the number of network users is greater than the dynamics of population growth. Therefore, it can be concluded that while maintaining the current trend, the percentage of Internet users in relation to the total population will grow.

Contemporary, European lifestyle forces people to use digital devices - both in the aspect of private and professional life (Lambiotte, Kosiński, 2014). With reference to the Polish academic community, understood as a group of students, graduates, academics and administrative staff, we can make the thesis that this community can not function without the use of digital devices - because most processes related to administration and the collection of scientific information are based or supported by digital systems. An example of this situation may be the process of borrowing documents from the university library, which requires the user to log in to the library system. Therefore, the fact is that the academic community leaves countless digital traces of its activity on websites belonging to universities.

One of the basic tools for generating and analyzing data about website users is Google Analytics. This tool allows, among other things, to identify users' information needs by analyzing their ways of using websites or mobile applications. In addition, the study described in this article uses Google Analytics to show the demographic, geographic and technological characteristics of the study group.

In contrast to the basic research methods, eg the questionnaire method, data generated by digital footprint analyzes are devoid of a declarative character - because these analyzes are based on real activities performed by users of digital devices, and as Michał Kosiński notes in article *Mining big data to extract patterns and predict real life outcomes*, how we use our digital devices is closely related to our habits and needs (both professional and private). Thanks to this dependence, we almost never manage to use digital devices any differently than we want or need, and it is through this fact that the analysis of digital traces gives a real picture of users' behavior, shows their real needs and information habits and psychological or social characteristics.

This article presents the analysis of the Taylor & Francis digital database, which provides useful articles in the field of work on analyzing digital traces (behaviors) of users of academic library websites. The main purpose of the article is



to present the demographic and geographical cross-section of the users of the libraries under study and to identify the information needs of this group. In addition, the article presents additional statements, such as the percentage of which digital devices the examined group uses. All statistical data presented in the article come from the study of Polish university libraries, which are carried out as part of the doctoral thesis of the author of the article (Analysis of information needs of website users of Polish university libraries using the Google Analytics tool). The measurements presented in the study were conducted from January 2018 to December 2018. The tool used in the study was Google Analytics.

### Analysis of databases to find literature related to the use of tools analyzing the behavior of library users of websites

The largest database of articles directly related to the use of tools for analyzing user behavior in the field of university libraries, which was found for the purpose of the article, can be available in the resources of the Taylor & Francis database. Entering the phrase “analytics library website” and narrowing down the search to information sciences gives about 500 results. After narrowing the search, about 150 results were obtained in the field related to information science in the academic field. After analyzing the abstracts of the received articles, it can be stated that the chosen research field corresponds to 18 publications available in the selected database:

1. Adam Chandler & Melissa Wallace (2016) Using Piwik Instead of Google Analytics at the Cornell University Library, *The Serials Librarian*, 71:3-4, 173-179, DOI: 10.1080/0361526X.2016.1245645
2. Amanda Nichols Hess & Mariela Hristova (2016) To search or to browse: How users navigate a new interface for online library tutorials, *College & Undergraduate Libraries*, 23:2, 168-183, DOI: 10.1080/10691316.2014.963274
3. Anne E. Rauh & Stephanie J. H. McReynolds (2016) Telling Our Story: A Case Study of a Collaborative Departmental Blog at Syracuse University Libraries, *New Review of Academic Librarianship*, 22:2-3, 315-324, DOI: 10.1080/13614533.2016.1181664
4. Anne Sara (2015) Responsive web design for libraries: A LITA guide, *The Australian Library Journal*, 64:2, 159-160, DOI: 10.1080/00049670.2015.1040362



5. Anthony S. Chow (2017) Getting to Where You Want to Go: Designing Information Systems and Using Your Data Through the Application of Analytics and Informatics, *Serials Review*, 43:3-4, 188-194, DOI: 10.1080/00987913.2017.1366889
6. Christine Tobias & Amy Blair (2015) Listen to What You Cannot Hear, Observe What You Cannot See: An Introduction to Evidence-Based Methods for Evaluating and Enhancing the User Experience in Distance Library Services, *Journal of Library & Information Services in Distance Learning*, 9:1-2, 148-156, DOI: 10.1080/1533290X.2014.946354
7. Christine Tobias (2017) A Case of TMI (Too Much Information): Improving the Usability of the Library's Website through the Implementation of LibAnswers and the A-Z Database List (LibGuides v2), *Journal of Library & Information Services in Distance Learning*, 11:1-2, 175-182, DOI: 10.1080/1533290X.2016.1229430
8. Doug Way (2010) The Impact of Web-scale Discovery on the Use of a Library Collection, *Serials Review*, 36:4, 214-220, DOI: 10.1080/00987913.2010.10765320
9. Erin Crane (2016) Tech Matters: Effectively Integrating Google Analytics with LibGuides at Germanna Community College, *Community & Junior College Libraries*, 22:3-4, 141-148, DOI: 10.1080/02763915.2017.1374717
10. H. Jamane Yeager (2017) Using EZproxy and Google Analytics to Evaluate Electronic Serials Usage, *Serials Review*, 43:3-4, 208-215, DOI: 10.1080/00987913.2017.1350312
11. Jessica Mussell & Rosie Croft (2013) Discovery Layers and the Distance Student: Online Search Habits of Students, *Journal of Library & Information Services in Distance Learning*, 7:1-2, 18-39, DOI: 10.1080/1533290X.2012.705561
12. Kirsty Bower, Nick Sheppard, Jennifer Bayjoo & Adele Pease (2017) Establishing the Role and Impact of Academic Librarians in Supporting Open Research: A Case Study at Leeds Beckett University, UK, *New Review of Academic Librarianship*, 23:2-3, 233-244, DOI: 10.1080/13614533.2017.1318767
13. Linda Frederiksen (2016) The Complete Guide to Using Google in Libraries, *Journal of Access Services*, 13:1, 48-49, DOI: 10.1080/15367967.2016.1162057



14. Lisa Kruesi (2015) Web Metrics for Library and Information Professionals, *Australian Academic & Research Libraries*, 46:2, 143-144, DOI: 10.1080/00048623.2015.1031627
15. Natalie Haber, Steven Shelton & William Chassaing (2018) UX and Your Library: A Scalable Model, *Journal of Library & Information Services in Distance Learning*, DOI: 10.1080/1533290X.2018.1498636
16. Paul Betty (2009) Assessing Homegrown Library Collections: Using Google Analytics to Track Use of Screencasts and Flash-Based Learning Objects, *Journal of Electronic Resources Librarianship*, 21:1, 75-92, DOI: 10.1080/19411260902858631
17. Steven J. Turner M.L.I.S. (2010) Website Statistics 2.0: Using Google Analytics to Measure Library Website Effectiveness, *Technical Services Quarterly*, 27:3, 261-278, DOI: 10.1080/07317131003765910
18. Sue Manuel, James Dearnley & Graham Walton (2009) Library Website Management and Maintenance: A Study of the Uk 1994 Group, *New Review of Academic Librarianship*, 15:1, 68-96, DOI: 10.1080/13614530903116504

During the further analysis of the content, articles were extracted that directly relate to the use of Google Analytics to measure the behavior of users on the websites of academic libraries:

1. Adam Chandler & Melissa Wallace (2016) Using Piwik Instead of Google Analytics at the Cornell University Library, *The Serials Librarian*, 71:3-4, 173-179, DOI: 10.1080/0361526X.2016.1245645
2. Dragos, S.-M., 2011. Why Google Analytics cannot be used for educational web content. doi.org/10.1109/nwesp.2011.6088162
3. Erin Crane (2016) Tech Matters: Effectively Integrating Google Analytics with LibGuides at Germanna Community College, *Community & Junior College Libraries*, 22:3-4, 141-148, DOI: 10.1080/02763915.2017.1374717
4. Fang, W. Using Google Analytics for improving library website content and design: a case study, *Rutgers University Community Repository*, 2007. DOI: doi.org/doi:10.7282/T3MK6B6N
5. Ian Barba , Ryan Cassidy , Esther De Leon & B. Justin Williams (2013) Web Analytics Reveal User Behavior: TTU Libraries' Experience with Google Analytics, *Journal of Web Librarianship*, 7:4, 389-400, DOI: 10.1080/19322909.2013.828991



6. Linda Frederiksen (2016) The Complete Guide to Using Google in Libraries, *Journal of Access Services*, 13:1, 48-49, DOI: 10.1080/15367967.2016.1162057
7. Paul Betty (2009) Assessing Homegrown Library Collections: Using Google Analytics to Track Use of Screencasts and Flash-Based Learning Objects, *Journal of Electronic Resources Librarianship*, 21:1, 75-92, DOI: 10.1080/19411260902858631
8. Steven J. Turner M.L.I.S. (2010) Website Statistics 2.0: Using Google Analytics to Measure Library Website Effectiveness, *Technical Services Quarterly*, 27:3, 261-278, DOI: 10.1080/07317131003765910

## Research field, chronological scope, goals and research methodology

The websites of selected Polish university libraries constitute a research field for the presented research results. There are 18 public universities in Poland, the research described in this article has been subject to the websites of 6 libraries:

- Library of the Cardinal Stefan Wyszyński University in Warsaw (UKSW)
- Library of the University of Łódź (UŁ)
- Library of the Nicolaus Copernicus University in Toruń (UMK)
- Library of the University of Opole (UO)
- Library of the University of Szczecin (US)
- Library of the University of Warmia and Mazury in Olsztyn (UWM)
- University of Warsaw Library (UW)

Data presented in the article were generated within 11 months - start of measurements 01.01.2018, end of measurements 04.12.2018.

As described by Wei Feng, the Google Analytics tool can be used in your article, *Using Google Analytics for Improve Library Website Content and Design: a case study*, to:

- determining the behavior of users made on the examined websites;
- determining the effectiveness of the website's functioning;
- improving the quality of information services;
- improvements in the appearance and functionality of the website, to be tailored to the needs of users (F. Wei, 2007).

The described research was carried out to answer the following questions:



- How do users use library websites?
- What information is the user looking for on the library websites?
- To what extent websites correspond to users' information needs?
- What are the users of the websites studied (demographic, geographic and social)?
- To answer these questions, methods of analyzing digital footprints were used, which are offered through the Google Analytics (GA) tool - based on the experience of the researchers presented in the above bibliographical list.

Sanda-Maria Dragos (S.M Dragos, 2011) stated that Google Analytics can not be used to measure the information behaviors of users of the websites of libraries and other cultural institutions. This is the only position presented in this article, which critically refers to the described research tool. Nevertheless, the arguments used by the author are not unfounded and remain largely up to date - it was decided to refer to these conclusions in this article. The author said that GA was designed to measure commercial behavior, and websites of public institutions, in principle, should not be commercial. What's more, the author has accused that the measurements made by this tool are not accurate, eg the system can read that people connect from city A where they actually connect from city B.

While the fact is that GA is most often used in the field of e-commerce, the data presented later in this article constitute a scope that is not directly the result of commercial analyzes (eg sales effectiveness). 7 years have passed since the publication of the mentioned article, GA analytic algorithms have been significantly improved over this period, however, the possibility of distortions should still be remembered. Due to this, the analyzed data should be limited to the control research group. In the data presented below, a narrowing to 55% of the total population was applied - for the removal of purely statistical measurements, in which the overall research group was presented.

The study uses the following Google Analytics reports:

1. Recipients
  - a. Overview
2. Demographic data
  - a. Age
  - b. Gender
3. Geographical data
  - a. Location



- b. Language
- 4. Technology
  - a. Browser and system
- 5. Users flow
  - a. Narrowed to the country

## Results of statistical analyzes

From January 2018 to the beginning of December 2018, the study covered 668,103 users of the researched websites. This number shows that the use of GA allows you to carry out research on an unprecedented scale. Behavioral analyzes were based on data (digital traces) that users left while they was using websites. These data come from more than 2 million made sessions and less than 4.5 million hits made,. Thanks to this data, it is possible to identify demographic, geographic and behavioral features of users.<sup>1</sup>

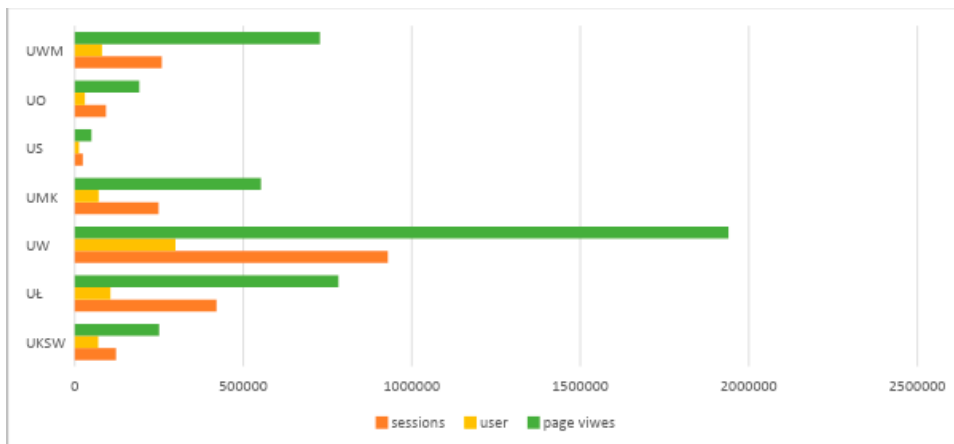


Figure 1. Sessions, users, page views

In statistical terms, there are approximately 3 sessions per user and less than 7 page views. However, it should be noted that the overall ratio of new users to

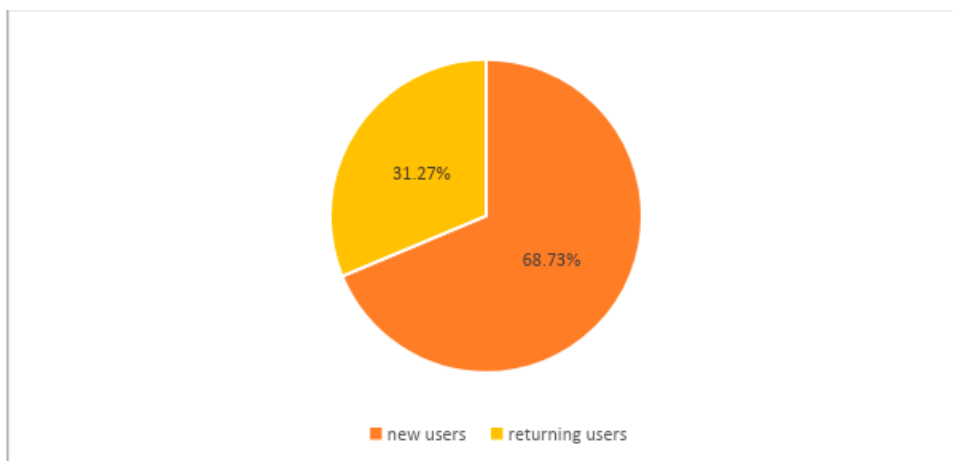
<sup>1</sup> The session is understood as the time in which the user actively uses the website. Page views are understood as visits on individual tabs. Example - a user who only once used the website, but at that time reviewed 5 tabs he made 1 session and 5 views.



fixed users is 68.73% to 31.27%. Therefore, it can be concluded that there are fewer sessions per user and fewer views.

Thanks to this, two theses can be put forward:

1. Only 1/3 of the academic community periodically uses the website of their university libraries.



*Figure 2. The ratio of new users to returning users*

2. These users usually know what they are looking for, because they make less than 7 hits during the session, which means that they usually know where they want to go.

In addition, traffic on the examined websites is not permanent, this means that the activity of users varies depending on the time of the academic year (activity increases during examination sessions), from the day of the week (the highest activity was recorded on Mondays, Tuesdays and Wednesdays) and the time of day (the highest activity was recorded between 10:00 - 15:00). These dependencies are common to all studied library websites. Therefore, to cover the overall picture of data statistical analyzes must be conducted at a minimum of one full academic year. An investigator who would analyze traffic on library sites only during the examination session or only during the holiday season would receive an incomplete dimension of the phenomenon.

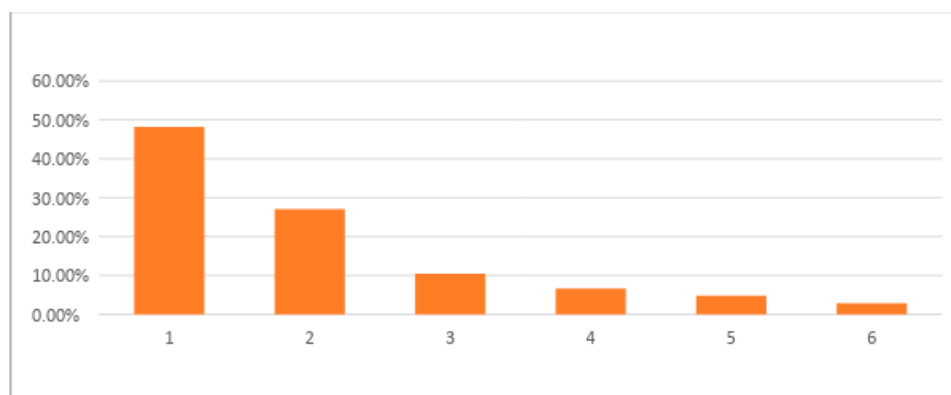


## Results of analyzes of demographic and geographical data

In the observation of the academic environment, it can be concluded empirically that the largest group in this community are students. Analyzes of digital traces confirm this fact, what makes it possible to determine which part of the whole surveyed population are students and which university employees. It should be noted that students of Polish public universities are obliged to pass the so-called “library training”, and thus at least once they have to use the university’s library website. Thanks to this, it is possible to cover a large research group in this study. This dependence may affect the distortion of the results of analyzes, because university employees, including academics, are not obliged to use the resources of university libraries websites.

The following data was generated based on analyzes of 55% of the entire research group. The standard age group corresponding to the group of students is between 18 and 24 years old - this group constitutes 48.2% of the surveyed population.

The second largest age group are people aged from 25 years to 34 years. This group consists of students, doctoral students and so-called young scientists. This group constitutes 27% of the surveyed population. This means that about 75% of the surveyed population is young.



*Figure 3. Age groups of the users of the websites studied*

Against the background of all the surveyed institutions, the highest percentage of users of university library sites in the 18-24 age group was recorded in the field of the University of Szczecin website (54%), while the lowest percentage in this age group was recorded in the Figure 4. Age groups at individual universities



field of Nicolaus Copernicus University in Toruń (42.8%). Changes in the distribution of age ranges analyzed over the academic years may provide answers to questions related to the university development plan. For example, if the university assumes an increase in recruitment, it should observe an increase in the number of people who belong to the 18-24 age group. Data of this type should be compared with the data on the number of people admitted to the university, thanks to which it will be possible to present the level of involvement of a group of students in scientific development.

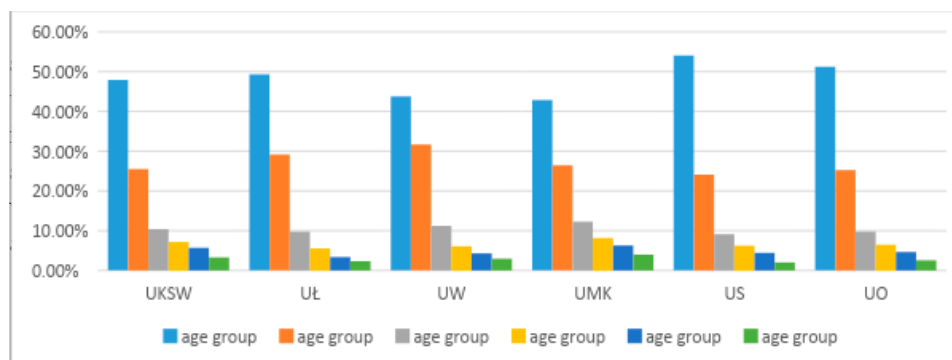


Figure 4. Age groups at individual universities

Gender analysis of users showed that 69% of the population are women, and 31% of the population are men. The highest percentage of women was observed in the field of the University of Opole (71.5%), while the lowest in the field of the University of Warsaw (66.8%).

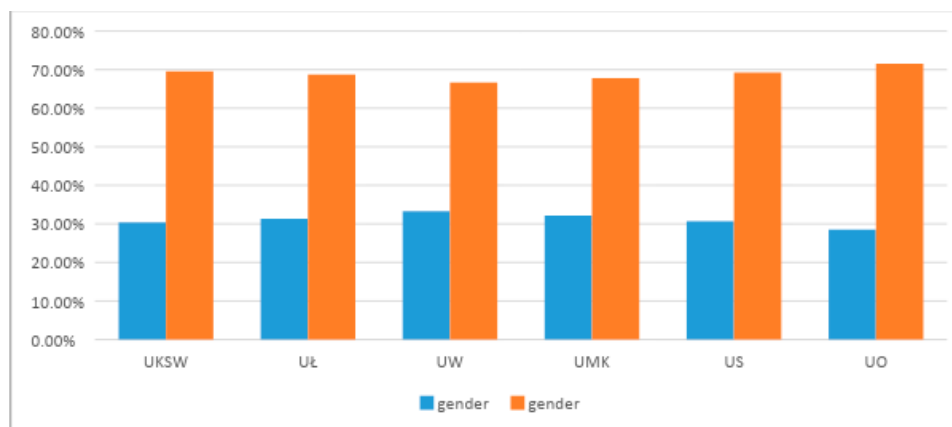


Figure 5. Gender proportions at individual universities



This analysis shows that the academic university environment in Poland is feminized.

Another important segment of data that can be analyzed by Google Analytics in relation to university library websites is the language used by their users. This segment was identified as a key one because the language barrier is one of the most important information barriers. On the scale of 7 websites studied, 2 of them did not have the possibility to open the site content in a language other than Polish. The remaining 5 sites allowed to open the content in English.

About 95% of all surveyed users speak Polish, the second leading language is English (about 3%), Russian (about 1%) and French (about 1%). In the perspective of these data, it can be concluded that translating the content of the university library website into English should reduce the problem of language barrier to a minimum. This conclusion can be supported by the fact that English is the current language of study and the percentage of people speaking in other languages is not a significant part of the surveyed community.

In addition, the study looked at which countries users connect to the websites studied. In a natural way, most users use these websites from Poland, then from the United States of America, Germany, Great Britain and France.

## Results of technological data analysis

Another important information barrier is the so-called technological barrier. An example of this barrier is the total or partial disabling of the user's content on the site due to the tools / digital devices used by him. One should ask what digital prejudices users use when using the university library website.

71.25% of users of the websites studied use laptops or desktop computers to use their resources, over 25.25% use smartphones and 1.5% use tablets for this purpose. In addition, it can be stated that Windows is the most commonly used operating system for laptops and desktops, while Android is the leading system for mobile devices. The most commonly used web browsers are Chrome, FireFox and Safari.

The above information is particularly important in the process of developing a website template, because not all projects are displayed in the same way in any digital environment. This relationship is most visible in the perspective of displaying the website on mobile devices - smartphones or tablets. In the perspective of the 7 examined websites, 2 were not responsive - this means that using



them on mobile devices is difficult. In the perspective of these two websites, the percentage of mobile devices used by users is lower than the average for the whole group. This fact may mean that websites that offer convenient access to content through mobile devices are more likely to be visited by users through smartphones and / or tablets.

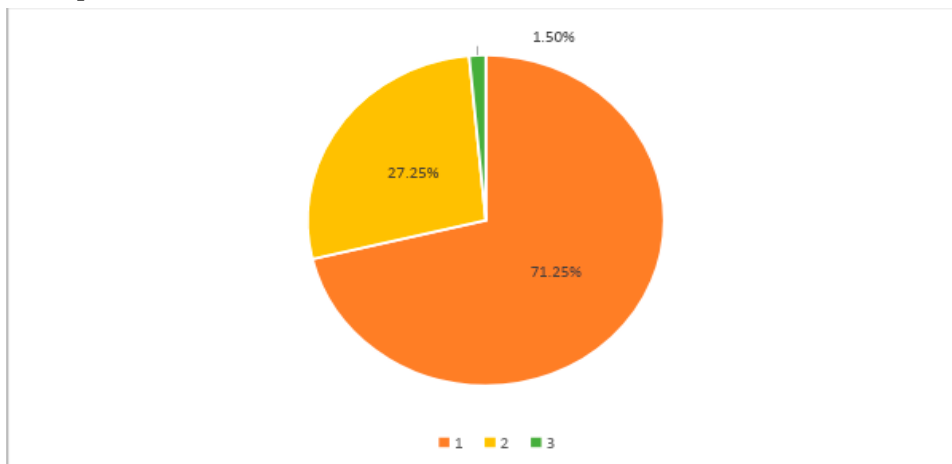


Figure 6. Digital devices used by users

In the perspective of the presented data, where almost 1/3 of all users use mobile devices to connect to the websites of the libraries under study, it can be stated that having a responsive website is currently desired by the users of these websites.

## Content searched by website users

What kind of content is searched by users of the surveyed websites? This is the most important research question of this work. You can supplement them with further questions, ie, how do users search information on websites and find them? The largest 3 examined websites were used to present this segment due to the number of users - the University of Warsaw Library, the University of Lodz Library and the Library of the Nicolaus Copernicus University in Toruń. In order to standardize the measurements, the data was limited to a sample of 100,000 sessions made by users in the period 01.01.2018 - 04/12/2018 and then the sample was narrowed down according to the category of the country joining the party (in each case it was Poland).



In all cases, it was found that users are looking for information in the three basic segments:

1. Access to the catalog - approx. 75% of all sessions;
2. On-line resources - approx. 20% of all sessions;
3. Library opening hours and information about the library - about 5% of all sessions.

Missing percentages of data is a collection of sessions during which users searched for information other than those highlighted above. For example, in reference to the University of Lodz Library, it was information about the opening hours of gardens belonging to the library, which are a tourist attraction of this object. In the perspective of all surveyed websites, information on how to use the catalog is often sought after.

This study showed that the most prominent content on the websites of university libraries in Poland should be the main catalog, access to e-resources and basic information about the library: opening hours, address and contact. In addition, it can be stated that other content such as news or information about social media are not used by users. However, this method does not allow to determine whether users have found the content they were looking for. This is because if a given user was looking for information on how to prepare a bibliographic inventory and this information is not available on the tested website, it is not possible to record this event in the survey.

However, the analysis of this segment allows you to set priorities in the process of building a website. It is worth developing those fields that are often used by users. In the perspective of these data, it should be stated that the majority of users who use the websites studied will visit them in order to reach the catalog and it is this functionality that should be developed by administrators of these websites. The next step is to ensure the visibility and functionality of e-resources, on-line catalogs and information about the library with an emphasis on the opening hours. In the perspective of the rest of the libraries studied, users' interest in information on the methods of bibliography creation can also be noticed - this relationship is not visible in the majority of researched sites, because information in this field is not desirable, is not available on them or is not sufficiently exposed.



## Summary

Summing up the analysis of data from the perspective of technology and the way users behave, it can be concluded that the websites of university libraries in Poland should be developed for the users of laptops / desktops as well as mobile devices (mainly smartphones). In addition, these pages should be designed in such a way as to display bookmarks / information on access to the root directory as well as electronic resources and information on the use of the catalog, the construction of bibliographic footnotes and information on the institution's opening hours and locations.

From a technical point of view, the website template of the university library should be optimized mainly in terms of operation in the Windows and Android software environment. In the second place, administrators should make sure that these websites work properly in the MacOS and iOS (Apple) software environment. In addition, it will optimize the site's operation at the corner of Chrome, FireFox and Safari browsers. Analyzing data in terms of demographic and geographical features of users may prove particularly important in the perspective of conducting promotional activities of universities and in the perspective of verifying these activities.

Analyzing the academic environment from the perspective of digital traces left by it allows for the coverage of the entire population while maintaining high relevance between real users' needs and research results. This article presents data that originates from activities carried out by over 660,000 users of the websites surveyed. This work presents the preliminary results of research and the possibility of analyzing the traces of digital users of selected websites of university libraries in Poland using the Google Analytics tool. A full list of analyzes and conclusions will be published in a doctoral thesis written by the author of this article in the Department of Informatology and Bibliology of the University of Lodz.



## References

- Dragos, S.-M. (2011). Why Google Analytics cannot be used for educational web content. <https://doi.org/10.1109/nwesp.2011.60881622>.
- Fang, W. Using Google Analytics for improving library website content and design: a case study, Rutgers University Community Repository, 2007. DOI: <http://dx.doi.org/doi:10.7282/T3MK6B6N3>.
- Kosinski, M., Wang, Y., Lakkaraju, H., & Leskovec, J. (2016). Mining big data to extract patterns and predict real-life outcomes. *Psychological Methods*, 21(4), 493-506. DOI: <http://dx.doi.org/10.1037/met00001054>.
- Kasprzak, W. (2015). *Cyfrowe ślady: studium prawno-kryminalistyczne*, Dyfin, Warszawa, ISBN: 9788379306992.
- Lambiotte, R., Kosinski, M. (2014) "Tracking the Digital Footprints of Personality," in *Proceedings of the IEEE*, vol. 102, no. 12, pp. 1934-1939, Dec. 2014. DOI: 10.1109/JPROC.2014.2359054.
- Internet Live Stats, <http://www.internetlivestats.com/>, acces december 2018.
- Population clock, United States Census Bureau, <https://www.census.gov/popclock/>, acces december 2018.
- Taylor and Francis Online, <https://www.tandfonline.com/>



## P A P E R S

S u b t h e m e :

Information profession(als) and discipline



## LEARN TO WORK TOGETHER: TRENDS IN SOCIAL AND COLLABORATIVE INFORMATION SEEKING

Laura Avià

Information and Documentation Student, University of Barcelona, Spain  
laviabos7@alumnes.ub.edu

### Abstract

*Information seeking is often performed in collaborative contexts (Hertzum and Hansen, 2018). Social and Collaborative Information Seeking (SCIS) is a relatively new area of study concerned with the seeking and acquiring of information from social spaces on the Internet (Shah, 2017). The purpose of this paper is to identify and detail ideas that contribute to learn to work together, and it is focused on the need to create collective consciousness to take advantage of virtual social spaces. This literature review presents an overview of the idea of learning to work together, from a general view to the specific featured fields. Also, it provides a discussion about the defined issues and the future directions established until now. This study is based on the systematic review of twenty-two up-to-date Social and Collaborative Information Seeking articles, published since 2016, in order to know the current status of SCIS research. The online sources ACM Digital Library, LISA, Google Scholar and JASIST were searched with this criterion. The librarian has acquired enough knowledge or methods to be specialized in these tools in order to become a fundamental part of the educational team. For all that, it is interesting to learn with the information sought by others. This review recognises the need to save time, and this could be achieved by not repeating the same search queries and by grouping different search queries to expand knowledge.*

**Keywords:** social and collaborative information seeking (SCIS), collaborative search, information seeking, group work, social media

### Introduction

Social Information Seeking (SIS) is a field of research that involves studying situations, motivations and methods involved in people's seeking and sharing of information in participatory online social sites, as well as building systems for supporting such activities (Shah, 2017). Social and Collaborative Information Seeking (SCIS) can encourage, foster and measure learning. If learning dimensions are integrated into information seeking processes, we can extend the us-



age of information access systems into different learning contexts (Shah, 2017). SCIS research is dominated by exploratory studies and lab experiments.

The tools to support SCIS must be virtual, in order to facilitate work from anywhere (Dixon, 2017). SCIS has five defined characteristics: there must be a common goal among the members, they should be independent to experiment on their own, a trusting environment is needed, the patterns and needs of the team must be established in advance and, as I mentioned, the teams have to work in a virtual space.

In addition, awareness is a central feature of team cognition and is the result of the interaction between an agent and his environment (McNeese and Reddy, 2017). The awareness activities range from the time of the search to the change of the behaviour.

## Methodology

The aim of this literature review is to know the current state of SCIS research. During the research, the resources ACM Digital Library, Google Scholar, Library and Information Science Abstracts (LISA) and the Journal of the Association for Information Science and Technology were used.

The search query has been formulated combining these keywords: social, collaborative, information seeking, information behavior, Shah, social media, learn. In all sources, the temporary scope was defined from 2016 up-to-date in order to retrieve the most recent articles and to know what is currently published about SCIS. There is no geographical scope determined, but one study showed that in SCIS field, Eastern and Western realities are very different (Tian, 2015) and it is possible to appreciate cultural differences.

A total of twenty-two articles were selected for this paper taking into account these criterion. Former papers were not selected because there were analysed into previous reviews by Shah, as the current main author in this field.

## The idea of learning to work together

### **Collaborative Information Seeking and its studies**

Collaborative information seeking (CIS) is of growing importance in the information sciences and human-computer interaction research communities



(McNeese and Reddy, 2017). It can be either in a specific workplace setting or in a more open community or environment (Hansen and Widén, 2016).

It is called Social and collaborative information seeking (SCIS) because often it is not possible to separate social and collaborative dimensions and we may be able to support human information behavior in ways not previously possible (Shah, Capra and Hansen, 2017). SCIS can be defined as two or more persons interacting with each other doing searches on the (or looking for information needs on the web) web and collaboratively resolving a shared information need (Tao and Tombros, 2016) or, simpler, individuals searching information to collaboratively complete an informational task (Tsai and Yang, 2018). CIS studies concern how the collaborating actors consult their sources and make use of the information obtained from them (Hertzum, 2017). Some studies aim to unravel what activities people engage in to seek information collaboratively and competently in real-life situations, while other aim to create and evaluate technologies to support people in their collaborative search (Hertzum and Hansen, 2018).

### **Systems and social media**

The field of CIS underwent a fundamental shift thanks to the rapid development of computer-mediated communication and computer supported cooperative work (Lee and Kang, 2018). Greater understanding of their aspects is important for designing systems that can better support collaboration (Leeder and Shah, 2016). Conceptualizing the contexts will contribute to the development of the system (Choi and Shah, 2016).

The quick changes in the relevance and the actionability of real time information make “collaborative grounding” crucial to the work of the social media monitors (Bhat, Moreno and Best, 2018). Information seeking is an essential type of information behaviour on asynchronous social media. (Scheibe, Fietkiewicz and Stock, 2016).

### **Users as collaborators**

Individuals are often faced with various types of barriers and failures when they look for information (Wang and Shah, 2016). Some of these barriers can be the language seeking or the use of searching advanced commands. Therefore, users collaborate when they do not have enough individual knowledge and obtain help from others who are learning individually (Wu, Liang and Yu, 2018).



They use social networking sites for seeking practical information about offline matters and obtain substantial enacted support from other users (Tian, 2015).

Researchers have focused on people's individual experiences and retrieval and data access practices (Given and Kelly, 2016). The social interactions of collaborators and use of social media have not been considered yet for information seeking and sharing purposes during CIS (Fardous, Du and Choo, 2017).

### **Benefits: learn, help, share, work**

Inside the fast-paced environment in which organizations now function, if they are unable to learn, they are left behind (Dixon, 2017). Nowadays, many students collaborate in producing and sharing information in participatory on-line environments (Leeder and Shah, 2016).

Working collaboratively could be beneficial in many situations that present an extremely difficult task for an individual (Shah, Hendaheva and González-Ibáñez, 2017). Helping users writing effective answers is beneficial for subject area learning for both inquirers and the recipients of answers (Frens, Walker and Hsieh, 2018). Through working together, participants obtain better outcomes than those achieved by individual efforts (Choi, Shah and Singh, 2016).

### **Awareness or consciousness**

There are some featured fields identified during the review of the literature, but not all articles have them. The most prominent concept is "awareness", whose use in the literature is much greater than "consciousness". Many of CIS-related team activities are associated with developing awareness, and that is why it is necessary to focus on the use of awareness, to support interaction during collaborative activities (McNeese and Reddy, 2017). The awareness of other group members' activity takes value while working on a project, and this group awareness can also inspire new ideas (Leader and Shah, 2016). CIS tasks cannot be tackled without making sense of the task and encountered information together with collaborators (collaborative sensemaking) (Tao and Tombros, 2016).

The key components of successful community-based knowledge creation are information sharing and gathering activities in support of the group's welfare (Given and Kelly, 2016). The psychological costs of information seeking are nearly absent in CIS studies, because the collaboration is portrayed as smooth and free of tension, apart from the complications of the task (Hertzum, 2017).



Emerging technologies help people to find information and share their knowledge with ease (Choi, Shah and Singh, 2016).

### *Research' dimensions and resources*

CIS has stimulated various research dimensions, like patterns as co-searching, co-browsing, collaborative navigation, social searching or collaborative filtering (Lee and Kang, 2018). Therefore, is possible to find information seeking activities into two other dimensions: collaborative dimension and social nature (Shah, Capra and Hansen, 2017). Here has been little research on the information seeking behavior of college students collaboratively using library resources (Leeder and Shah, 2016). Some of the key concepts are user intent in search and learning as part of search process (Shah, Hendaheewa and González-Ibáñez, 2017).

### **Collaborative online tools**

Nowadays it is frequent the use of online tools to content discussion and information sharing (Tsai and Yang, 2018). Question and answer' (Q&A) services enable computer-mediated interpersonal communication with other people through new information and communication technologies (Choi and Shah, 2016). There is a huge opportunity for Q&A to support informal, self-directed learning by encouraging high-quality answers (Frens, Walker and Hsieh, 2018).

Social media can be integrated in collaborative domain during information seeking (Fardous, Du and Choo, 2017). Social media monitoring can relate to CIS as it involves teams seeking meaning from information retrieved from social media platforms (Bhat, Moreno and Best, 2018).

According to that, social information, even if it comes from an informal source, is very useful since it is used to facilitate collaboration between individuals.

## **Issues and discussion**

### **Achieving the goal**

CIS tools can include tips and instructions on how to evaluate the quality of sources, such as criteria for credibility analysis. (Leeder and Shah, 2016). Social methods of awareness are critical to develop team cognition during CIS (Mc-



Neese and Reddy, 2017). Gamification elements, like virtual presents or levels, can be important motivational factors (Scheibe, Fietkiewicz and Stock, 2016).

There is a need for a design solution that reduces the amount of cross-communication (Bhat, Moreno and Best, 2018). Systems would get an advantage if they can accurately match information seekers to people who have the expertise and the willingness to help in a timely manner (Wang and Shah, 2018).

Social media and cloud drives have become popular collaborative platforms to share information (Tsai and Yang, 2018). Social media is identified as mostly used media for information seeking (Fardous, Du and Choo, 2017).

### **Group features**

There is a waste of group' potential when group work is divided into independent subtasks, because no attention has been paid, previously, to the cultivation of comprehensive abilities (Wu, Liang and Yu, 2018). A clearly divisible task could lead to improved performance with the help of added project members, but this does not apply for a non-divisible task (Shah, Hendaheva and González-Ibáñez, 2017). There is a considerable dearth of research concerning the information behavior of groups that focus on collective experiences (Given and Kelly, 2016).

One of the specific types of information behavior which further streamline a group project is group decision-making (Lee and Kang, 2018). The mix of information culture and CIS gives a more holistic perspective to information use and practices in organizations (Hansen and Widén, 2016).

Collaborators need a common space to work together, and the system should provide flexible features to support collaborative sensemaking (Tao and Tom-bros, 2016). This space cannot necessarily be face-to-face as can be virtual too. In the same way, structures and organization are needed to effectively share resources, datasets, methods and findings (Shah, Capra and Hansen, 2017).

### **Roles and interaction**

Each team has its leader and it is his responsibility to establish routines for learning and observe teams' work over time (Dixon, 2017). Despite the above, being a leader does not always mean to grab more opportunities to learn and experience (Choi, Shah and Singh, 2016). Each team should also have some rules to follow in order to gain experience as a collaborative group. These rules can be



related about the tools to be used to search information or languages rules to search. However, these rules does not need to be so strict into the group, but as a general agreement rules to follow.

The need for feedback can be translated into the opportunity to inform answerers about the effectiveness of their responses and direct them to improve (Frens, Walker and Hsieh, 2018). Delivering additional information on an asker's motivations would let users answer a question by identifying both what an asker's need and how they evaluate information quality (Choi and Shah, 2016).

Although students create seemingly similarities online, they can be positioned in different offline networks (Tian, 2015).

## Conclusions and future directions

Here are collected the ideas to think about the ways SCIS research could explore:

### Evaluation and quality

Collaborative systems have to bet for integrate effective search skills, critical thinking and evaluation skills support (Leeder and Shah, 2016). This could be achieved by developing more systematic approaches to synthesize online information behavior of askers and responders and how they evaluate information quality (Choi and Shah, 2016). Also, by adjusting the information handling strategies in the workplace, on individual as well as group and organisational level (Hansen and Widén, 2016).

CIS could assist in establishing collaborative practices for monitoring critical events in real-time (Bhat, Moreno and Best, 2018). It would be good to develop a prototype CIS system to support collaborative sensemaking (Tao and Tombros, 2016).

### Research methods

Usually, there is a need to investigate more users using a large sample (Wu, Liang and Yu, 2018). Also to perform quantitative analysis to further examine relationships between certain types and frequencies of information behavior (Lee and Kang, 2018). An emerging area of study is the nature of information



behavior within groups. Consequently, collectivist group approaches should be added to information behavior research (Given and Kelly, 2016).

### **Independence of action**

There is a need for a shared model that provides a context for appraising the findings of individual CIS studies and cumulatively absorbs the findings of individual CIS studies (Hertzum and Hansen, 2018). Another requirement is to create an appropriate collaboration condition for the former part of a project and let individuals work independently on the latter (Shah, Hendaheva and González-Ibáñez, 2017).

This could be achieved by investigating the factors that influence individuals' choices of information sources or channels (Wang and Shah, 2018). Furthermore, analyzing data to identify whether or not users with different CIS profiles utilize online tools differently (Tsai and Yang, 2018). On the whole, to balance theories of feedback with the practical needs of the community (Frens, Walker and Hsieh, 2018).

### **Nature of the contents**

CIS tools should integrate features of social media (Fardous, Du and Choo, 2017). To do so, it could be considered the multiple applications used in various types of chat communication (Choi, Shah and Singh, 2016). To better understand the relationship between social networking sites' use, social capital and offline life, is need to know who provides informational, social and emotional support in other contexts (Tian, 2015).

### **The role of the librarians**

It would be beneficial to study the learning routines of virtual teams (Dixon, 2017). In addition, support student learning and improve collaborative search systems to assist students. Furthermore, investigate new or improved system functions and determine whether such system changes improve the outcomes of students CIS behavior (Leeder and Shah, 2016).

Librarians could find the way to become moderators of virtual spaces, by sharing links to library resources and collaborative tools, and supporting by this way students' learning and the academic community' concerns. The role of the



librarian could be giving personalized assistance to students, by advising which virtual tools are more accurate in order to save time and achieve better marks in group work.

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## References

- Bhat, K., Moreno, A., & Best, M.L. (2018). Collaborative information seeking through social media updates in real time. In *Proceedings of the 2018 Conference on Human Information Interaction & Retrieval* (pp. 221-224). New York: ACM. doi: 10.1145/3176349.3176869
- Choi, D., Shah, C., & Singh, V. (2016). Which team benefits from collaboration? Investigating collaborative information seeking using personal and social contextual signals. In A. Grove, D. H. Sonnenwald, L. Harrison, C. Blake, C. Schlögl, I. Peters, B. Endler-Jobst, C. Cool, Y. Theng (Eds.), *Creating Knowledge, Enhancing Lives through Information & Technology: Proceedings of the 79th ASIS&T Annual Meeting*. Copenhagen: ASIS&T. Retrieved from: <http://delivery.acm.org.sire.ub.edu/10.1145/3020000/3017599/a152-choi.pdf>
- Choi, E., & Shah, C. (2016). User motivations for asking questions in online Q&A services. *Journal of the Association for Information Science and Technology*, 67(5), 1182-1197. doi: 10.1002/asi.23490
- Dixon, N. (2017). Learning together and working apart: routines for organizational learning in virtual teams. *The Learning Organization*, 24(3), 138-149. doi: 10.1108/TLO-12-2016-0101
- Fardous, J., Du, J.D., & Choo, K.R. (2017). Investigating mobile social media users' Behaviors in tourism collaborative information seeking. In *Proceedings of the 2017 Conference on Human Information Interaction and Retrieval* (pp. 395-397). Oslo: ACM. doi: 10.1145/3020165.3022167
- Frens, J., Walker, E., & Hsieh, G. (2018). Supporting answerers with feedback in social Q&A. In *Proceedings of the Fifth Annual ACM Conference on Learning at Scale*, article 10. doi: 10.1145/3231644.3231653



- Given, L.M., & Kelly, W.B. (2016). Collectivist information behavior: mentoring circles as sites for knowledge creation. In A. Grove, D. H. Sonnenwald, L. Harrison, C. Blake, C. Schlögl, I. Peters, B. Endler-Jobst, C. Cool, Y. Theng (Eds.), *Creating Knowledge, Enhancing Lives through Information & Technology: Proceedings of the 79th ASIS&T Annual Meeting*. Copenhagen: ASIS&T. Retrieved from: <http://delivery.acm.org.sire.ub.edu/10.1145/3020000/3017506/a59-given.pdf>
- Hansen, P., & Widén, G. (2016). The embeddedness of collaborative information seeking in information culture. *Journal of Information Science*, 43(4), 554-566. doi: 10.1177/0165551516651544
- Hertzum, M. (2017). Collaborative information seeking and expertise seeking: different discourses about similar issues. *Journal of Documentation*, 73(5), 858-876. doi: 10.1108/JD-04-2016-0053
- Hertzum, M., & Hansen, P. (2018). Empirical studies of collaborative information seeking: a review of methodological issues. *Journal of Documentation*, 75(1), 140-163. doi: 10.1108/JD-05-2018-0072
- Lee, J., & Kang, J.H. (2018). Crying mothers mobilise for a collective action: collaborative information behaviour in an online community. *Information Research*, 23(2), paper 792. Retrieved from: <http://InformationR.net/ir/23-2/paper792.html>
- Leeder, C., & Shah, C. (2016). Collaborative information seeking in student group projects. *Aslib Journal of Information Management*, 68(5), 526-544. doi: 10.1108/AJIM-12-2015-0190
- Leeder, C., & Shah, C. (2016). Library research as collaborative information seeking. *Library & Information Science Research*, 38(3), 202-211. doi: 10.1016/j.lisr.2016.08.001
- McNeese, N.J., & Reddy, M.C. (2017). The role of team cognition in collaborative information seeking. *Journal of the Association for Information Science and Technology*, 68(1), 129-140. doi: 10.1002/asi.23614
- Scheibe, K., Fietkiewicz, K.J., & Stock, W.G. (2016). Information behavior on social live streaming services. *Journal of Information Science Theory and Practice*, 4(2), 6-20. doi: 10.1633/JISTaP.2016.4.2.1
- Shah, C. (2017). *Social Information Seeking: Leveraging the Wisdom of the Crowd*. New York: Springer International Publishing.
- Shah, C., Capra, R., & Hansen, P. (2017). Research agenda for social and collaborative information seeking. *Library & Information Science Research*, 39(2), 140-146. doi: 10.1016/j.lisr.2017.03.005



- Shah, C., Hendahewa, C., & González-Ibáñez, R. (2017). Two's not always company: collaborative information seeking across task types. *Aslib Journal of Information Management*, 69(1), 22-35. doi: 10.1108/AJIM-06-2016-0075
- Tao, Y., & Tombros, A. (2016). How collaborators make sense of tasks together: A comparative analysis of collaborative sensemaking behavior in collaborative information-seeking tasks. *Journal of the Association for Information Science and Technology*, 68, 609-622. doi: 10.1002/asi.23693
- Tian, X. (2015). Network domains in social networking sites: expectations, meanings, and social capital. *Information, Communication & Society*, 19(2), 188-202. doi: 10.1080/1369118x.2015.1050051
- Tsai T.I., & Yang, W.L. (2018). How do pre-service teachers work "together" on curriculum development projects: a study on tools and tasks in collaborative information behavior. In Chowdhury G., McLeod J., Gillet V., Willett P. (Eds.), *Transforming Digital Worlds. iConference 2018. Lecture Notes in Computer Science*, vol 10766. Cham: Springer. doi: 10.1007/978-3-319-78105-1\_59
- Wang, Y., & Shah, C. (2016). Exploring support for the unconquerable barriers in information seeking. In A. Grove, D. H. Sonnenwald, L. Harrison, C. Blake, C. Schlögl, I. Peters, B. Endler-Jobst, C. Cool, Y. Theng (Eds.), *Creating Knowledge, Enhancing Lives through Information & Technology: Proceedings of the 79th ASIS&T Annual Meeting*. Copenhagen: ASIS&T. Retrieved from: <http://delivery.acm.org.sire.ub.edu/10.1145/3020000/3017553/a106-wang.pdf>
- Wu, D., Liang, S., & Yu, W. (2018). Collaborative information searching as learning in academic group work. *Aslib Journal of Information Management*, 70(1), 2-27. doi: 10.1108/AJIM-03-2017-0063



## REGIONAL NETWORK OF LIBRARY INFORMATION SYSTEMS - COBISS.NET

Davor Bračko

Mag., IZUM – Institute of Information Science, Maribor 2000, Slovenia  
davor.bracko@izum.si

### Abstract

*Library information systems represent a very important infrastructure for the modern knowledge-based information society. They are essential for the modern education system and research as well as for cultural, technological and economic development. Libraries have to keep pace with knowledge and culture, and they must provide conditions required for dialogue and cooperation, which represent the most important basis for development. Libraries can do this more effectively if they are linked in a uniform library information system. COBISS (Co-operative Online Bibliographic System and Services) represents an organizational model of joining libraries into a library information system with shared cataloguing, the COBIB shared bibliographic/catalogue database and local databases of participating libraries, the COLIB database on libraries, the CONOR authority database, and a number of other functions. COBISS has been providing e-services supported by modern information and communication technology to libraries and library users since the 1980s. We would like to present the usability of the COBISS system to the wider expert community. As a foundation of culture, science and education, COBISS is meeting the needs of librarians, researchers and readers, and enabling the achievement of goals needed for the transition to the modern and efficient knowledge society and for the functioning therein.*

**Keywords:** libraries, library network, information access, EU digital agenda, information systems, research systems

### Introduction

Library information systems represent a very important infrastructure for the modern knowledge-based information society. They are essential for the modern education system and research as well as for cultural, technological and economic development. Libraries have to keep pace with knowledge and culture, and they must provide conditions required for dialogue and cooperation, which represent the most important basis for development. Libraries can do this more



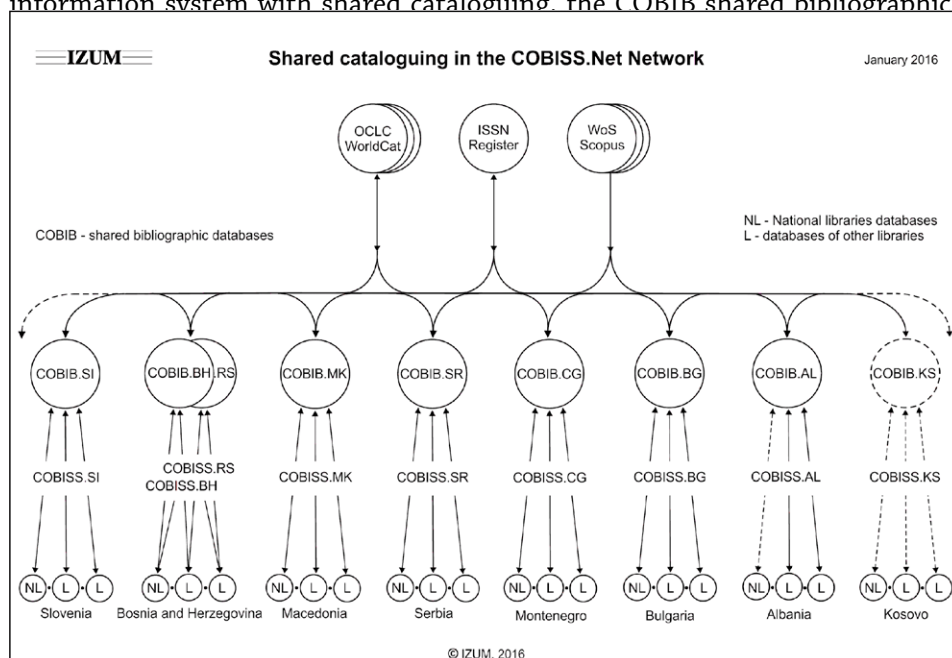
effectively if they are linked in a uniform library information system. The COBISS system is a part of the national library information system, on which the school system and research as well as cultural, technological and economic development in Slovenia and in some other countries of the region are based.

## Materials and Methods

A number of various resources of user feedback and information gathered from websites were used. Quantitative and qualitative analyses were performed concerning the quality of bibliographic records, comments from users of the mobile app and web services, user requests and commendations as well as their satisfaction with the provision of reference help. Additionally, the analysis regarding the compliance of the COBISS system services with the latest guidelines of the EU directives was also performed.

## About the Cobiss System

COBISS represents an organisational model of joining libraries into a library information system with shared cataloguing, the COBIB shared bibliographic/





*Figure 1. Scheme of autonomous library information systems on the COBISS platform with shared cataloguing in the COBISS.net network*

The **National COBISS Centre (NCC)** is a library information service that carries out the following tasks:

- planning and co-ordinating activities related to linking of libraries in the COBISS system;
- providing computer capacity for the operation of the system and the central services;
- providing COBISS software and manuals for shared cataloguing; local library functions and other services;
- managing the COBIB shared bibliographic database;
- organising training and professional help to libraries and other users of COBISS software and services;
- verification of suitability of library staff qualification for shared cataloguing purposes;
- professional help to libraries with the conversion and transferring of data from other systems.

In Slovenia, the tasks of the National COBISS Centre are carried out by the Institute of Information Science (IZUM). In other countries, these are generally departments within the national library.

Within the library information system based on the COBISS platform, the **participating libraries** may have a status of:

- the national member, which is assigned to the national library that actively participates in the shared cataloguing and performs special tasks (cataloguing national publishing output, provision of training for librarians, proficiency verification of record creators (cataloguers), cataloguing quality control, etc.);
- a full member, which is assigned to any library that participates in shared cataloguing and may contribute their records into the shared bibliographic database if the cataloguers have appropriate permits/privileges for shared cataloguing. Without the appropriate permits, cataloguers are not allowed to contribute records into the shared database; they can only download records from the shared database to their local databases.

COBISS has been providing e-services supported with modern information and communication technology to libraries and library users since the 1980s. This has resulted in an increased provision of e-services to library users in Slovenia and abroad, and in the increase of their reach, considering and responding



to the challenges of the modern society, such as diversity, integration, fairness and adaptability for various user groups and profiles. (COBISS Platform, 2018)

In 2017, Slovenian libraries created 155,879 bibliographic records (on books and for the needs of bibliographies) in the COBIB.SI shared bibliographic/catalogue database that now holds 5 million records, which belong to the 21-million strong holdings of the Slovenian libraries and 36-million in COBISS.net combined. (Kazalci rasti, 2018) These records on books, articles, journals, graphic material, CDs, films and other material types are available to public and searchable with the COBISS software. The COBISS end users are primarily library members (1,2 million memberships in Slovenia), researchers, librarians and others. (Kazalci rasti, 2018) Thus, the range of users, for whom the software is intended, is very wide. The method of use also varies considerably. COBISS must fulfil the needs of different user profiles, from a primary school student, who is only renewing a loan for books they need for their school project, to a researcher, who is using logical operators in advanced search to find scientific articles. The software is intended for everyone, who is looking for relevant information or material available in libraries, and this also includes electronic material.

Despite dealing with very different user profiles, all users expect the software to fulfil their needs or help them achieve a goal. This is where the role of designers and developers comes into play. Their task is to create a product that will guarantee the best user experience to the widest range of users and in the most uniform and efficient way. In order to achieve this, we are designing the COBISS software in accordance with:

1. The guidelines of the financier and the EU agenda
2. Technological and social development
3. User opinions and requests

IZUM has been contributing significantly to the fulfilment of strategic goals and programme priorities of UNESCO in the fields of library automation and the concept of information systems for monitoring research results in the region. This is why in 2011 UNESCO granted IZUM the status of a regional category 2 centre for library information systems and current research information systems. In this role, IZUM takes care of:

- co-ordination of the development and operation of the shared bibliographic system and services;
- co-ordination of the development and application of standards for computer support to meet the requirements of the shared bibliographic system and services;



- software development and maintenance to meet the requirements of the shared bibliographic system and services;
- determination of the suitability of library staff for shared cataloguing purposes, in co-operation with the National Libraries of the countries participating in COBISS.net;
- planning and maintenance of the central computer and communications capacity to enable the functioning of the system;
- management of the offer of databases on electronic data carriers, with direct access by agreement with their producers;
- organisation of professional training and counselling in the fields covered by the shared bibliographic system;
- coordination of the information system for monitoring research activities in the different COBISS.net countries;
- participation in public programmes for the development of COBISS.net as a means for developing knowledge societies in the region;
- engineering for the development and maintenance of a computer and communications infrastructure in educational, research and cultural organisations;
- research, development and counselling in its field of work.

## Shared Cataloguing and Responsibility for the Quality of Bibliographic Records

Shared cataloguing enables a rational division of labour and saves time and effort in the demanding procedure that is processing library material and maintaining catalogues. Once a bibliographic record is processed, it is available to all other participants in the system and the COBISS.net network through the COBIB shared bibliographic/catalogue database.

In shared and local databases in the COBISS.net system, as well as in the Slovenian COBISS.SI system, several quantitative milestones were passed: in the local COBISS.net databases, the 25-millionth record was created; in the local COBISS.SI databases the 14-millionth record was created; and in the shared COBISS.net databases, the 11-millionth record was created. (Kazalci rasti, 2018)

The databases store bibliographic records for different types of material (monographs, serials, integrating resources, articles and other component parts), for the purposes of managing personal bibliographies of authors and researchers, and also for performed works.



The shared cataloguing system is conceived in such a way that each bibliographic resource is catalogued only once; once catalogued, the record for this resource becomes available to all COBISS.net network members. Consequently, the quality of bibliographic records in the COBISS system is of utmost importance. Records represent the basis of the bibliographic/catalogue databases and, thus, of the COBISS system. The quality of bibliographic records has an impact on the services available to people searching for information and to library visi-

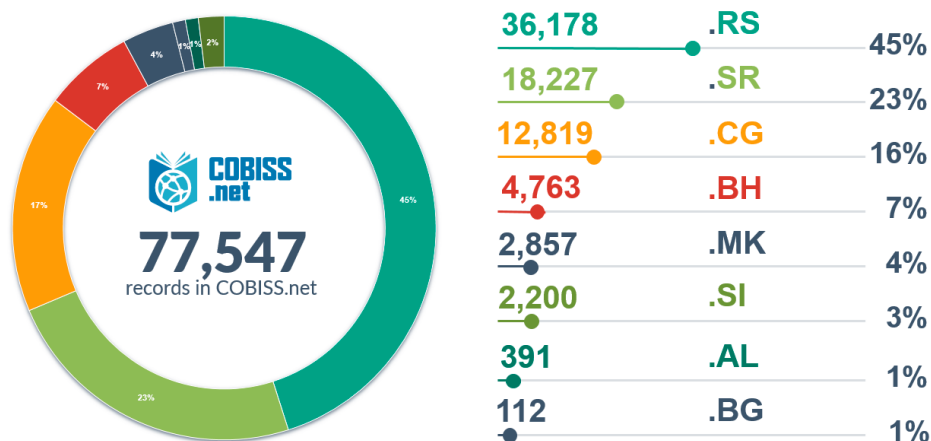


Figure 2. Bibliographic record interchange in COBISS.net in 2017

## Access to Information in Libraries

Libraries are treasure troves of knowledge holding millions of items. Searching for library material has been computer-aided for several decades, and development in this field in recent years has been especially rapid. New technologies are emerging, new options are presenting themselves, and – most of all – the habits and demands of users, searchers of information, are changing. The experience of many internet users today is shaped by internet giants and social media. That is why the usability of software, which enables access to information in library catalogues and other databases, is a vital factor in guaranteeing a user experience that the users of modern internet solutions are expecting.

Today, COBISS+ enables libraries and end users to access information in over 889 libraries in Slovenia (the neighbouring region is in the process of adoption). (Cobiss.net, 2018) The COBISS+ software was developed from scratch, and along with all of the functionalities of its predecessor, it offers users a range of new features.



**COBISS+ is a web application** that enables libraries and end users to access:

- bibliographic/catalogue databases in the COBISS system (COBIB and local databases of libraries),
- other COBISS databases (COLIB, CORES, CONOR, ELINKS, SGC),
- certain specialised databases (of domestic or foreign database providers),
- databases on remote Z39.50 servers.

(COBISS Platform, 2018)

**mCOBISS mobile app** as a simpler and more effective method of accessing information in libraries.

mCOBISS is the mobile version of COBISS+, which was developed in accordance with modern trends and technologies. It provides a faster and simpler access to a wide range of COBISS services, improves their availability, efficiency, impact and user experience, and by doing so considerably simplifies the access to the right information at the right time.

The mCOBISS app is an innovative solution that does not only fulfil the existing needs but also encourages and fulfils new needs and eliminates the present-day problems of the digital society. It also increases the range of e-services available to library users in Slovenia and abroad, and expands their reach to the field of mobile devices.

## Local Applications

When dealing with the local applications, a great deal of attention has been given to the uniformity of data entry and the display of local data intended for end users. The uniformity has been provided to a great extent by the COMARC/H format for holdings data. Besides, prior to including an individual library in the system, the national COBISS centre and the respective library agree on how to enter local data. The data entry is adapted so as to render an end-user as friendly presentation as possible, and at the same time preserve the uniqueness of the work organisation in any of these libraries.

The **COBISS3/Acquisitions** software module consists of the following procedures for acquiring library materials (monographs) and managing financial resources in funds.

The **COBISS3/Serials** software module includes all the procedures for acquiring serials and managing financial resources in funds.



The **COBISS3/Holdings** software module allows complete management of holdings data.

The **COBISS3/Loan** software module enables loan.

The **COBISS3/Interlibrary Loan** software module includes all the procedures in which the library acts as a library ordering materials from other libraries, and all the procedures in which the library acts as a library supplying materials from its own collection.

The **COBISS3/Reports** software module enables generating various reports, which can be printed or sent via e-mail. Reports are prepared on the basis of data from all COBISS3 software modules.

(COBISS Platform, 2018)

## Other Applications and Services

**Bibliographies of Researchers** is a web application allowing the preparation of personal bibliographies of researchers provided that beside standard bibliographic data the COBIB database records also include the unique ID (researcher's code) of the author and the designation of the type of bibliographic unit according to the valid typology of documents/works for bibliography management within the COBISS system. By selecting the entry parameters, several different types of reports can be prepared. In Slovenia, some of the functions of this application have already been integrated in the Slovenian current research information system, i.e. SICRIS and are used to evaluate the bibliographic indicators of research performance. (COBISS Platform, 2018)

**SICRIS** is structured under internationally-approved standards and classification schemes and EU recommendations (CERIF – Common European Research project Information Format). The databases are interconnected and most of the data is presented in multiple languages. SICRIS has a link to the COBIB.SI bibliographic database, which also allows users a direct insight into researchers' bibliographies.

The following entities are currently presented in SICRIS:

- 973 research organisations with registered employees,
- 1568 research groups with registered employees,
- 15195 employed researchers,
- 425 active research projects,



- 331 active research and infrastructure programmes),
- 941 research equipment.

SICRIS also allows viewing of presentation pages of more than 500 European projects of the EU Framework Programmes directly from the Projects database within the CORDIS system. (Slovenian Current Research Information System, 2018)

## User training

User training is a vital component of the development of every information system. This is why we at IZUM are paying close attention to it. Apart from the typical courses presented in this programme we also organize presentations of new features and special online courses covering a wider area of our activities. In 2017, we conducted 123 classes in 380 days for 1,424 participants. (Kazalci rasti, 2018)

## The *Ask a Librarian* reference service

One of the fields, where the COBISS system connects libraries and users of library services, is that of general or reference questions. The *Ask a Librarian* reference service is designed cooperatively, with the nine included libraries acting as equal participants. This cooperation between libraries in the form of answering reference questions is now in its 14<sup>th</sup> year. During this period, more than 33,000 questions have been posed by users and answered by librarians.

## The Compliance of the COBISS System with National and European Directives

Information and communication technologies are an important part of the EU's strategy for strengthening economic growth, promoting European digital potential and responding to the challenges of a modern, global world. The Digital Agenda is one of the seven leading incentives of the Europe 2020 strategy and it should provide a fast, sustainable and inclusive growth to the European Union in this decade.

COBISS is pursuing a global goal – to encourage the development and improve the offer of e-services in different areas of the information society. In doing so, it is directly contributing to the expansion of publicly accessible e-services, and



actively shaping the concepts of technological development, organisation and business in the fields of culture, science and education, all of which contributes to the transition to a modern and efficient knowledge society.

Among the more notable topics of the renewed EU strategy for sustainable development, COBISS relates directly to social inclusion, demographic changes and migrations. It improves and facilitates the access to saved contents relevant to a comprehensive development of individuals and communities and also ensures non-discriminatory possibilities for using the most advanced e-services in the field of librarianship. By doing this, COBISS also contributes to recognizing and consequently making the best possible decisions in the present, which will have lasting effects in the digital future.

One of the specific goals is to improve digital literacy. The impact that COBISS has in this area is an obvious added value in the form of a virtual environment. Namely, in the case of the mCOBISS mobile app, users are using new and increasingly accessible devices, which enable them to use the new e-services of the national library system. The services are intended for all, not only for trained users of modern ICT services and devices. Because of their simplicity of use and attractiveness, COBISS can also be used by less-skilled users. Users' understanding and accepting the contents and services is of key importance because this e-service is a result of analysing users' wishes and needs as well as the result of adapting to the capabilities of new devices. mCOBISS includes functions that enable different forms of using remote services for the general public, regardless of the physical location of the user. On top of that, citizens with special needs (especially with motor disorders) have access to completely new possibilities of using library activities, which improves their quality of life and reduces their marginalization (a contribution to e-accessibility).

## Discussion and Conclusion

The COBISS system promotes science, creativeness and innovations in the society and education. The direct impact COBISS has is evident in the transfer of knowledge by bringing libraries and their functions to the individual with the use of contemporary e-services and mobile apps, which brings the current «standard» functions in physical libraries directly to the user as a new added value. Solutions offered by the COBISS system are intended for a wide range of users, and with that they collectively follow the global goal – promoting development and a wide range of e-services in different areas of information society. The services of the COBISS system not only fulfil the existing goals, habits and



needs of the users, but they also promote the use of new, innovative solutions, all the while ensuring a good user experience. COBISS is therefore expanding the multitude of publicly accessible e-services and co-creates new technological development trends in the fields of culture, science and education promoting the transition into a modern and effective knowledge society.

COBISS as a system aims to ensure the highest possible level of success, effectiveness and satisfaction felt by the researchers, librarians, general users and others when they achieve their goals by using one of the services. This also includes the majority of groups and individuals with special needs whose access to e-services or the internet is limited for various reasons. This improves the effectiveness and the impact of the COBISS services and provides an easier access to the information and also improves the transfer of knowledge. This is the correct path to high-quality services that include the user interface and the contents as a homogenous whole. Only a service suited to the need of its users can guarantee a user-friendly experience.

The COBISS system helps solve actual problems associated with updating library systems in member countries and provides conditions for the integration into the global library network, both with regards to accessing international bibliographic databases as well as adding their own bibliographic data to them. The intellectual legacy and current intellectual production of these countries call for a more active presence in global reviews. Part of this is also encouraging the building of the information infrastructure that enables a higher quality of research activity and the transparency of research potential and results in the region.

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IZUM – Institute of Information Science, Maribor 2000, Slovenia

## References

- Institute of Information Science 2018, *COBISS Platform*, Institute of Information Science Maribor. Retrieved from <https://www.cobiss.net/cobiss-platform.htm>.
- Institute of Information Science 2018, *Kazalci rasti sistema COBISS.SI in obsega dejavnosti IZUM-a*, Institute of Information Science Maribor. Retrieved from <http://www.cobiss.si/kazalci/>.



Institute of Information Science 2018, *Slovenian Current Research Information System*,  
Institute of Information Science Maribor. Retrieved from [http://www.sicris.si/  
public/jqm/memo.aspx?lang=eng&opdescr=presentation&opt=6&subopt=1](http://www.sicris.si/public/jqm/memo.aspx?lang=eng&opdescr=presentation&opt=6&subopt=1).



## WARRIORS, ALLIES OR SPECTATORS: A LOOK AT STAKEHOLDERS' PERCEPTION OF THE ROLE OF LIBRARIES AND LIBRARIANS IN THE FAKE NEWS PHENOMENON

Matilde Fontanin

Doctoral Student, Department of Modern Cultures and Humanities,  
University La Sapienza, Rome, Italy  
matilde.fontanin@uniroma1.it

### Abstract

*The recent debate on fake news and critical thinking is invading the national and international scene. Strategies to counterfeit the phenomenon are issued everywhere: IFLA (International Federation of Library Associations) built a campaign around its infographic tool; at the same time, the Internet giants are beginning to change their attitude and position with respect to fake news as a result of public pressure – e.g. Facebook and the scandal of Cambridge Analytica. Libraries and librarians think they could play an important role, being their job about knowledge and information management, but does anyone else think along the same lines? An article published on Science with the explicit goal of starting a “science of fake news”, advocated an interdisciplinary approach, yet hardly any reference was made to Library and Information studies. The same happened in the recent EU Public consultation on fake news and online disinformation - neither libraries nor schools were counted among the stakeholders. Someone may argue that news is outside the scope of the library mission; yet preserving documentation and helping people to find and evaluate information effectively definitely is: the actions undertaken by EBLIDA (European Bureau of Library, Information and Documentation) advocate for a role for libraries. Based on this scenario, the present paper will reflect on the concept of fake news in the light of library and information science – thus defining the field and its limits. Subsequently, it will analyse policy documents addressing the issue, to verify whether libraries and library studies are considered stakeholders by external observers. Method: documents on Fake News will be scanned looking for mentions of libraries on the websites of European Union, USA, Canada, Great Britain and Italy. An overall scan will also be carried out on the role of libraries in relation to fake news in research articles.*

**Keywords:** fake news, library mission, libraries in public perception, information behavior, information ethics



## The background and purpose of the study

On Nov 13, the local TV News in Friuli Venezia Giulia, Italy, (*'Flash Mob dei giornalisti in difesa della libertà di stampa'*, 2018) reported that, as part of a nation-wide initiative, local journalists enacted a flash mob to defend the freedom of the press, in response to two politicians who had recently defined these professionals as *"worthless chacals, 'pen-sellers', prostitutes"*. The spokesman maintained that, though some might consider journalists redundant in the age of online communication, *"we think that now the role of those who professionally verify news and certify the sources is even more crucial"*.<sup>1</sup> This rang a bell. Is this not what librarians do? Besides, Seife (2014) could add that one of the flaws of journalism in the frenetic digital age is that visibility and shareability rule their agenda, rather than accuracy.

This happened at a time when the present study was under way but added a brick to the construction of its meaning. The spokesman maintained that journalists are in charge of fact-checking - and they definitely should be. On the other hand, the field of Library and Information Science (LIS) seems to advocate to librarians a key role: both in the selection of collections and in the teaching of effective searching to library users. Yet Galluzzi (2014) shows that this role is not totally acknowledged in the press - which she rightly considers an expression of public perception.

The spark for the present study originated from the survey on public perception on Fake News (Tortola, 2017) led by the European Union Digital Single Market between November 2017 and February 2018, where libraries and schools were conspicuous among the stakeholders only for their absence. The initiative led the author to a reflection on the role of library field in this debate, reinforced in March 2018 by an article (Lazer et al., 2018) advocating an inter-disciplinary effort to create a "Science of Fake News" where, once more, the LIS field was not mentioned. Librarians' perception of their role did not align with the perception of the community at large. This realization prompted the current investigation on: how libraries perceive themselves and how - (or if) are they perceived from the outside in the Fake News debate?

Details of the methods, procedures and instruments used

To address the questions, the present study will pursue three lines of investigation:

- Scanning current literature for a definition of the concept of Fake News;
- Analysing the literature on libraries' perception of themselves in this respect;

<sup>1</sup> Translations from Italian by the author.



- Examining documentation from governmental and supra-governmental sources - among them IFLA, EBLIDA and the European Union.

The results of the investigation will be read in the light of IFLA Code of Ethics.

The search in academic literature for the first two lines of investigation was carried out easily, both on specialised databases and on general search engines.

On the contrary, finding official government sources that defined actual actions undertaken by various states to tackle the issue was challenging. We were looking for digital agendas, policies, proposed or passed bills, that made reference to the issue of Fake News or to the informed use of digital information. The intention was to provide a snapshot of the current actions undertaken by different European nations. However, the language barrier limited the scope of this investigation to English, French, Italian. Though most parliamentary or governmental portals dedicate space to digital agendas, identifying the responsible departments, the fact that the situation varied greatly from one country to the other (e.g. from Education to Commerce) was another challenge.

Another issue was that it was even less easy to find information about policies specifically aimed at Fake news: they might be included in documents on political disinformation, digital agendas, specific government actions – and sometimes those issues are treated from a different angle (e.g. connectivity).

For the purpose of this phase of the study, the decision was made to examine mainly documents from the European Union. The international perspective included library-focused international organisations such as IFLA (International Federation of Library Associations) and EBLIDA (European Bureau of Library, Information and Documentation Associations).

The geographic scope was limited to four countries: Great Britain and USA, because much of the recent evidence and comment emanates from those countries (Lor, 2018), Canada and Italy, being the countries of the author and contributor of the paper.

## Findings, discussion

### **Literature review on Fake News.**

The literature on Fake News is abundant and interdisciplinary, yet the document analysis uncovered some of the following common threads.



Firstly, the phenomenon, considered part of the broader concept of “post-truth”, is not new (Cooke, 2017; Lazer et al., 2018; Lor, 2018; Reilly, 2018; Rochlin, 2017; Tandoc, Lim, & Ling, 2018). What is new is its context in a social media environment and its evolving meaning. Since 2016, a time when the Oxford English Dictionary chose “Post-truth” as word of the year as a result of political issues surrounding the Leave campaign in the UK and the presidential election in the USA, research in the area of fake news has increased significantly.

Secondly, the social dimension is extremely meaningful. We live in a post-truth era “*in which audiences are more likely to believe information that appeals to emotions or existing personal beliefs, as opposed to seeking and readily accepting information regarded as factual or objective*” (Cooke, 2017, p. 212). The idea of truth therefore turns from a factual correspondence to a social agreement (Anthony, 2018; Lorusso, 2018). Fake news *per se* would be of little consequence without reactions, that is “*fake news needs the nourishment of troubled times in order to take root*” (Tandoc, et al., 2018, p.149).

The third thread is money. Clickbait is a source for revenue, the more outrageous the stories, the more successful they are: in a social environment, the emotional involvement is stronger than the rational judgement. See the case of BuzzFeed News tracing a group of liberal and conservative websites back to the same company (Silverman, 2017), or of the Macedonian village fabricating stories on Donald Trump (Kirby, 2016). The effects of news fabrication are maximised by news bots.

The fourth thread is authority: Web 2.0 allowed citizen journalism to challenge the authority of journalists. Besides, it blurred the concept of information source, as news can be reached via the newspaper website but more often via social media. Receiving stories posted by socially trusted sources changes the bias of the receiver, who is prejudiced in their favour. “*Popularity on social media is thus a self-fulfilling cycle*” (Tandoc et al., 2018, p. 139), this is why fact-checking might be counterproductive under certain circumstances (Lazer et al., 2018, p. 1095) and the only defence is to refuse to react to fabricated stories, as each “click” on Facebook turns into an endorsement (Rochlin, 2017, p. 390).

This short framework is enough to understand the complexity of the problem. There is not one simple solution, yet strategies are needed. Literature points to two directions, that is: automatising the detection of deceptive pieces of information – in other words using the same weapons that create misinformation to fight it – or empowering individuals. More precisely, these two options should



be adopted jointly: while the first one calls into action the Internet giants and platforms, the second one is where libraries could and should be involved.

In LIS literature, the issue is so prominent that the ALA Reference and user Services Association dedicated it a special issue (2018). The role of libraries and librarians is advocated mostly in two directions: on the one hand as providers of trusted, balanced, reliable collections offering diverse viewpoints, and on the other as educators, often in association with schools, universities and other educational institutions. The digital dimension is implied in both functions, as collections are both in analogic and digital format. Moreover, libraries often mediate free web resources to their users.

The two tasks are in line with IFLA Code of Ethics and, even earlier, they comply with Ranganathan's five principles (Ranganathan, 1931). Libraries manage and organise collections and make them available to their users; when the collections go online, libraries follow suit.

LIS literature moves from the analysis of the general fake news debate. Lor (2018) states that "*the post-truth phenomenon is [...] a problem of contemporary social epistemology*", whose nature is social and emotional more than individual and cognitive, and determines the continuing existence of democracy. Libraries, in his opinion, are not in the same race as journalists and social media experts; their value lies in the historical view. Therefore, libraries need to review their role in the light of information and democracy, work with other partners, exert their soft power as trusted institutions with a long-term constancy opposed to the ever-shifting current information ecosystem, and offer a space, a secure haven for everyone.

Most library literature demonstrates that librarians are aware of the issue, they feel involved, think they need to act in a network with other stakeholders, who are mostly identified with the institutions they serve, be they universities, municipalities, states, schools.

## Perception of libraries in official sources

The first finding was that a thorough search requires more time and a cross-country collaboration, to overcome both the language and the cultural barriers.



The European Commission produced many documents on the matter (European Commission, 2018b), the following is a summary of the trends uncovered in these documents.

Fake news and disinformation are issues influencing political life and endangering democracy, as an increasing part of the population – especially the younger – draw their information from the Internet. A recent Eurobarometer opinion poll in all 28 Member States found that 72% of respondents use the Internet to access news more than once a week (European Commission, Directorate-General for Communication, 2016). The EU perspective is much focused on the internet platforms, seen both as problem and counterpart for the solution. Moreover, policies point at addressing the challenges posed by cybersecurity and the protection of identity, developing digital skills for the job market, encouraging active citizenship and enhancing connectivity.

The Digital Education Action Plan (European Commission, 2018a) envisages actions to be taken to regulate Internet platforms and providers, create fact-checking sources, increase connectivity and raise awareness and digital skills through education. Both schools (coding and cybersecurity classes, access to technology) and higher education (Open Science) are perceived as stakeholders in this respect. Libraries are not mentioned directly, except for academic libraries, listed among other campus services. Yet, if schools and universities are involved, their libraries follow necessarily, and public libraries could be implied where the Plan states that the acquisition of digital skills can happen also *“through after-school classes”* (European Commission, 2018a, p. 5). Policies correspond to values at the core of the library profession, an impression confirmed by a report advising education ministries that they *“work with libraries. [...] [to] ensure communities can access both online and offline news and digital literacy materials via their local libraries.”* (Wardle & Derakhshan, 2017, p. 84).

The EU efforts are echoed by EBLIDA (2018) reporting about the EU survey on public perception (Tortola, 2017), which aimed at assessing the citizens' opinion on the role of various stakeholders to counter the spread of fake information online. The consultation closed in February 2018, and a High Level Group (HLG) on fake news and online disinformation met the first time in January 2018. Their Report (EC, Directorate-General for Communication Networks, & High Level Group, 2018), according to EBLIDA, *“highlights that libraries can play a role in literacy competence, especially in media and information literacy.”* The report actually does envisage media literacy as a solution to counter spread and power of Fake News. As it says, the EU should work *“with the aim of integrating critical media literacy into the core literacies guaranteed to all schoolchildren in*



Europe, with formal status in national school curricula. This can engage libraries as well.” (European Commission et al., 2018, p. 27). This is the only occurrence of the word “librar\*” in the report, yet an indirect reference may be found in the statement that “*It should however be for independent (educational) institutions to provide the content of any media and information literacy programmes*” a view in line with most LIS literature. Besides, a reference is made to an inquiry on media literacy (European Audiovisual Observatory for the European Commission, 2016) listing actions undertaken in the 28 EU countries, where libraries are mentioned several times.

Among the 39 expert members of the group - chosen across professions and organizations – there are no libraries, librarians or LIS experts: scholars are mostly from the field of communication studies, journalism and Internet expertise. The call for the Group was open, so the absence of LIS professionals might mean either an oversight from the field, or that librarians were not chosen.

Back to EBLIDA, it celebrated its 25th anniversary with the Aarhus declaration, stating “*We call upon the [...] governments of Europe to [...] promote and support strong reading and critical thinking competencies through libraries in a time of fake-news and information overload.*” (‘EBLIDA Aarhus Declaration’, 2017).

## A look at countries: UK, Canada, US and Italy

The situation in the individual countries is very varied. The UK is very active. The Culture, Media and Sports Committee of the House of Commons recently published its Fifth Report (Great Britain. Grand Committee, 2018) on the issue. The focus is on the tendency of people to use social networks for information purposes and the resulting spread of fake news, in the light of social and political issues (e.g. Russia, the Leave campaign), nevertheless it recommends that the government put forward an “*educational framework (developed by charities and non-governmental organisations) and based online. Digital literacy should be the fourth pillar of education, alongside reading, writing and maths.*” (Great Britain. Grand Committee, 2018, p. 63).

A remarkable point is made in this report regarding the definition issue: they recommend that “fake news” be replaced by “misinformation” and “disinformation”, as it has become ambiguous to the point of “*including a description of any statement that is not liked or agreed with by the reader.*”. “*With [...] a shared definition, and clear guidelines [...] there will be a shared consistency of meaning across the platforms.*” (Great Britain. Grand Committee, 2018, p. 64). The Government



defines “*disinformation as the deliberate creation and sharing of false and/or manipulated information that is intended to deceive and mislead audiences, either for the purposes of causing harm, or for political, personal or financial gain. ‘Misinformation’ refers to the inadvertent sharing of false information.*” (Great Britain. HM Government, 2018, p. 2).

Much reference is made to the “platforms” - Facebook being prominent - to be held liable for their actions and to pay for the education framework. The advice is that “*Facebook and other social media companies should not be in a position of ‘marking their own homework’*”. (Great Britain. Grand Committee, 2018, p. 67).

In Canada the issue seems to be under the responsibility of the Canadian Heritage Minister Melanie Joly, who envisions “*partnerships between social media networks and media literacy organizations as part of the solution to the misinformation problem, rather than government intervention*” (Garber, 2018). Though aware that the issue needs networking, plans do not seem to involve libraries, whose mission is rather to be focused on preservation and access to the collections. The issue in Canada seems to be connectivity rather than evaluation.

For the USA, the search for “fake news” in the portal <https://www.usa.gov/> returned some Congress bills in response to President Trump’s public statements which were deemed false. The query “digital literacy” retrieved <https://digitalliteracy.gov/>, a portal going back to the Obama administration.

In Italy, the present digital agenda seems to be concentrating on the transformation of the Public administration. The sections of the Agency for the Digital Agenda dedicated to competencies are focused on the job market and the ICT professions, and no reference is made to educational strategic plans. On the other hand, the Ministry for Education (MIUR) started a National Plan for Digital School (‘La scuola digitale - MIUR’, n.d.) in 2016, under the previous Government but still operating, where libraries are definitely present – see, as an example, action #24 for Innovative School Libraries (‘Biblioteche Scolastiche Innovative - MIUR’, n.d.).

Completely different is the contribution of IFLA, the International Federation of Library Associations and Institutions, one of the stakeholders of the Agenda for the Millennium Goals, working relentlessly on advocating for libraries. Through its Global Vision, IFLA it is striving to become the global voice of libraries, and to do this it is collecting ideas from libraries and librarians around the world in its Idea Store. The specific action dedicated to Fake News (‘IFLA -- Real Solutions to Fake News: How Libraries Help’) produced an infographic (‘IFLA -- How To Spot Fake News’) which has been translated into 39 languages.



## Conclusions

The literature examined proves that the libraries' perception of their role in the post-truth debate is not widely echoed in the way they are mentioned in official documents.

Libraries feel they can play an active role in the fake news and post-truth debate, both as curators of information and as educators to critical thinking, to foster the development of democratic societies. In the literature, they mostly refer to their relations to their parent institutions, not to Internet platforms, journalists and only partially to publishers.

On the other hand, the documents produced by governmental and supra-national sources show that libraries are not perceived as stakeholders in the post-truth debate, at the best we could say they are taken for granted as part of their parent institutions.

Rather, official documents show an attention to media producers and to the Internet platforms - even letting them "mark their own homework" (Great Britain. Grand Committee, 2018).

Marchionini (2018) maintains that, even in the world of Big Data, democracy is being killed not by lack of information, but by too much information. Data curation adds value to data, LIS scientists are the bridge between data and knowledge. To be more effective, the action should be carried out in collaboration with subject experts, who are not involved in the same ethical choices around data curation that directly involve libraries.

Libraries are definitely too slow for the present informational ecosystem, but we can agree with Lor (2018) that they are valuable to preserve democracy because *"as librarians strive to keep at the forefront technologically, to a considerable extent they remain custodians and providers of slower moving but less ephemeral content. [...] Libraries provide continuing access to the records of our time. As a non-partisan space, a bit boring perhaps, but trustworthy, the library provides a space for reflection, a haven for civility and rationality, and a home for contrarian thinkers."* Someone might argue that librarians are not involved in the news, but they definitely are in disinformation and misinformation. Rejection of negationist attitudes (no-vax, creationism a.s.o.) needs an historical perspective.

Yet advocacy – what IFLA does – is needed to make libraries visible. In the meantime, libraries should network among themselves and with other stakeholders – schools, universities, journalists, historians but also with internet platforms and the economic institutions – not to save themselves but simply



to empower people to be aware of the quality of information in order – to quote Lazer et al. (2018) - “to promote interdisciplinary research to reduce the spread of fake news and to address the underlying pathologies it has revealed”.

In the frenzy of the present fast-moving informational ecosystem, libraries help people remember. The consequences of a forgetful society have been depicted in dystopian masterpieces of a past when democracy was less taken for granted: erasing the past to feed people with a fabricated story continuously rewritten (Bradbury, 1953; Orwell, 1949), depriving individuals of social cohesion to suit the power of the government (Huxley, 1932). Of course, Oceania, the World State and the America in Fahrenheit 451 are mere figments of the imagination, yet those books still teach us a lesson, even if they are not ranked within the top ten in web searches, and libraries still make them available. Together with other sources and through the mediation of librarians, they allow the citizens who still want to know to confront the present issues with the solutions humanity found in the past.

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## References

- ACRL <Association of College and Research Libraries>. (2015, February 9). Framework for Information Literacy for Higher Education [Text]. Retrieved from <http://www.ala.org/acrl/standards/ilframework>.
- Anthony, A. (2018, August 5). Yuval Noah Harari: ‘The idea of free information is extremely dangerous’. *The Guardian*. Retrieved from <https://www.theguardian.com/culture/2018/aug/05/yuval-noah-harari-free-information-extremely-dangerous-interview-21-lessons>.
- Biblioteca Scolastiche Innovative - MIUR. (n.d.). Retrieved from [http://www.istruzione.it/scuola\\_digitale/prog-biblioteche-scolastiche-innovative.shtml](http://www.istruzione.it/scuola_digitale/prog-biblioteche-scolastiche-innovative.shtml).
- Bradbury, R. (1953). *Fahrenheit 451*. New York: Ballantine Books.
- Cooke, N. A. (2017). Posttruth, Truthiness, and Alternative Facts: Information Behavior and Critical Information Consumption for a New Age. *The Library Quarterly*, 87(3), 211–221. doi: 10.1086/692298.



Did the Pope Endorse Trump? - FactCheck.org. (n.d.). Retrieved from <https://www.factcheck.org/2016/10/did-the-pope-endorse-trump/>.

Take down the digital barriers! : Enable Libraries to provide Smart Access to Culture, Information and Knowledge! (2017, May 3). EBLIDA <European Bureau of Library, Information and Documentation Associations>. Retrieved from [http://www.eblida.org/Activities/2017\\_Aarhus\\_Declaration/eblida-aarhus-declaration-4-May2017.pdf](http://www.eblida.org/Activities/2017_Aarhus_Declaration/eblida-aarhus-declaration-4-May2017.pdf).

EBLIDA <European Bureau of Library, Information and Documentation Associations>. (2018, March 13). Final report of the High Level Expert Group on Fake News and Online Disinformation - European Bureau of Library Information and Documentation Associations (EBLIDA). Retrieved from <http://www.eblida.org/news/final-report-of-the-high-level-expert-group-on-fake-news-and-online-disinformation.html>.

European Audiovisual Observatory for the European Commission. (2016). MAP-PING OF MEDIA LITERACY PRACTICES AND ACTIONS IN EU-28, 458.

European Commission. (2018a). *Digital Education Action Plan: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions* (Communication No. COM/2018/022 final) (p. 12). Brussels: European Commission. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2018:22:FIN>.

European Commission. (2018b). *Tackling online disinformation: a European Approach: Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions* (Communication No. COM(2018) 236 final). Brussels: European Commission. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0236>.

European Commission, Directorate-General for Communication. DG COMM "Strategy, Corporate Communication Actions and Eurobarometer" Unit. (2016). *Flash Eurobarometer: Internet users' preferences for accessing content online* (Flash Eurobarometer No. 437). Retrieved from <https://ec.europa.eu/digital-single-market/en/news/eurobarometer-internet-users-preferences-accessing-content-online>.

European Commission, Directorate-General for Communication Networks, C. and T., & High Level Group on fake news and online disinformation. (2018). *A multi-dimensional approach to disinformation: report of the independent high level group on fake news and online disinformation*. Retrieved from <https://data.europa.eu/doi:10.2759/739290>.

Galluzzi, A. (2014). *Libraries and public perceptions: a comparative analysis of the European press*. Waltham, MA: Elsevier.



- Garber, L. (2018, February 21). Canada can't do much to stem fake news, according to government documents - National | Globalnews.ca. Retrieved from <https://globalnews.ca/news/4039886/canada-stem-fake-news-government/>.
- Gibson, C., & Jacobson, T. E. (2018). Habits of Mind in an Uncertain Information World. *Reference & User Services Quarterly*, 57(3), 183–192. doi: 10.5860/rusq.57.3.6603.
- Great Britain. Grand Committee. (2018). *Disinformation and 'fake news': Interim Report : Fifth Report of Session 2017–19 - Digital, Culture, Media and Sport Committee - House of Commons* (No. HC363) (p. 89). London, U.K: Authority of the House of Commons. Retrieved from <https://publications.parliament.uk/pa/cm201719/cmselect/cmcmucmeds/363/36302.htm>.
- Great Britain. HM Government. (2018). *Disinformation and 'fake news': Government Response to the Committee's Fifth Report - Digital, Culture, Media and Sport Committee - House of Commons* (No. Appended to report HC 363). Retrieved from <https://publications.parliament.uk/pa/cm201719/cmselect/cmcmucmeds/1630/163002.htm>.
- Huxley, A. (1932). *Brave New World. A novel. F.P.* London: Chatto & Windus.
- IFLA -- How To Spot Fake News. (n.d.). Retrieved from <https://www.ifla.org/publications/node/11174>.
- IFLA -- Real Solutions to Fake News: How Libraries Help. (n.d.). Retrieved from <https://www.ifla.org/node/11584>.
- IFLA FAIFE (2012). IFLA Code of Ethics for Librarians and other Information Workers. Retrieved from <https://www.ifla.org/publications/node/11092#responsibilities>.
- Kieli, E., & Robertson, L. (2016, November 18). How to Spot Fake News. Retrieved from <http://www.factcheck.org/2016/11/how-to-spot-fake-news/>.
- Kirby, E. J. (2016, December 5). The city getting rich from fake news - BBC News. Retrieved from <http://www.bbc.com/news/magazine-38168281>.
- La scuola digitale - MIUR. (n.d.). Retrieved from [http://www.istruzione.it/scuola\\_digitale/index.shtml](http://www.istruzione.it/scuola_digitale/index.shtml).
- Lazer, D. M. J., Baum, M. A., Benkler, Y., Berinsky, A. J., Greenhill, K. M., Menczer, F., ... Zittrain, J. L. (2018). The science of fake news. *Science*, 359(6380), 1094–1096. doi: 10.1126/science.aao2998.
- Lor, P. J. (2018). Democracy, information, and libraries in a time of post-truth discourse. *Library Management*, 39(5), 307–321. Doi: 10.1108/LM-06-2017-0061.
- Lorusso, A. M. (2018). *Postverità: fra reality tv, social media e storytelling*. Bari: GLF editori Laterza.



- Marchionini, G. (2018). *Information Science roles in Data Science : Keynote lecture at FEIS2018 Conference, 11-12 September 2018, Pisa (Italy)*. Retrieved from <http://mediaeventi.unipi.it/category/video/FEIS-Einfose-2018-11-Settembre-morning-session/8ec6e51e618b29ed1e6f9d4822f68434/160>.
- Orwell, G. (1949). *Nineteen Eighty-Four. A novel*. London: Secker & Warburg.
- Ranganathan, S. R. (1931). *The five laws of library science*. Madras: The Madras Library association. Retrieved from [https://babel.hathitrust.org/cgi/pt?id=uc1.\\$b99721](https://babel.hathitrust.org/cgi/pt?id=uc1.$b99721).
- Reilly, I. (2018). F for Fake: Propaganda! Hoaxing! Hacking! Partisanship! and Activism! in the Fake News Ecology. *The Journal of American Culture*, 41(2), 139–152. doi: 10.1111/jacc.12834.
- Rochlin, N. (2017). Fake news: belief in post-truth. *Library Hi Tech*, 35(3), 386–392. doi: 10.1108/LHT-03-2017-0062.
- Rose-Wiles, L. (2018). Reflections on Fake News, Librarians, and Undergraduate Research. *Reference & User Services Quarterly*, 57(3), 200–204. doi: 10.5860/rusq.57.3.6606.
- RUSA <Reference and user Services Association>. ALA <American Library Association>. (2018). Trusted information in an age of uncertainty : special issue. *Reference & User Services Quarterly*, 57(3 (Spring)). doi: 10.5860/rusq.57.3.
- Seife, C. (2014). *Virtual unreality: just because the Internet told you, how do you know it's true?* New York: Viking.
- Silverman, C. (2017). This Is How Your Hyperpartisan Political News Gets Made. Retrieved 29 November 2018, from <https://www.buzzfeednews.com/article/craigsilverman/how-the-hyperpartisan-sausage-is-made>.
- Tandoc, E. C., Lim, Z. W., & Ling, R. (2018). Defining “Fake News”: A typology of scholarly definitions. *Digital Journalism*, 6(2), 137–153. doi: 10.1080/21670811.2017.1360143.
- Tortola, A. I. E. (2017, November 7). Public consultation on fake news and online disinformation [Text]. Retrieved 15 November 2018, from [https://ec.europa.eu/info/consultations/public-consultation-fake-news-and-online-disinformation\\_en](https://ec.europa.eu/info/consultations/public-consultation-fake-news-and-online-disinformation_en).
- Wardle, C., & Derakhshan, H. (2017). *Information Disorder : Toward an interdisciplinary framework for research and policymaking* (Council of Europe report No. DGI(2017)09) (p. 109). Strasbourg: Council of Europe. Retrieved from <https://firstdraftnews.org/coe-report/>.



## THE FATE OF A HUNGARIAN CULTURAL HERITAGE NOWADAYS: THE LIBRARY OF THE NATIONAL CASINO

Andrea Gyuricza

Doctoral Student, Library and Information Centre of the Hungarian  
Academy of Sciences, Budapest, Hungary; Doctoral School of History,  
Eszterházy Károly University, Eger, Hungary  
gyuricza.andrea@konyvtar.mta.hu

### Abstract

*The National Casino Association was founded in 1827 by István Széchenyi. During its nearly 120 years of existence, it was an integral part of the Hungarian public life and culture. The National Casino established its own library for its members. The methodically collected and systematized library exceeded the country's public libraries qualitatively and quantitatively as well. The library of the National Casino had nearly 40.000 books before the Second World War. The leaders and the members tried to protect the property of the association, when they have sensed the danger, but after the Second World War they were unable to recover the collection. The Hungarian Minister of Interior dissolved the National Casino with a decree in the year 1945, because it proved to be a legal person contrary to the interests of the state. According to the association's statutes, the Hungarian Academy of Sciences inherits all assets of the Casino in case of dissolution. And so it happened, now the library of the National Casino is part of the Library and Information Centre of the Hungarian Academy of Sciences' collection. This collection is very important to the Hungarian Academy of Sciences and also to its library, it is an important part of the Hungarian cultural heritage. Our library must to manage, maintain and present it to the community. The National Casino story belongs to the history of Hungary, and the Hungarians consider its founder as the greatest Hungarian for his actions, views and achievements. Our task is to preserve the memory of Széchenyi and the Casino, for example to hold presentations and exhibitions about the result of our Casino researches. Parallel with the processing of the books, and the research we keep the current status of books, by cleaning and conservating, we also try to restore some of them.*

**Keywords:** Hungarian cultural heritage, István Széchenyi, library, National Casino



## Introduction

Hungarian people have a very rugged history. This past motivated everybody who wanted to change the fate of Hungary. In this aspect there was a very important period of our history when the changes started. It was the Hungarian Reform Era (19<sup>th</sup> century) and one of the most determinative personalities was Count István Széchenyi. He represented the awakening of the Hungarian national identity. He introduced a lot of important reforms in order to progress. One of his merits was the foundation of the National Casino Association in 1827.

During its nearly 120 years of existence, it was an integral part of the Hungarian public life and culture. The National Casino established its own library for its members. They collected the books from every disciplines and countries. The methodically collected and systematized library exceeded the country's public libraries qualitatively and quantitatively as well.

## The background of this study

I'm a librarian in the Library and Information Centre of the Hungarian Academy of Sciences. I have been searching for the National Casino and its library for more than four years. I'm cataloging the remained book collection of the National Casino and I'm researching for the history of the Association. In addition to learning about the literature I do archival research. From 2018 I'm a doctoral student in the Doctoral School of History of the Eszterházy Károly University in Eger.

## István Széchenyi and the National Casino

Széchenyi's visions were to establish civil society in Budapest, modernize Hungary, making also an economic modernization, and consolidate the Hungarian language instead of Latin. Széchenyi was thinking in a whole unit, he organized railroads, public horse races, Danube steamboats, and the first permanent bridge linking Buda and Pest; also supported cultural initiatives, his spectacular decision to donate his one year's income in order to contribute to the establishment of the Hungarian Academy of Sciences (1825) traditionally marks the beginning of the Reform Era. (Ilk, 1927. 4 p.) We consider him as "the greatest Hungarian" for his actions, views and achievements.



He studied club life during his stay abroad and he considered to setup a constantly running casino (not just during the parliamentary term), a public forum for the Hungarian nobility. The opening ceremony of the National Casino (Figure 1.) took place on 20 August 1827. (Simon, 2000. 22 p.)

Széchenyi's goals with the association to have a distinctive ornate gathering place in our country, where the prominent and better educated, intelligent men, from every class of society can meet each other for a conversation or can read a variety of political newspapers and useful economic, scientific and artistic monthly writings. In this place they can themselves to have fun in their empty hours and can also find a casual Restaurant at the same time. (Ilk, 1927. 8-9. p.)

With the foundation of the Casino he inspired a nation-wide trend for the liberal Hungarian nobility to make a civil society, to establish casinos in the countryside, in the big cities across the country and also in Transylvania. The Habsburg absolutism watched this movement very carefully, because casinos played central roles in Hungarian public life during the Reform Era.

At the beginning, the association had 175 shareholders, a committee was set up to develop the fundamentals and deal with the affairs of the association. From different parts of the country, wines of the best quality came to the National Casino's cellar to be sold. They wanted to increase the reputation and commercial turnover of Hungarian wines in



Figure 1. Figure The building of the National Casino



Figure 2. Figure The hall of the Casino



abroad too. (Ilk, 1927. 10 p.) The Casino had a restaurant servants, a court master, a goalie, two interior servants, and a heater.

The National Casino soon became an unofficial parliament, where the Hungarian elites could discuss the up-to-date issues. However, the politics were banned. The founders wanted only a place to transcending caste divisions between nobles and bourgeois elites, where they can meet and smoke and read together without stiffness or restraint. The casino attracted members from the most prominent Hungarian families, ignoring the noble rank. It was opened to the worthy strangers as well. The National Casino turned into the most fashionable club in this era. (Figure 2.)

In István Széchenyi's testament, in 1833, he bequeathed a gold cup to the Casino, and in 1841 he requested to organize the shareholder's dinner each year, where the members must have emptied the cup to his honor which was filled with the best of the wines at that time. This was the Széchenyi feast, held every year during the operation of the association (with the exception of the war years).

In 1848, Széchenyi chaired the general assembly, where the members saw him at the headquarters for the last time, though in 1856, he sent an ornate chess game from Döbling sanatorium. (Ilk, 1927. 31-32. p.) István Széchenyi shot himself on 8 April 1860.

## Fundamental Rules

Each year, the National Casino has issued its current statutes, policies and the names of its members. According to the fundamentals, Casino is a forum where well-behaved people can converse pleasantly with each other. (Nemzeti Casino, 1828. 33 p.) Their main topics of discussion are science, economics and commerce, books and newspapers, but gambling is excluded.

The National Casino was not an exclusive club. The Casino included historical names, officials, magistrates, lawyers, doctors, scientists, writers, merchants, pharmacists. The membership was optional for any Hungarian or Transylvanian men or foreign people - soldiers, scientists, artists, hopeful young men - but he could only register himself in the book of Strangers, and allowed to enter to the club premises if he was recommended by another member.

Strict rules related to the operation of the Casino, especially membership fees and card games, if somebody didn't repay the debts of the game within the given deadline, they could be excluded from the association.



Casino facilities such as the lounge, reading room, game room and restaurant were only used for designated purposes. The library's documents could only be used locally.

The assets of the National Casino were indivisible neither shareholders nor members of the association, nor their heirs, could hold any rights. If the dissolution of the club is unavoidable, for unforeseen extraordinary causes or events all of its assets, as an indivisible foundation, be devolved to the Hungarian Academy of Sciences or to the Hungarian scientific institute of similar nature. (Nemzeti Casino, 1896. 24 p.)

In cases where Casino overrode its purpose set out in the statutes and did not comply with its procedures, exceeded its powers, acted as antagonist, committed a serious offense against public security and public order or threatened the interests of the members, the Minister of the Interior may have ordered the investigation, its operation could have been suspended and permanently dissolved. (Nemzeti Casino, 1924. 12 p.)

## The Library of the Casino

When Széchenyi established the Casino, in 1827, he offered his own collection to the library of the association (Figure 3.). His donation contained 338 books, and the members of the Casino collected 250 more for the beginnings. Seven years later, in 1834 the library owned 3000 volumes already. (Simon, 2000. 42 p.) The Casino helped spreading the Hungarian literature in the countryside.

The library wasn't open for the public, only the members could use it and only locally. The collection contained books, newspapers, journals, magazines, maps and other printed matters. Most of the members donated books for the library. In the nineteenth century there was always an official librarian who systematized, maintained the collection and documented the events. In the 20<sup>th</sup> century it was not always possible, they hadn't got enough staff. In the National Casino, the library consisted of one big hall, three rooms and one reading room (Figure 4.). The books were



Figure 3. Figure The library of the Casino



in the hall, the journals and newspapers were in the rooms. Several library catalogues facilitated the use (Csontos, 1887. 124 p.):

- an alphabetical card catalogue (1873);
- a topic card catalogue (1873);
- an index in which books and new purchases are listed in alphabetical order;
- and a printed catalogue (1852).



Figure 4. Figure The reading room

In 1834 Mihály Antal created the first inventory, with 673 works, nearly 3,000 volumes of books, newspapers and periodicals. (György, 1886. 68 p.) The dedicated librarians placed a great emphasis on the library, kept it and managed it, organized it, they met the needs of library science and bibliography and the institute's traditions alike. As long as they used their own librarians, they wrote the catalogues. From the 1880s on, there was no separate librarian, the secretary, the cashier, and the librarian were in charge of one person. At that time the library consisted of 19.000 volumes. (Csontos, 1887. 119 p.)

The library used Munic bibliographic and library classification model. The books classified in 10 different fields, and in these fields the Hungarian, the related to Hungary and the foreign-language works were separated. The collection contained a large number of Hungarian literature, Hungarian history, Hungarian scientific literature, most of the Hungarian music, and all publications of the Hungarian Academy of Sciences and the Kisfaludy Society. It was considered the oldest and most prestigious library in the country in the 1880s. (György, 1886. 69 p.) The classification system of the library was the following in 1852 (Pákh, 1852. 259-313. p.):

- I.: History of Literature, Mavens (Art Critic), Linguistics, Bibliography, dictionaries, encyclopedias;
- II.: Classics, Literature, Art, Antiques;
- III.: Philosophy, Education, Schooling, Religion, Church, Mythology;
- IV.: History, Life Writing, Memorials, Diploma Lore, Coin Lore, Coat of Arms Lore, Genealogy;
- V.: Geography, Statistics, Travel, Place Drawings, Folk Description, Guides;



VI.: Politics, State Science, Public Life, Society, Law and Legal Science, Criminal Law;

VII.: National Economy, Finance, Industry, Commerce, Transport;

VIII.: Natural sciences, Medicine, Veterinary Medicine, Agriculture, Animal Husbandry, Forestry, Hunting, Horticulture;

IX.: Mathematics, Astronomy, Architecture, Handicrafts, Military Science;

X.: Mixed.

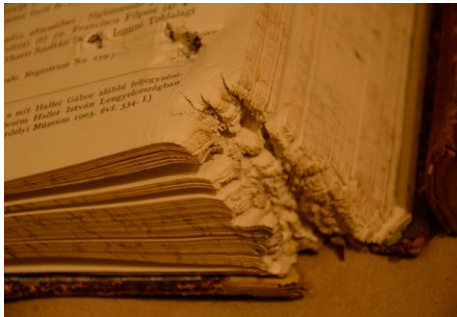


Figure 5. Figure A damaged book

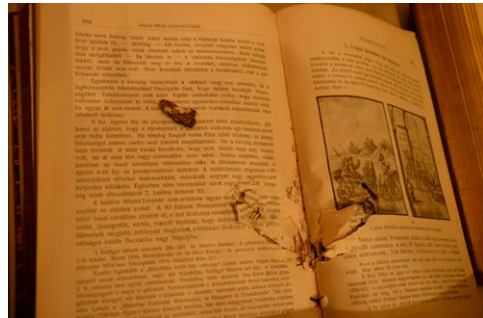


Figure 6. Figure A damaged book with bullet

From a historical point of view terrible disasters hit the country and the nation which have affected the association as well: firstly the Hungarian Revolution of 1848 and the ensuing Hungarian War of Independence, later the First World War and the Treaty of Trianon in 1920, and finally the Second World War. In these terrible and heavy periods the National Casino was working continuously. After the historical disasters it stood up again and again. Support was given to his members.

The library of the National Casino had nearly 40.000 books before the Second World War. The leaders and the members tried to protect the property of the association, when they have sensed the danger, but after the Second World War they were unable to recover the collection. (Figure 5-6.)

## The end of the Casino

The Minister of Interior of Hungary dissolved the National Casino with a decree in the year 1945, because it proved to be a legal person contrary to the interests of the state. (Ügyészi jelentés, 1945.) According to the association's





Figure 7. The building in the end

statutes, the Hungarian Academy of Sciences inherited all assets of the Casino in case of dissolution.

Subsequently, the capital began inventing and seizing the assets of the National Casino. As soon as the Academy became aware of the case, he announced his claim to his legacy and signaled his cooperation and support during the salvage, in October 1945. In this time, the National Casino owned the following items

(Ügyészi jelentés, 1945.):

- two buildings that got a serious bomb attacks in the war;
- movable property objects (the members of the Casino tried to save these to the countryside before the war, but unfortunately most of these were destroyed);
- some hunting trophies (the Academy gave these to the Natural History Museum as an eternal deposit);
- the catalogues and indexes of the Casino (we have never seen them anymore);
  - all of the documentations of the association and the library were destroyed

The library was in one of the bombed buildings (Melich and Nyireö, 1946.) (Figure 7.):

- 20-23.000 books were immediately transferred to the Library of the University (October 1945)
  - these were further transported to the building of the Academy (June 1947)
- the rest 6-10.000 books stayed in the bombed building for more than half a year
  - these were transported to the building of the Academy (May 1946)
- the more valuable books were hidden before the war in the cellar of the Parliament, where the enemy soldiers burned them.

The numbers of the books differ from each other in the various written sources and documents. Fortunately, there is a detailed account of the events



following the dissolution, but unfortunately we have little information about the events of the next decades.

After the dissolution it was noted that the following items were transferred from the library building (Nyireö, 1946.):

- An alphabetical index to the library, until 1943, in 4 volumes;
- the class catalogs of the Casino, in 13 volumes (the catalogs of two classes were missing at this time);
- the book of the names of Casino and the book of the strangers;
- as well as other objects.

We have not found the class catalogs and inventory books yet. Other objects included a globe from the 1830's and seven African and Hungarian trophies. On August 1, 1947, trophies were handed over to the Library of the HAS as an eternal deposit to the Natural History Museum, to protect them from the danger of ruin. (Melich, 1947.) During this research, we contacted the Natural History Museum, where we were informed that unfortunately, during the 1956 events, fire struck their building, so many works were destroyed. However, during the itemized search, they found five hunting trophies, which are still part of their stock in an undamaged state.

The Casino owned a lot of other works (paintings, maps, furniture), but unfortunately there isn't information about where these are. Some of them were saved in the countryside, some of them remained in the ruined building, but most of them were probably destroyed.

## The National Casino in the Library of the Hungarian Academy of Sciences

Now the library of the National Casino is part of the Library and Information Centre of the Hungarian Academy of Sciences' collection. We were waiting for a long time process them but in the end of 2014 we started to explore this collection. We talk about nearly 20.000 books, but we don't know the exact numbers, as the work has not been finished. About half of the collection has been already catalogued to our electronic catalogue, in MARC21 format. According to a calculation this, we have 13000 books and 6770 journals and magazines (around 450 titles). There are nearly 6000 book records in the Aleph catalogue of our library at the moment. About 4000 of them are Hungarian documents, rest of them are German, French, English, Latin or Italian materials. These books were published in the 19<sup>th</sup> century or at the first part of the 20th century. The numbers of the old





Figure 8. Ex libris

This part of the collection has also been processed, while the work was handled separately for books and periodicals, half of the exhibited materials was books and the other half was periodicals. Since then, we changed the books to period-



Figure 9. Stamp of the NC

or rare books are more than 800 volumes. The first phase was the cataloguing of the Hungarian books, this work has been finished. The descriptions are based on the processing criteria for old books, taking the standard of our library into account.

Parallel with the processing of the books, a research of the Casino's history and the remaining documents is also started. We founded some documents, from which we learned that the Library of the Academy has given 2001 old books to the Hungarian National Museum in August 1991 for the Széchenyi memorial exhibition (the memorial room is for Ferenc Széchenyi, he was the father of István Széchenyi). In the selection of books, the binding and the status of the works played a role.

This part of the collection has also been processed, while the work was handled separately for books and periodicals, half of the exhibited materials was books and the other half was periodicals. Since then, we changed the books to periodicals in the Széchenyi Hall of the Museum. Now the library of the Academy lent 2500 volumes of journals for the Hungarian National Museum.

The collection of National Casino is in one of external warehouse sections of the Library and Information Centre of the Hungarian Academy of Sciences, we didn't merge it with the main collection. These volumes are very dusty, damaged and musty. Some of these are shot through or contains bullets. Readers have limited access to this collection. Most of the books have half-leader or canvas binding, in the same style. A seal (Figure 8.) and an ex libris (Figure 9.) can be found in every volume of the Na-

tional Casino. Many volumes need restoration.

## The present and future of the library of the Casino

This collection is very important to the Hungarian Academy of Sciences and also to its library, it is an important part of the Hungarian cultural heritage.

In 2018 for example in the event of Nights of Museums our thematic program was built around the National Casino. We organized professional lectures,



an exhibition, we have equipped a casino room, we offered to try contemporary clothes for the guests. The visitors could see a little in the National Casino world. The event was a great success.

We would like to introduce the memory of this Association and its Library for as many people as possible. This collection is outstanding not only in its own time but even today.

## Acknowledgments

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- Metropolitan Ervin Szabó Library, Budapest Collection, Budapest

Pictures from the books are the author's own recordings.

## References

- Csontos J. (1887). Emlékirat a Nemzeti Casino könyvtáráról. *Magyar Könyvszemle*, 12(1-6), 117-130.
- György A. (1886). *Magyarország köz- és magánkönyvtárai 1885-ben*. Budapest: Athenaeum
- Ilk M. (1927). *A Nemzeti Casino százéves története: 1827-1926*. Budapest
- Melich J. & Nyireö I. (1946). *Jelentés a Nemzeti Casino könyvtárával kapcsolatos dolgokról, 1946*. Manuscript. Library and Information Centre HAS, Department of Manuscripts & Rare Books. Könyvtári irat Ad 274/1946.
- Melich J. (1947). *[Levél az Elnök Urnak]*. Library and Information Centre HAS, Department of Manuscripts & Rare Books. RAL 362/1947.
- Nemzeti Casino (1896). *A nemzeti casino alapszabályai, 1895*. Budapest
- Nemzeti Casino (1924). *A nemzeti casino alapszabályai és házirendje, 1923*. Budapest
- Nyireö J. (1946). *Pro memoria*. Library and Information Centre HAS, Department of Manuscripts & Rare Books. K 829:282/1946.
- Pákh A. (1852). *Kalauz a' Nemzeti Casino könyvtárához*. Pesten: Trattner-Károlyi
- Nemzeti Casino (1828). *A pesti casino tagjainak a.b.c. szerint való feljegyzése és annak alapjai, 1828*. Pest
- Simon Z. (2000). A reformkori magyar politikai nyilvánosság és a Nemzeti Kaszinó. *Sic Itur Ad Astra*, 12(3), 11-46.
- Ügyészi jelentés (1945). Library and Information Centre HAS, Department of Manuscripts & Rare Books. RAL 234/1945.



## RESEARCH PROJECTS: DIGITIZATION OF THE WRITER'S LEGACY

Nevenka Kalebić,

Research assistant, Department of Information Sciences, University of Zadar,  
Zadar, Croatia, [nevenka.kalebic@gmail.com](mailto:nevenka.kalebic@gmail.com)

Nina Klarin,

Master's student, Department of Information Sciences, University of Zadar,  
Zadar, Croatia, [ninaklarin@gmail.com](mailto:ninaklarin@gmail.com)

Marta Valovčić,

Master's student, Department of Information Sciences, University of Zadar,  
Zadar, Croatia [marta.valovii@gmail.com](mailto:marta.valovii@gmail.com)

### Abstract

*This paper demonstrates the importance of cultural heritage digitization projects with special emphasis on the digitization of the writer's/literary legacies. Digital humanities as a young scientific discipline is key in the process of creating such projects. The goal is to make specific objects more accessible to users through an interdisciplinary approach, involving experts from different areas through projects and applying new technologies. When accessing websites, researchers and scientists of digital humanities require a clear site layout, as well as technical support in order to quickly obtain necessary information. The heuristic evaluation method according to Nielsen's ten principles was used to conduct an analysis of websites on a sample of four projects (two in Croatia and two foreign projects). The objective was to determine how the websites of the selected projects meet Nielsen's ten principles and how well are their interfaces suited to the needs of users based on the obtained results. The objective was also to determine whether there is a difference between Croatian and foreign projects. The purpose is to point at a better understanding of such projects, their relevance for researchers and the wider community, as well as the possible improvement of the availability of information objects in a network environment. In the discussion of the obtained results, it was determined that all four websites were suited to user needs and that the above principles were met in most cases. By analysing Croatian and foreign projects, it was found that there is still room for improvement and applying new technologies in the context of digital humanities in Croatian projects.*

**Keywords:** literary legacy, project websites, digital humanities, heuristic evaluation



## The background and purpose of the study

Getting to know cultural heritage, its preservation and presentation to the user in today's information age is becoming a real challenge. Many heritage/information institutions – archives, libraries and museums – preserve the original wealth that confirms all the memories of the community's cultural and social activity through history and hence its identity. This is why heritage institutions are becoming interesting to many researchers (especially humanists) as well as to the wider community. Therefore a major responsibility is placed on them, from securing access to information objects to permanently saving and transferring it to future generations. By developing and implementing new technologies, the possibilities of accessing and communicating legacy to the user in the digital environment are greater and more diverse. Therefore digitization is increasingly mentioned as a mode of making certain objects available, because, according to Tomić (2014), "By saving, processing and presenting those objects that represent the research corpus of humanities, information sciences are necessarily related to humanities. Materials that are a common subject of interest/user research in the field of humanities are a common subject of digitization." Seiter-Šverko has a similar opinion, stating that "Digitization increases their availability to the general public and improves creativity, economy (new services and new business opportunities are created), as well as scientific research work." In this context, digital humanities as a young discipline based on research projects is a step further in digitization. According to Nikolić (2016), the emergence of new technologies has brought about a change in computer use in contemporary scientific research. Leading theorist of digital humanities Berry (2012) believes that as research projects are becoming bigger, computer experts are increasingly seeing computing as an integral part of research in humanities. Technology has become a prerequisite for access to research. The possibilities offered by new technologies are impressive: much more data can be processed than before, making data analysis much deeper and broader. According to Rees (2012), additional patterns and structures that were previously impossible to discern with the naked eye are detected.

The primary focus of digital humanities is the digitization of materials with the aim of disseminating the necessary information objects to researchers of particular scientific interest. It is mainly carried out in cooperation with other experts in the field with the aim of better describing and accessing the source in order to facilitate the research process. When accessing a project website, it is important for users to have an interesting interface, fast navigation, technical support, names that are understandable to researchers, and access to content in



open form (Warwick, 2012). The paper focuses on projects related to the digitization of writer's/literary legacies. By discovering the literary legacy of individual writers through digitization, high-quality application of new technologies, and collaboration of experts from different disciplines, users are able to study sources that bring new insights into the cultural and social setting, as well as the context of the time in which they originated.

## Details of the methods, procedures or instruments used

An analysis of the websites of selected projects was made from a sample of four digitization projects of writer's/literary legacies using the heuristic evaluation method. The sample includes two Croatian and two foreign projects. When selecting foreign projects, the criterion was that the digitized text processing was conducted according to the TEI standard for marking and exchanging humanistic texts in a digital environment. There are only two such projects in Croatia, so both were selected for the analysis. The heuristic evaluation method is an informal, quick, inexpensive and easy method for evaluating a user interface based on predefined principles or guidelines. A small set of experts examines the compliance of each element of the interface with a list of accepted website usability principles. (Plantak Vukovac and Orehovački, 2010) Most commonly, these are Nielsen's heuristics: Visibility of system status, Match between system and the real world, User control and freedom, Consistency and standards, Error prevention, Recognition rather than recall, Flexibility and efficiency of use, Aesthetic and minimalist design, Help users recognize, diagnose, and recover from errors, Help and documentation (Nielsen, 1995).

The objective was to determine how the websites of the selected projects meet Nielsen's ten principles and how well are their interfaces suited to the needs of users based on the obtained results. The objective was also to determine whether there is a difference between Croatian and foreign projects. The purpose is to point at a better understanding of such projects, their relevance for researchers and the wider community, as well as the possible improvement of the availability of information objects in a network environment.

## Projects in Croatia

This paper describes two Croatian projects related to the digitization of writer's/literary legacies. Virtual Collection of the Works of Antun Gustav Matoš and the Silvije Strahimir Kranjčević project. The home page of the project Virtual Collection of the Works of Antun Gustav Matoš was made in the form



of a timeline, highlighting the most important works of Matoš and interesting facts related to his life. In addition, the virtual collection gives an overview of the digitized works of Matoš (letters, manuscripts, printed works, etc.) and digitized works by other authors about Matoš (pictures, caricatures, literary and musical works). The Matoš and I Campaign is also notable for encouraging the discovery of Matoš's presence in our everyday lives and rereading his works. This virtual collection also contains an interactive map which, reflecting Matoš's trips across Europe motivated by existential reasons, includes the names of the cities that fundamentally influenced the author's creative biography (<http://virtualna.nsk.hr/agm/2014/03/11/o-virtualnoj-izlozbi/>).

The Silvije Strahimir Kranjčević project combines the available material from all places where his legacy is stored (Croatian Academy of Sciences and Arts, National and University Library and the Museum of Literary and Performing Arts of Bosnia and Herzegovina) (<http://www.sskranjcevic.hr/djela.ASP?PisID=1>). On this site, the public can access both the legacy of Silvije Strahimir Kranjčević and all the materials related to the Kranjčević family. In addition to Kranjčević's digitized legacy, this collection contains his resume and bibliography of works in which he is mentioned, and users can also download certain texts by Kranjčević as Word files.

Table 1 Analysis of Croatian projects

## Projects outside Croatia

Selected projects outside Croatia related to the digitization of writer's/literary legacies are: The Thomas Gray Archive and The Writings of James Fenimore Cooper. These projects are collections of the works by Thomas Gray and James Fenimore Cooper. This makes it easier to search, find and study their works. The Thomas Gray Archive is a project created through collaboration with archives, libraries and repositories to collect all the works of Thomas Gray. This project was created by SUB Göttingen and the Bodleian Libraries, University of Oxford. This platform supports online research by providing images of all materials (published works, letters, manuscripts, etc). The digitized materials were processed following the TEI standard. The TEI (Text Encoding Initiative) is an organization which developed a standard for marking and exchanging humanistic texts in a digital environment, which was initially based on SGML for marking and exchanging humanistic texts in a digital environment (Bosančić, 2011). This platform also enables annotating, which facilitates the organization of ideas and concepts (<http://www.thomasgray.org/about/>). The second project,



The Writings of James Fenimore Cooper, began by organizing works in the late 1960s. The project is a collection of all the works of James Fenimore Cooper. SUNY Press was the original publisher. However, after the death of the founder in 2017, the University of New York continued the publication. The Writings of James Fenimore Cooper includes first editions but also works from 1850 to 1920 that are not dated and are therefore have very little value for collectors (<https://www.wjfc.org/>). The website also includes a brief overview of the life of James Fenimore Cooper. There is also a graphic representation of his works.

	<b>Virtual Collection of the Works of Antun Gustav Matoš</b>	<b>Silvije Strahimir Kranjčević project</b>
<b>Visibility of system status</b>	The website quickly responds to user actions, but does not provide feedback about system status.	The website very quickly responds to user actions, but does not provide feedback about system status.
<b>Match between system and the real world</b>	The website corresponds to real-world experience and content is organized in a clear way	The website corresponds to real-world experience and content is organized in a clear way
<b>User control and freedom</b>	Users can undo or redo actions	Users can undo or redo actions
<b>Consistency and standards</b>	Icons and phrases on the website are consistent, terminology is clear	Icons and phrases on the website are consistent (with the exception of returning to the home page by clicking the site logo)
<b>Error prevention</b>	No example	The browser does not prevent errors
<b>Recognition rather than recall</b>	Available options and commands are clearly visible at all times	Available options and commands are clearly visible, but not at all times
<b>Flexibility and efficiency of use</b>	The website can be easily searched by using the timeline	The website can be easily searched. Users may use a search bar, but it is not specific enough (it is difficult to make a query)
<b>Aesthetic and minimalist design</b>	The website is aesthetically acceptable	The website could be aesthetically improved
<b>Help users recognize, diagnose, and recover from errors</b>	The website provides error messages and the user can submit a query	There is an error notification system, but it does not offer a solution.
<b>Help and documentation</b>	Does not include instructions for use	Does not include instructions for use



<b>Consistency and standards</b>	Icons and phrases on the website are consistent, terminology is clear	Icons and phrases on the website are consistent (with the exception of returning to the home page by clicking the site logo)
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<b>Aesthetic and minimalist design</b>	The website is aesthetically acceptable	The website could be aesthetically improved
<b>Help users recognize, diagnose, and recover from errors</b>	The website provides error messages and the user can submit a query	There is an error notification system, but it does not offer a solution.
<b>Help and documentation</b>	Does not include instructions for use	Does not include instructions for use

Table 2 Analysis of foreign projects

	<b>Thomas Gray Archive</b>	<b>The Writings of James Cooper</b>
<b>Visibility of system status</b>	The website quickly responds to user actions	The website quickly responds to user actions
<b>Match between system and the real world</b>	The website corresponds to real-world experience and content is organized in a clear way	The website corresponds to real-world experience and content is organized in a clear way
<b>User control and freedom</b>	Users can undo or redo actions	Users can undo or redo actions
<b>Consistency and standards</b>	Icons and phrases on the website are consistent, terminology is clear.	Icons and phrases on the website are consistent, terminology is clear.
<b>Error prevention</b>	There is an error prevention system	There is no error prevention system
<b>Recognition rather than recall</b>	Available options and commands are clearly visible at all times	Available options and commands are clearly visible, but not at all times
<b>Flexibility and efficiency of use</b>	The website can be easily searched, equally suited to advanced users and beginners	The page is not adapted for newer users but can be easily searched
<b>Aesthetic and minimalist design</b>	It is aesthetically acceptable with high-lighted important hyperlinks	The website is aesthetically acceptable



<b>Help users recognize, diagnose, and recover from errors</b>	The system recognizes, diagnoses and provides clear instructions for resolving errors	The system recognizes and provides clear instructions for resolving errors
<b>Help and documentation</b>	Includes a FAQ section and sitemap	Does not include instructions for use

## Findings, discussion and conclusion

The analysis determined that all four websites are suited to user requirements and that the above principles are met in most cases. They all have a user-friendly interface, meaning that they correspond to real-world experience, and the content is organized in a clear way to make navigation as easy as possible for the user. Furthermore, three websites include a search bar which enables users to search the content more easily, while the website Virtual Collection of Works of Antun Gustav Matoš displays content using a timeline. However, when searching the websites, it was noticed that not all of the websites listed above were aesthetically acceptable and that there is room for improvement for certain sites. There is no error prevention system but most of the websites have a system which recognizes and provides clear instructions for resolving errors. By analysing the Croatian and foreign examples, it was concluded that the Croatian websites have not yet achieved the best possible quality but have room for improvement based on the good practice of foreign projects, which are fully adapted to the practice of digital humanities. While these websites currently have some shortcomings, they can be reduced through constant innovations and additions. Considering that these are currently the only projects related to the digitization of certain writers in Croatia, they are commendable and form the basis for the realization of similar projects. Digital humanities aim at achieving an interdisciplinary approach through the cooperation of different disciplines involved in the digitization of literary legacies of certain writers in order to provide better access to information and better communication with researchers and the wider community. Given that technology is developing quite rapidly, it is essential to encourage the cooperation of computer experts and experts from other disciplines participating in project design with the aim of providing more high-quality and contemporary websites. This gives users a wealth of sources for studying our cultural heritage. Special emphasis is therefore placed on the literary legacy whose preservation, processing and dissemination through projects further confirms our identity and memory of our collective cultural and social creative activity.



## References/Bibliography

1. Berry, David M. (2012.) Introduction: Understanding the Digital Humanities. *Understanding Digital Humanities* (pp. 1-20). London: Palgrave Macmillan.
2. Bosančić, B. (2011). Descriptive markup languages and the development of digital humanities. *Libellarium*, 4(1), 62- 82. Retrieved from <https://hrcak.srce.hr/92394>
3. Nielsen, J. (1995). 10 usability heuristics for user interface design. Nielsen Norman Group, 1(1). Retrieved from <http://courses.ischool.utexas.edu/rbias/2014/Spring/INF385P/files/10%20Usability%20Heuristics%20for%20User%20Interface%20Design.docx>
4. Nikolić, D. (2016). Digital Humanities and National Philology: on Possible Implications of the Computational Turn. *Croatica: a journal for Croatian language, literature, and culture*, 40(60), 75-87. Retrieved from <https://hrcak.srce.hr/174512>
5. Plantak Vukovac, D., & Orehovački, T. (2010). Web Usability Evaluation Methods. *CASE-22 Methods and tools for business and IT development*, 171-182. Retrieved from [https://bib.irb.hr/datoteka/473208.PlantakVukovac\\_Orehovacki.pdf](https://bib.irb.hr/datoteka/473208.PlantakVukovac_Orehovacki.pdf)
6. Rees, L. E. S. (2012). An interpretation of digital humanities. *Understanding digital humanities* (pp. 21-41). London: Palgrave Macmillan.
7. Seiter-Šverko, D. (2013). The national programme of digitisation of archival, library and museum holdings and the Project "Croatian Cultural Heritage". *Vjesnik bibliotekara Hrvatske*, 55(2), 5-15. Retrieved from <https://hrcak.srce.hr/106547>
8. Tomić, M. (2015). Digital humanities as a challenge: paradigmatic change in the humanities research and the practice of digitization. [PowerPoint slides]. Retrieved from [https://bib.irb.hr/datoteka/767117.Tomic\\_Marijana.pdf](https://bib.irb.hr/datoteka/767117.Tomic_Marijana.pdf)
9. Warwick, C. (2012). Studying users in digital humanities. *Digital humanities in practice*, 17(5), 1-21. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.305.6694&rep=rep1&type=pdf>



## BOOK BUYING HABITS OF CROATIAN CITIZENS

Petar Matusina

Master student, Department of Information Sciences, University of  
Osijek, Croatia  
pmatusina@ffos.hr

Jure Žilić

Master Student, Department of Information Sciences, University of  
Osijek, Croatia  
jzilic@ffos.hr

Sanjica Faletar Tanacković

Associate professor, Department of Information Sciences, University of  
Osijek, Croatia  
sfaletar@ffos.hr

### Abstract

*Paper presents findings of the quantitative study which investigated book buying habits of citizens in eastern Croatia. The aim of the study was to find out why, where, when and how often do citizens buy books. Findings based on the analysis of 300 valid questionnaires show that more than half of respondents (55,7%) didn't buy any books in past 12 months. The main reason for not buying books is, as they claimed, because they are not interested in books and reading (39,6%) and because books are too expensive (23,1%). In order to obtain their reading material, around 40% respondents borrow books from libraries and friends. Majority of respondents (57,9%) who indicated that they did buy at least one book in the past 12 months, reported that they bought it on sale (at discounted price). As to the place of purchase, findings show that respondents buy books most frequently at newsstands (49%) and in bookstores (48,7%). The study offers only partial insight into the topic and a more detailed, qualitative study of reasons behind not buying books is required. In order to facilitate more general conclusions, which could be applied to the whole country, the expansion of the study is planned. Also, bearing in mind that eastern Croatia is among the least economically developed regions in the country, authors plan to conduct a similar study in economically more developed regions of the country.*



**Keywords:** book buying habits, citizens, eastern Croatia

## Introduction

A review of professional literature in Croatian scholarly journals and reported activities of professional associations such as Croatian Librarians' Association and Croatian Reading Association (Stričević and Jelušić, 2011; Hrvatsko čitateljsko društvo, 2018; Hrvatsko knjižničarsko društvo, 2016) suggest a growing interest in reading and reading promotion both at scholarly and practical level. However, the book buying habits of citizens have been only sporadically studied by scholars and groups with diverse backgrounds and interests.

For example, Gandolfo, Juric and Jelušić (2015) conducted a comparative study of reading and book purchasing behaviour among university students in Italy and Croatia. They found out that both Italian and Croatian students develop their reading habits independently. However, Italian students admitted that their reading is largely influenced by their family, while Croatian students expressed the importance of both their family and friends in developing reading skills and interests. Both Italian and Croatian students emphasized the importance of the following factors in relation to the choice of place where to buy a book: possibility of a physical contact with a book, price and selection. Both groups of respondents explained that they prefer buying books in bookstores (rather than in supermarkets or newsstands). This study showed that many students buy books they have already read and that the price is an important factor for students so they usually buy books when they are on sale.

Croatian Association of Publishers and Booksellers (CAPB) and a non-profit organization «Knjižni blok» which serves as a collaboration platform for authors, publishers, booksellers, librarians, translators, literary critics and journalist have commissioned several studies into Croatian book market since early 2000. In relation to the book buying experiences of Croatian citizens over 15 and from all regions of the country, their most recent study (GfK 2016) has shown that majority of Croatian citizens does not read (in their free time): only 47% respondents reported reading at least one book in past 12 months. Majority of those who read at least one book in the studied period indicated that they borrowed the book they read from the library or from a friend. Only 19% of all respondents bought at least one book in the studied time period, out of which 64% bought book(s) for themselves or their children, 12% for their friends (as a gift) and 24% both for themselves and their friends. Almost half of the respondents (47%) bought fiction, 29% bought children's books and 21% bought



non-fiction. Most frequently books were bought in bookstores (49%). To a lesser degree respondents bought books at newsstands (29%), book fairs (13%), supermarkets (12%) etc. Only 4% bought books online. More than half (61%) bought books at discounted price. Interestingly, when asked about reasons for not buying (any) books in the studied period, 81% reported that they do not need books and that they are not interested in books and reading. Twenty-five percent did not buy any books because they are too expensive for them. Respondents who bought books admitted to the largest degree that they would buy more books if they were less expensive (72%) and if a better selection of books was available (27%).

In order to address the reported poor interest in books and reading among Croatian citizens, in 2017 a national strategy for reading promotion was adopted. This policy document was developed with the aim to offer a framework for action at all levels (institutional, local, national) regarding reading promotion among all citizens (including those with disabilities), wider availability of books (through bookstores and libraries), production of e-books and free digital reading material (Ministarstvo kulture, 2017).

The study presented in this paper aims to contribute to the critical understanding of this very phenomena through investigation of perceptions and experiences of citizens in eastern Croatia (which is among the least economically developed regions in the country) regarding their reading and book buying interests and habits in leisure time. In this paper only a portion of the results will be presented, in particular those pertaining to citizens' book buying habits.

## Study

The goal of the study presented in this paper was to investigate book buying interests and habits of citizens in eastern Croatia in their leisure time. The study aimed to answer the following research questions:

1. How often do citizens in eastern Croatia buy books, in their leisure time?
2. Why citizens don't buy books?
3. How do citizens buy books (purchase channel, factors affecting their decision)?

Authors also wanted to see if there are any differences, relating to these issues, among respondents with different demographic characteristics (age, gender, education level and library membership).



## Methodology

The study was conducted with the help of quantitative methodology, a print, self-administered anonymous survey by questionnaire. The survey was chosen as the most appropriate method for this exploratory study because authors wanted to reach as many respondents as possible. Since authors wished to include in their study citizens from different social groups and backgrounds it was decided that respondents will be recruited in local supermarkets and grocery stores because they are far more neutral places than for example libraries and schools. The survey was distributed in June and July 2017, at different times of day to convenient sample of citizens, employees and shoppers, at premises of seven supermarkets and grocery stores (Plodine, Billa, Interspar, Spar, Konzum, NTL i Boso d.o.o.) in the following towns in eastern Croatia: Osijek, Čepin, Valpovo, Beli Manastir, Bizovac and Donji Miholjac. Questionnaire included multiple choice, open and Lickert-like type of questions.

## Findings

### **Respondents' background**

A total of 300 respondents participated in the survey: 36% male, and 64% female. In relation to their age, the largest number of respondents fall into the 21-30 and 31-40 age group (26.7% and 21.7% respectively). This is followed by respondents aged 41-50 (18.1%), under 20 (17.4%), and over 51 (16.1%). In relation to their employment status, 75.9% are employed, 13.7% students, 5% retired, and 5.3% unemployed. Although, the average library membership rate in Croatia is well below 20%, the majority of respondents in this study reported that they have a library card (56.4%) and 38% indicated that reading is one of their leisure activities.

### **Book infrastructure in respondents' place of residence**

With this question authors wanted to identify basic facts about the book and reading infrastructure in the respondents' place of residence so we asked them to indicate where (in their place of residence) they can obtain (purchase or borrow) books and other reading material. A total of 84.7% indicated that in their place of residence there is a newsstand where books and periodicals are sold. Slightly less frequently respondents reported that in their place of residence there is a public library (76.3%) and a bookstore (72.7%). Almost two thirds (65%) stated



that in their place of residence from time to time some kind of event (such as a small book fair) is organized where books are sold. Fifty-six percent reported that there is an antique book store, and only 19.7% said that in their place of residence books can be obtained from a bookmobile service operated by a public library from the nearest large city. (Table 1)

*Table 1.* Book infrastructure in respondents' place of residence

	%
newsstand	84.7
public library	76.3
book store	72.2
book fair	65
antique book store	56
bookmobile	19.7

### Personal libraries

In the next section of the survey, respondents were asked questions about their private, personal libraries. A total of 41.2% reported having collected up to 20 books in their personal library. A slightly larger book collection (21 to 50 books) was reported by around a quarter of respondents (24.1%). A total of 18.1% own more than 50 but less than 100 books. Only 16.6% have a personal library estimated at more than 100 books. (Table 2)

*Table 2.* Size of respondents' personal library

	%
up to 20	41.2
21 to 50	24.1
51 to 100	18.1
100+	16.6

Statistically significant difference (tested with the help of t-test) was identified in relation to the age ( $P=0.033$ ) and educational level of respondents ( $P=0.001$ ): older respondents and those with higher educational level tend to have larger personal libraries. ANOVA test identified statistically significant difference in relation to the public library membership ( $P=0,000$ ): respondents who are public library members tend to have larger personal libraries than those who are not members of their local library.



When asked to explain how they obtained books for their personal libraries, respondents indicated the following: 55.2% purchased the books themselves, 53.7% inherited the library from a family member and 46.3% received books as (birthday) gifts. Interestingly, less than a quarter of respondents (21%) has read all or majority of books in their personal library.

### How often do citizens buy books, in their leisure time?

In this section of the survey, respondents were asked about their book buying experiences in past 12 months. More than half of respondents (55.7%) reported that they didn't buy any books in the studied period. A total of 33.1% bought from 1 to 5 books, and 6.8% bought from 6 to 11 books. Only 4.4% could be identified as frequent book buyers: on average they bought at least one book a month. On average, each respondent bought 0.92 books in the studied period. (Table 3)

Table 3. Number of books bought in past 12 months

	%
none	55.7
1 to 5	33.1
6 to 11	6.8
12+	4.4

Although female respondents (Mean 2.51) buy books more frequently than male (Mean 1.71), this difference was not identified as statistically significant. However, ANOVA test identified statistically significant difference in relation to respondents' educational level ( $P=0.028$ ): books are bought more frequently by respondents with higher level of education. Also, t-test identified statistically significant difference ( $P=0.000$ ) in relation to library membership: respondents who are library members tend to buy books more frequently (Mean 3.20) than respondents who are not library members (Mean 0.95).

### Why citizens don't buy books?

The main reasons why they are not buying books, respondents claimed, is because they are not interested in books and reading (39.6%) and because books are too expensive (23.1%). Also, around 40% respondents does not buy books



because they borrow books in libraries (22.4%) and from friends (14.9%). (Table 4)

*Table 4.* Reasons for not buying books

	%
not interested in books and reading	39.6
books are too expensive	23.1
borrow books in library	22.4
borrow books from a friend	14.9

Chi-square test identified statistically significant difference in relation to the age of respondents ( $P=0,005$ ): disinterest in reading and books was expressed most frequently by respondents aged 21-30. This age group also indicated more frequently that they borrow books in libraries. While respondents aged 31-40 reported most frequently that they do not buy books because they are too expensive, respondents aged 51+indicated more frequently that they borrow books from friends. Statistically significant difference was also identified in relation to the library membership ( $P=0.000$ ): respondents who are library members indicated more frequently that they do not buy books because they borrow them in the library.

## How citizens buy books?

In this section of the survey, we wanted to find out where citizens buy books (purchase channels) and understand what factors influence their decision to buy books.

Based on their responses to a Lickert-type question, as can be seen from Mean values provided in Table 5, respondents' decision to buy books is to the largest degree influenced by a recommendation of a family member or a friend (Mean 3.60) and the possibility to touch, watch and browse the book before purchasing (Mean 3.60). This is followed by (discounted) price of the book (Mean 3.44) and the fact that the book is listed on the best-selling lists (Mean 3.31). Readers' feedback (Mean 3.24), the fact the the book was written by the author they loved (Mean 3.09), or was awarded a literary award (Mean 3.07) and recommended by a book shop staff (Mean 3.04). the least important factor is book or author promotion on TV (Mean 2.85).



*Table 5. Factors influencing respondents' book buying decision*

	<b>Mean</b>
recommendation of a family member/friend	3.60
possibility to touch, watch and browse the book before purchase	3.60
(discounted) price of the book	3.44
book is listed on the best-selling lists	3.31
readers' feedback (forums, Facebook, newspapers, magazines etc.)	3.24
book is written by the author they love	3.09
book is awarded a literary award	3.07
recommendation by a book shop staff	3.04
book or author promotion on TV	2.85

Majority of respondents (57.9%) who indicated that they did buy at least one book in the past 12 months, reported that they bought it on sale (at discounted price). A total of 42.1% paid the full price for the book(s) they bought. When asked if the price of the book had anything to do with their decision to buy a book, a total of 56.6% admitted that it had, and 43.4% said that it had not (i.e. they would not buy books even if they were cheaper).

As to the purchase channel, findings show that respondents buy books more frequently through physical channels such as newsstands (49%) and bookstores (48.7%). This is followed by supermarkets and grocery stores (29%), book fairs (23.7%), and antique book stores (10.7%). Online booksellers (8.7%) are listed least frequently. (Table 6)

*Table 6. Purchase channel*

	<b>%</b>
newsstand	49
book store	48.7
supermarket and grocery store	29
book fairs	23.7
antique book shops	10.7
online booksellers	8.7

Chi-square test identified statistically significant difference in relation to the newsstands ( $P=0.001$ ): female respondents buy books more frequently at newsstands than male. In relation to newsstands, statistically significant difference was identified regarding respondents' age ( $P=0.040$ ): respondents aged 41-50 buy books most frequently at newsstands. Statistically significant difference



was also identified in relation to book stores regarding the educational level of respondents ( $P=0.001$ ): bookstores are the preferred purchase channel for respondents with the highest educational level. In relation to the library membership, statistically significant difference was identified in relation to all places of purchase: book stores ( $P=0.001$ ), newsstands ( $P=0.000$ ), antique book shops ( $P=0.009$ ) and online booksellers ( $P=0.039$ ). Respondents with library cards buy books more frequently at all listed places of purchase than those who are not library members.

## Concluding discussion

The study presented in this paper investigated book buying interests and habits of citizens in eastern Croatia in their leisure time. Since several recent studies that focussed on this phenomenon indicated that Croatian citizen read and buy books in their free time well under European average, authors wanted to explore, among other things, how many books did citizens in one of the least economically developed regions in the country buy in the past 12 month and if they did not buy any books in this period, why not.

While GfK study (2016), which was conducted across Croatia, found out that only 19% of respondents bought at least one book in the past 12 month, in our study twice as many respondents (44.3%) stated that they bought at least one book in the past 12 months. On average, each respondent bought 0.92 books in the studied period. In line with some other studies which have shown that women in general read more than men, our study has shown that women in general buy more books than men (although this difference was not statistically significant). As expected, respondents with higher educational level and those who are library card holders buy books more frequently than those with lower educational achievement and those who are not library members. Our study, on the other hand, did not confirm findings of some international studies (e.g. Suessmann, 2015) which established that book buying is correlated with age.

When buying books, majority of respondents seem to stick with traditional i.e. physical purchase channels (newsstands and book stores): only 8.7% of respondents stated that they bought books through online booksellers. It should be noted, for example, that book stores are preferred purchase channels for respondents with higher educational level and respondents who are library members. Although preference for physical purchase channels was also identified in studies conducted by GfK (2016) and Gandolfo, Juric and Jelušić (2013), respondents in our study preferred to a much larger degree to buy books at news-



stands than in book stores which were selected as preferred place of purchase in these two earlier studies. This might partially explain why a larger portion of respondents in this study bought books: books available at newsstands are usually of a poorer quality and are sold at discounted price (sometimes even as a free gift when buying a newspaper or a magazine).

Respondents who stated that they did not buy any books in the studied period (55.7%) were asked to provide reasons. The main reason why these respondents did not buy books is their disinterest in reading and books as such (39.6%). To a much lesser degree (23.1%) respondents admitted that an important barrier to their purchasing of books is the price of books. While largest disinterest in reading and books was identified for respondents aged 21-30, the respondents in the age group 31-40 reported most frequently that they do not buy books because they are too expensive. The same reasons for not buying books were reported by respondents in GfK study.

Although this study revealed some interesting findings about book buying of citizens in eastern Croatia, it offers only a partial insight into the topic and a more detailed and more comprehensive study is required. In order to facilitate more general conclusions, which could be applied to the whole country, the expansion of the study is planned. Also, bearing in mind that eastern Croatia is among the least economically developed regions in the country, authors plan to conduct a similar study in a more developed regions of the country to see if there are any differences.

## References

- Gandolfo, A.; Juric, M.; Jelusić, S. (2015). A comparative study of student reading and book buying habits. [PowerPoint slides]. Retrieved from [https://arpi.unipi.it/retrieve/handle/11568/753003/42882/final%20draft\\_by%20the%20book2](https://arpi.unipi.it/retrieve/handle/11568/753003/42882/final%20draft_by%20the%20book2)
- GfK.IstraživanjetržištaknjigauRH.(2016.)[PowerPointslides].Retrievedfrom[https://issuu.com/modernavremena/docs/gfk\\_-\\_istra\\_ivanje\\_tr\\_i\\_ta\\_knjig](https://issuu.com/modernavremena/docs/gfk_-_istra_ivanje_tr_i_ta_knjig)
- Hrvatsko čitateljsko društvo. (2018). Čitaj mi. Retrieved from <http://www.citajmi.info/naslovna/>
- Hrvatsko knjižničarsko društvo. (2016). I want to read too. Retrieved from [https://www.hkdrustvo.hr/hr/strucna\\_tijela/30/publikacija/396/](https://www.hkdrustvo.hr/hr/strucna_tijela/30/publikacija/396/)
- Ministarstvo kulture. (2017). Nacionalna strategija poticanja čitanja za razdoblje od 2017 do 2022. Retrieved from <https://www.min-kulture.hr/userdocsimages/NAJNOVIJE%20NOVOSTI/a/NSPC%CC%8C.pdf>



Stričević, I.; Jelušić, S. (2011) Informacijske potrebe i čitateljski interesi građana Hrvatske“ In E. Pecotić et al. (Eds.). *Međunarodni interdisciplinarni stručni skup Knjiga i slobodno vrijeme: zbornik radova*. (pp. 16–31). Split: Gradska knjižnica Marka Marulića.

Suessmann, I. (2015). Germany: A nation of readers?. German Buch News. Retrieved from <https://publishingperspectives.com/2015/07/germany-a-nation-of-readers/>



## ENSURING EQUAL ACCESS TO DIGITAL CONTENT: HOW TO MAKE AN ACCESSIBLE WEB DESIGN FOR A LIBRARIAN WIKI WEBSITE?

Andor Nagy

Assistant Professor, University of Pécs - Faculty of Humanities, Institute of Human Development and Cultural Studies, Department of Library and Information Science, Pécs, Hungary

Doctoral Student, Eötvös Loránd University, Doctoral School of Literary Studies, Library science, Budapest, Hungary

Librarian, National Széchényi Library, Hungarian Library Institute, Budapest, Hungary

ngyandor@gmail.com

### Abstract

*Most people have specific ideas about the possibilities of physical accessibility, and regulations also describe clearly, how accessibility should be realized; ramps, elevators, parking spaces for disabled people and signs with Braille writing are visible to everyone and their function is obvious. As opposed to this, the accessibility of web platforms is a much more elusive area, which I was trying to map out. In this article, I introduce the process of making an accessible web design through Acting Communities Wiki website.*

**Keywords:** accessibility, digital content, equal access

### Introduction

Based on the data collected by the Hungarian Central Statistical Office, 490 578 people were living with some kind of physical or mental disability in Hungary in 2011. According to the data of the national census in 2011<sup>1</sup>, this number is 4,9% of the total population of 9 985 722, so we can see, that a significant part of the population is affected, which we cannot ignore, moreover, we must strive for equal chances in the everyday lives of people with disabilities.

<sup>1</sup> Tausz Katalin, Phd et al. (2015). 2011. évi népszámlálás: 17. A fogyatékkal élők helyzete és szociális ellátásuk. Budapest: Központi Statisztikai Hivatal. Retrieved from: [http://www.ksh.hu/docs/hun/xftp/idoszaki/nepsz2011/nepsz\\_17\\_2011.pdf](http://www.ksh.hu/docs/hun/xftp/idoszaki/nepsz2011/nepsz_17_2011.pdf).



When we design a building or digital service to be accessible, we not only provide a comfortable environment for people with permanent disabilities, but also for people who are temporarily disabled, therefore when we provide accessibility, we make life easier for far more people than that 4,9%.

Most people have specific ideas about the possibilities of physical accessibility, and regulations also describe clearly, how accessibility should be realized; ramps, elevators, parking spaces for disabled people and signs with Braille writing<sup>1</sup> are visible to everyone and their function is obvious.

As opposed to this, the accessibility of web platforms is a much more elusive area, which I was trying to map out in the past one and a half years. As a coworker of the National Széchényi Library I have been working as a web content-developer since 2017, when the process of establishing the Acting Communities Wiki<sup>2</sup> started, as I was responsible for coordinating technical and content development. The wiki was created within the project called Acting communities - active community involvement EFOP-1.2.1-15-2016-00001<sup>3</sup>, which was realized with the cooperation of the Hungarian Open Air Museum, the National Institute for Culture Non-profit Ltd. and the National Széchényi Library.

The Acting Communities Wiki has two main goals:

1. Making the results of the project accessible in a way understandable for the public
2. Actively involving the audience by providing opportunity for immediate feedback, to create their own content and edit or comment on the already existing ones.

The site was designed so that the content created and proofread by the technical board of the Acting communities - active community involvement project will be accessible in its original form even if the users of Acting Communities Wiki further improve it. We achieved this by having two versions accessible of the articles created by us; one proofread and one publicly editable. All the entries that I put together from the content created and proofread by coworkers of the project are under the "Proofread" menu. These are not editable by everyone, but each entry has a copy in the "Community" category. This version of the entries is editable by anyone after an easy registration process. Here are the entries creat-

<sup>1</sup> Magyar Vakok és Gyengénlátók Országos Szövetsége. Braille-írás. Retrieved from: <http://www.mvgyoszh.hu/braille-iras>.

<sup>2</sup> Cselekvő Közösségek Wiki (n.d.). Retrieved from: <https://cskwiki.hu>.

<sup>3</sup> Cselekvő közösségek – aktív közösségi szerepvállalás EFOP-1.3.1-15-2016-00001 projekt (n.d.). Retrieved from: <http://cselekvokozossegek.hu>.



ed by Active Community Wiki users as well. In the case of these entries, there is no technical proofreading (just a moderation in advance), similarly to Wikipedia, we leave the maintenance of these entries to the community.

## Theoretical background

In case of projects realized within the framework of European Union tenders, accessibility is required in most cases, and the criteria of physical accessibility are well defined in the Hungarian regulation system as well. According to act LXXVIII of 1997 about the foundation and protection of built environment section 2, the built environment is accessible *“if convenient, safe and independent use of such areas is ensured for all persons, including handicapped persons or groups for whom special facilities, equipment or technical solutions are necessary.”*<sup>4</sup> The act builds on the recommendation of the handbook titled The European concept of accessibility<sup>5</sup>, which was accepted as a normative document by the European Commission in 1996. The technical regulations of the act mainly apply to the design of public buildings and buildings providing public service, and they mainly consider people with reduced mobility.

In Hungary, this act was followed by the Equal chance act, Act XXVI of 1998<sup>6</sup>, which intended to give equal chances to a broader group of disabled people.

Act XCII of 2007 about the rights of the disabled and the announcement of the corresponding Optional Protocol<sup>7</sup> interprets disability in a much more progressive way, and claims that disability is not a disease, but a part of social diversity. The making of the act is a significant achievement because it is not limited anymore to physical accessibility, but declares that material areas as well as services, events and programs must be designed according to the concept of “universal planning”, and in a way that is as accessible as possible for everyone, without the need for special preparations. It mentions the necessity of the accessibility of the platforms on the internet, but unfortunately, it provides no details about the method imagined: *“Urging private entities that pro-*

<sup>4</sup> Jogtár: 1997. évi LXXVIII. törvény. Retrieved from: <https://net.jogtar.hu/jogszabaly?docid=99700078.TV>.

<sup>5</sup> MaartenWijk, edit. (1996). *Az Akadálymentesség Európai Eszméje*. Budapest: MEOSZ

<sup>6</sup> Jogtár: 1998. évi XXVI. törvény. Retrieved from: <https://net.jogtar.hu/jogszabaly?docid=99800026.TV>.

<sup>7</sup> Jogtár: 2007. évi XCII. törvény. Retrieved from: <https://net.jogtar.hu/jogszabaly?docid=a0700092.TV>.



*vide services to the general public, including through the internet, to provide information and services in accessible and usable formats for persons with disabilities”*<sup>8</sup>. In case of an act from 2007, it is not surprising, that it does not go in detail about the method of making web platforms accessible, since the first detailed technical description recording the steps of making a web platform accessible was accepted as a standard only in 2012. The standard got the code number ISO/IEC 40500:2012<sup>9</sup>, and it is based on the Web Content Accessibility Guidelines 2.0 (WCAG 2.0)<sup>10</sup>. The recommendation was worked out by the World Wide Web Consortium (W3C)<sup>11</sup>, the first version in 1999<sup>12</sup>.

W3C is an international organization, whose main task is creating standards helping the improvement of the web. The organization has full-time coworkers, but the online community takes part in the developing process as well, and it cooperates with ca. 400 organizations<sup>13</sup>. The work of W3C is coordinated by the French based European Research Consortium for Informatics and Mathematics<sup>14</sup>, the US based MIT Computer Science and Artificial Intelligence Laboratory<sup>15</sup> and the coworkers of the Japanese Keio University<sup>16</sup>.

## Web Content Accessibility Guidelines (WCAG) 2.0

The WCAG 2.0 specifies how web contents can be made understandable for Internet users with disabilities. This affects many people, e.g. people with hearing, sight, body, cognitive, neurological or other problems, and elderly people with changed abilities, too. An accessible website is beneficial for the average

<sup>8</sup> im.

<sup>9</sup> International Organization for Standardization: ISO/IEC 40500:2012. Retrieved from: <https://www.iso.org/standard/58625.html>.

<sup>10</sup> World Wide Web Consortium: Web Akadálymentesítési Útmutató 2.0. Retrieved from: <http://www.w3c.hu/forditasok/WCAG20>.

<sup>11</sup> World Wide Web Consortium: A W3C bemutatása. Retrieved from: <http://www.w3c.hu/forditasok/w3cfacts.html>.

<sup>12</sup> World Wide Web Consortium: Web Content Accessibility Guidelines 1.0. Retrieved from: <https://www.w3.org/TR/WAI-WEBCONTENT>.

<sup>13</sup> World Wide Web Consortium: Current Members. Retrieved from: <https://www.w3.org/Consortium/Member/List>.

<sup>14</sup> ERCIM (n.d.). Retrieved from: <https://www.ercim.eu>.

<sup>15</sup> MIT Computer Science & Artificial Intelligence Lab (n.d.). Retrieved from: <https://www.csail.mit.edu/about>.

<sup>16</sup> Keio University. Retrieved from: <https://www.keio.ac.jp/en/about>.



user as well of course, since these sites are designed intentionally, and they are easy to understand at first sight.

## Levels of accessibility

The standard of W3C describes three levels of accessibility<sup>17</sup>: *A level (basic level) AA level (advanced level) AAA level (highest level)*.

On the basic level, websites are designed so that obstacles that prevent the content of site from being understandable are cleared for most people. A solution like this is for example when the web content developer adds so called supplementary text to the pictures (alt attributes), so that the content of the pictures can be processed by reading programs.

Websites on the advanced accessibility level (AA level) not only strive to clear even the most elementary obstacles for disabled users, but the structure and the content of the site is designed in a way that makes browsing not only possible for users with disabilities, but also comfortable.

The highest level of accessibility is mainly realized on websites that the content of which is aimed specially at disabled people, but it is not advisable to design every sub-site of a website according to the criteria of the AAA level, since there are cases when trying to meet every expectation of the level can damage the overall user experience.

## Principles of the Web Content Accessibility Guidelines 2.0

The WCAG 2.0 identifies four principles: *noticeability, operability, understandability, robustness*.

The criteria of the three levels of accessibility are formulated within these principles. Next to every criterion it is indicated in brackets which level of accessibility its implementation contributes to. The highest level (AAA) naturally has to meet the criteria of the AAA, AA and A levels, too, and the advanced level only has to meet the expectations of the AA and A levels.

From now I will introduce the aim of the four main principles, illustrated by practical examples.

<sup>17</sup> World Wide Web Consortium: Az 1. követelmény értelmezése. Retrieved from: <http://www.w3c.hu/forditasok/UNDERSTANDING-WCAG20/conformance.html#uc-conf-req1-head>.



## Noticeability

The noticeability chapter defines the technical and content expectations that make it possible for users to perceive the content shown on the website (e.g. text, picture, sound). The easiest solution, that is present even on the basic accessibility level websites, is providing a text format alternative to not entirely text format content. Beside every text being clearly readable (e.g. using sufficient font size, font style and contrast), a text format alternative may be necessary in case of audiovisual content or special characters, symbols (e.g. percent- and at sign). There are several possibilities for the technical implementation of this, e.g. in many cases we can avoid using unnecessary multimedia content and symbols to begin with, but if this cannot be achieved, then we can describe the object in text in so called alt attribute. These alt attributes are not directly visible for users, but they can appear e.g. when they hover the mouse cursor over the object, and several reading softwares can identify and read them as well.

## Operability

The second principle is operability. Criteria listed in the chapter make sure that the website can be used easily by most people. For example, there are people who cannot use the mouse to navigate within the site, and for them it has to be made possible to avail all functions by using the keyboard as well.

Moreover, it is important that the website provides enough time to process the content for every user. A sub-site that closes automatically after a certain amount of time cannot be considered accessible for example, neither a video that cannot be paused.

Colors and flashing light that can cause epileptic seizure to some people also have to be avoided. The accessibility guidelines provide detailed information regarding this.

Another important point is for the website to provide help for disabled users in navigating, finding the content they are looking for, and locating their position within the site structure. This can be helped by e.g. using site titles and headers and defining the exact purpose if the links placed in the text.

## Understandability

The third principle is understandability. The content that appears on the website has to be understandable for both assistive softwares and for people. For example, the language of the site must be algorithmically definable in order for



the reading- and translating softwares to work optimally, and phrases and abbreviations that can prevent understandability have to be avoided.

Furthermore, using functions users can send in some kind of content with have to be accessible as well, e.g. during registration.

According to the principle of understandability, websites must be predictable in both appearance and operation. Among other things, automatically opening sites, pop-up sites and every appearance and navigating solution that can be disturbing have to be avoided.

### **Robustness**

The fourth principle is robustness that includes – mainly – technical expectations that can ensure with a good chance the compatibility of the website and the assistive softwares. So, repetitions for example have to be avoided, but using tags and technical attributes is recommended.

### **Difficulties of accessibility, results**

While planning the Acting Communities Wiki, we aimed at meeting the criteria of the advanced accessibility level (AA) of the WCAG 2.0, which we managed to achieve. An accessibility expert was involved in the developing process, who designed the structure and basic content of the site with the help of disabled people. The biggest difficulty proved to be that as a European Union project, not only did we have to meet the criteria of accessibility, but also the criteria regulating the electronic platforms created as a European Union project, and the public appearance of the wiki had to be consistent with the points recorded in the inner Public Appearance Guidelines of the Acting communities – active community involvement EFOP-1.3.1-15 project.

Therefore, we had to synchronize three entirely different criteria system. It would be unnecessary to list all the problems that occurred, because each website has different problems, but a practical example is the complexity of the placing of the different logos. The Public Appearance Guidelines for Beneficiaries of Széchenyi 2020<sup>18</sup> says that the logo of the Széchenyi 2020 program, the logo of the Hungarian Government, the flag of the European Union, the name of the

<sup>18</sup> Jelenleg hatályos: Kalóz Emilia (2018). *Széchenyi 2020 Kedvezményezett Arculati Kézikönyv*. Budapest: Miniszterelnökség. Retrieved from: <https://www.palyazat.gov.hu/download.php?objectId=78637>



subsidy base and the slogan “Investment in the future” has to be displayed on the project site. Moreover, according to the inner regulations of the project, we have to display the logos of the consortium partners and the project’s own logo, too. Beside the 10 listed compulsory elements, we wanted to show the logo designed for the Acting Communities Wiki as well. Synchronizing the instructions of the Széchenyi 2020 Public Appearance Guidelines for Beneficiaries and the inner public appearance guidelines of the project concerning the size and placing of the logos was a relatively easy task, however, it was much harder to fit the AA accessibility level of the WCAG 2.0. Every element that does not belong directly to the content of the website damages the operability and understandability of it. Also, since no logo can be bigger than the logo of the European Union within the website, the developer had two choices left: either all other logos will be really tiny (that is problematic from the accessibility aspect), or the logo of the European Union will take up a significant amount of the useful space on the website, which does not contribute to accessibility either.

In the end, we chose a solution in between, and we designed the logo of the Acting Communities Wiki to be clearly visible in a small size.

This was just one example from the numerous problems that occurred, and that everybody has to face when setting the goal of designing an accessible website, besides, opening an accessible website does not necessarily mean that it will stay accessible, since the certification is always granted for a specific time. Still, we can, and we have to strive for the website to stay accessible, but for this, we have to make sure that the formatting of the content that appears on the website meets the criteria system of accessibility. The graphic editing platform of an unmodified WordPress<sup>19</sup> content managing system is not suitable for creating accessible content, because for that, special formatting is necessary, e.g. the elements of the footnote have to be placed between `<dt>` HTML tags, and the quotes must be placed between `<blockquote>` or `<q>` HTML tags (based on their extent). I prepared a detailed technical guide<sup>20</sup> about this for the Acting Communities Wiki to help users creating content.

As a result of the prolonged developing process, in the end we got a website that meets every expectation set for modern websites, and furthermore, it realizes the advanced accessibility level (we have got a certificate about that) and complies fully with the regulations of both the project and the European Union

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<sup>19</sup> WordPress (n.d.). Retrieved from: <https://hu.wordpress.org>.

<sup>20</sup> Cselekvő Közösségek Wiki: Wiki szócikkek akadálymentesített formázása. Retrieved from: <https://cskwiki.hu/wiki-szocikkek-akadalymentesitett-formazasa>



## CULTURAL AND PUBLIC PROGRAM OF SCHOOL LIBRARIES: AN EXAMPLE OF SCHOOL LIBRARIES IN THE CITY OF OSIJEK

Mirna Gilman Ranogajec

Research and Teaching Assistant at Department of Information Sciences,  
Faculty of Humanities and Social Sciences at University of Osijek,  
Croatia  
mgilman@ffos.hr

Ines Hocenski

Research and Teaching Assistant at Department of Information Sciences,  
Faculty of Humanities and Social Sciences at University of Osijek,  
Croatia  
ihocenski@ffos.hr

### Abstract

*The school library has a special place in the educational process. It is an integral segment of the school system that is directly involved in school curricular and extracurricular activities serving as a teacher and leader through the world of knowledge, information, culture, media and technology use, providing a safe space for personal development of an individual. One of its many goals is to organize activities that encourage cultural and social awareness and sensitivity, promote reading, resources and services at and outside the school. This research will focus on the cultural and public activities of a school library which includes: organization, preparation and implementation of cultural contents, cooperation with cultural and other institutions in organizing activities for children and youth, encouraging cooperation between cultural and public activities in the teaching process of different educational areas, promotion of cultural and historical values as well as the promotion of general values and the alignment of socio-humanistic values. (IFLA, 2015; American Association of School Librarians, 2015; Galić, 2012; Hrvatsko knjižničarsko društvo, 2013; Kovačević, Lasić-Lazić and Lovrinčević, 2004). The goal of this research is to determine to what extent are the school libraries in the city of Osijek implementing cultural and public activities which should be regulated on an annual basis within each school library. Data will be gathered with the help of quantitative methodology. Data analysis and a questionnaire will be conducted in school libraries in the city of Osijek. There was no similar study of this type conducted in the city of Osijek before, therefore authors of this research be-*



*lieve that this paper will with its originality contribute directly to the development of cultural activities and services in school libraries in the city of Osijek. The results of the research will show to what extent do libraries in the city of Osijek actually participate in their regulated cultural roles, which can either serve as an example of good practice or as a suggestion and notice that school libraries should be more involved and active in this field of library work.*

**Keywords:** school libraries, program and activities, cultural and public services

## Introduction

The main task of a school library is to provide a basic support for lifelong learning, provide appropriate space, access to resources, activities and services to encourage student, teacher, and community learning (IFLA, 2015). Unlike public libraries, school libraries are directly involved in the educational system and are often changing and adapting as the system evolves. The range of school library tasks varies from country to country, where each school library should have a plan and program of tasks and activities for the ongoing school year. They all have the same main goal - to support and advance student learning. The main areas Croatian school libraries have to cover are educational, professional and cultural-public oriented ones. In this paper we will focus on organized cultural and public activities. By conducting such services and activities, school librarians are helping their students to develop cultural consciousness and adopt new values such as one of multiculturalism, art and literature, thus encouraging a healthy educational atmosphere of the school and its local community (Galić, 2012). Expectations for school libraries are high, but it is not uncommon that these standards are not realistic and are hard for implementation. Prior to this research, some issues were noticed in Osijek's school libraries, that were the starting point and a curiosity and concern for the authors of this research. Schools visited, often had a small classroom set for them - just enough to fulfill the basic needs of one school library. Second problems that was encountered was insufficient funding and interest for cultural and public activities. Also, it is an often scenario that in school libraries in Osijek there is only one full-time librarian working in the library covering the needs of cca 500 pupils, not to mention the needs of the school staff and local community. Since working conditions are varying, the purpose of this research was to examine the plan school libraries have for an area that is not often the subject of a discussion: cultural and public events and what affects the implementation of such activities.



## School library roles and goals

In addition to being an information specialist, the school librarian is a teaching associate responsible for acquiring, organizing and accessing library collections. Among other things, he or she plans various activities in cooperation with other school staff and thus supports the teaching process (Kovačević D.; Lasić-Lazić J.; Lovrinčević J, 2004). It can be said that school libraries have become an essential part of meeting the Standards issued by the Croatian National Education Standard (CNES), which emphasizes active methods of work, where this role is easily recognized by the school libraries. The CNES is changing the way students gain knowledge, skills, habits, education and socialization in line with the EU value system. (Nastavni plan i program za osnovnu školu, 2006). By organizing and implementing workshops, lectures and projects of rich content for students, professors, parents and the public, the school library is getting closer to the community and is including them in the educational lifelong learning process. This form of activity connects the traditional way of learning (ex cathedra lectures) with personal experience or with more interactive kind of learning (Galić, 2012). According to the Toolkit for Promoting School Library Programs: "Taking advantage of special observances to plan school-wide promotions is one way to put your library in the spotlight" (American Association of School Librarians, 2015). School libraries can be a part of manifestations and events such as Croatian Book Month, Noć knjige, picture book festival "Čuvari priča", Children's Week and many more that are held by various information institutions annually. Such literary events are perfect for school libraries, where they can either participate or be one of the organizers. By participating or by organizing they are fulfilling their cultural and public school library mission.

## Cultural and public program

School curricula and school libraries vary a great deal from country to country, so the school library annual programs are modified according to the local, legislative and curriculum context. School library program as per IFLA guidelines says that school librarians have to compromise between "what they aspire to achieve and what they can reasonably expect to achieve" (IFLA, 2015). The school library represents the cultural headquarters of the school and one of its tasks is cultural and public activity that is reflected in the organization, preparation and implementation of cultural events envisaged by the school's plan and program such as literary encounters, literary and film forums, book presentations, thematic anniversary exhibitions, holidays and other important dates. The cultural



and public activities of the library also include cooperation with other cultural and information institutions. By organizing different projects the school library can contribute to teaching and developing one's communication skills, research skills, planning skills, creative skills etc. The library has the mission to teach not only the school staff and students, but the public about research methods, information literacy, different mediums and information resources (Nastavni plan i program za osnovnu školu, 2006).

The School standards from the year 2000 say the Cultural and Public tasks of a school library were:

- cultural and public activities of the school library include:
- organization, preparation and implementation of cultural content such as literary and film forums, competitions in literacy, literary encounters, book presentations, thematic exhibitions, film screenings and video projections
- cooperation with cultural institutions that organize work with children and youth in leisure time (amateur theater, singing choirs, folk libraries, etc.) (Standard za školske knjižnice, 2000).

As of 2013, there is a new proposed Croatian standard for School Libraries. The cultural and public tasks of the school library are:

- organization, preparation and implementation of cultural contents (library and film stands, competitions in the knowledge, literary encounters, presenting books, art and other thematic exhibitions, film and video projections, theater performances, music and dance performances etc.)
- cooperation with cultural and other institutions that organize work with children and youth in leisure time (folk and other libraries, archives, museums, theaters, etc.).
- Encouraging the integration of cultural and public activities with the teaching of various educational programs areas
- promoting cultural and historical values and peculiarities of their own as well as others nationality
- promoting general values and aligning socio-humanistic values with to the goals of the educational program
- cooperation with professional associations and related institutions
- Public advocacy and promotion of school library activities (Standard za školske knjižnice, 2013)

The new Standards for school libraries seem more suitable and include the core of IFLA's School Library Guidelines. The School Library annual programs are



intended to guide the school librarians in the process of fulfilling informational needs of the “school community, to the social, ethnic, cultural, linguistic, indigenous and other unique population dimensions of the community within and beyond the school” (IFLA, 2015). According to IFLA Guidelines for School libraries, a school librarian should also strive to communicate and collaborate with other information institutions in order to improve their services and to expand them to the broader community. Which is more than students, it is beyond the border of a physical institution which embodies the school (IFLA, 2015).

## Research conducted in school libraries in the city of Osijek

The subject of this research were librarians working in elementary schools and high schools. The goal was to determine the amount of cultural and public activities organized by school libraries compared to the recommendations by the School library standard. Type of activity, cooperation with other cultural and educational institutions and potential problems in the organization of activities were all points of interests. The goal of the research was to identify and understand the factors impacting the work of school libraries on their cultural and public activity.

In accordance with the research goals, a quantitative method of data acquisition and analysis was used. A questionnaire was used to acquire data, since questionnaires are one of research methods most commonly used to show the current status of a research problem (Powell and Connaway, 2004). The questionnaire was made available online through a LimeSurvey template. An online questionnaire was used since it was the simplest way to reach most librarians in Osijek. The questionnaire consisted of 13 questions. The initial questions focused on the type of school (elementary/high school) the participant was working in, as well as the number of students and hired librarians. The remaining questions focused on the libraries’ organization and implementation of cultural and public activities (e.g. „State how many activities you have organized for a certain number of users in the current year“).

The questionnaire was successfully filled out by 19 librarians. Of the 19, 66.6% were elementary school employees, while 33.3% were high school employees. According to acquired data, there is an average of 392 students in elementary and high schools of Osijek, while there is one librarian per school.



## Findings and discussion

This part of the paper focuses on the analysis of the research results, followed by a discussion which will provide conclusions regarding the results of the research.

In the past academic year, 10.73% of activities organized by librarians were for students, 2.68% of them for teachers, 2.57% for the general public, 2% for parents and 2.94% for multiple groups. Furthermore, when looking at specific types of activities, the results were as follows: literary forums – overall 15 in the last academic year, movie forums – 10, tests of knowledge/quizzes – 19, literary meetings – 24, book promotions – 21, art exhibits – 32, other themed exhibits – 35, movie and video showings – 30, theatre plays – 34, musical and dance performances – 5, other – 24. The results show that librarians mostly organize events for students and that the fewest number of organized events are for parents. The most common organized events are art and themed exhibits and book promotions. Librarians collaborate with local cultural and other institutions that organize events with children and youth, mostly with public and other libraries (84%), as well as museums, archives and other cultural institutions such as Kinematografi Osijek (all at 11%). 63% of librarians that participated in the research claimed to collaborate with theaters, while 58% of them claimed to collaborate with other schools. 22% of librarians claimed to have not organized a single event in collaboration with another institution.

The establishments and institutions listed by librarians as collaborators are as follow:

- Croatian national theatre
- Branko Mihaljević Children's theatre, Osijek
- City and University Library in Osijek (GISKO)
- National archives in Osijek
- Center for Missing and Exploited Children, Osijek
- Theatre Studio Rijeka
- Dokkica
- Society of Classical Philologists
- Student Catholic Center Palma
- Breza Society

In the section of the questionnaire with descriptive questions, librarians stated that they collaborate with theaters to take students to plays, but also that their drama clubs perform in the theaters. When it comes to the question



about collaboration between schools, there is collaboration mostly when schools are doing their promotions. Most librarians point out their collaboration with the City and University Library of Osijek (GISKO) with activities during Book month, visits to the library, workshops in the children's section as well as meetings with writers and book promotions.

Librarians which do not organize events in their respective schools claim that a ban on organizing activities in the school is the reason for it because class is considered to be a top priority, there is a general lack of interest as well as an overbearing workload for a single librarian hired for the entire school which prevents them from properly focusing on cultural and public activity.

When talking about international collaborations with cultural or other institutions, the results are vastly different in comparison with domestic collaboration with institutions. 12 librarians, 68% of them, claimed not to have organized a single event in collaboration with foreign cultural or other institutions, while in 32% of schools, such type of collaboration was organized through other cultural institutions or among schools through EU projects. One library collaborated with a foreign theatre.

Foreign institutions libraries have collaborated with are:

- Library projects within Erasmus plus projects
- Children's art colonies in Slovenia
- International Festival of Art Istanbul (Turkey)
- E-twinning
- Jesuit European Educational Project
- Visits to a library in Finland

Lack of finance, motivation and time to organize international collaborations are the most common answers provided by librarians when asked why they have not achieved such a collaboration. In addition to the aforementioned, they state that taking children outside of schools requires a lot of preparation, agreements and coordination. When it comes to individual cultural activity and content organizing, art exhibits were the most common (53%), followed by book promotions (47%), knowledge-based competitions/quizzes and themed exhibits (42%), literary meetings (37%), movie and video showings (32%), literary forums (26%), and coming in last, theatre plays and musical and dance performances, with a mere 16% and movie forums (5%).

Analysis of provided answers regarding self-evaluation of their libraries and surroundings showed the following: 58% of librarians somewhat agree that the



institution they are employed in fully implements the cultural and public activities of the school library recommendations by the current School library standard. 26% of subjects completely agree with the aforementioned statement, while 5% do not share that opinion. 79% of librarians somewhat agree that expanded cultural and public activities recommended by the proposal of the new Standard for school libraries should be adopted, while 16% completely agree. 53% of librarians somewhat agree that lack of secured finances is the main reason why recommendations by the Standard for school libraries about cultural and public activities can not be met, while 32% of librarians completely agree with that statement. 58% say that schools do not have an adequate number of hired librarians to meet a standard of quality implementation of aforementioned activities. Half of the participants state that they have adequate space to organize these activities, while 37% disagree with that statement. 37% of librarians somewhat agree with the statement that they do not have enough support from the school to organize such activities, while 42% disagree. 42% of librarians partially agree that there is a sufficient number of interested library users for these activities and 26% completely agree with that statement. 42% librarians partially agree with the statement that the public and media are well informed about cultural activities and events organized by the school library and 21% completely agree with the previous statement. 11% of the librarians partially disagree on the statement regarding the public and media.

## Conclusion

The results of this research confirmed that most of the school libraries in the town of Osijek organize cultural and public activities per recommendations by the Standard for school libraries individually, as well as in collaboration with other institutions. These are mostly domestic collaborations, but there are also examples of good practice when the collaboration crosses Croatian borders. The most common types of activities, according to the answers provided by librarians, are based on collaborating with larger libraries that organize literary evenings, meetings with authors, various projects that encourage reading etc. There were examples of collaborations with cinemas and theaters. The main reasons why the activities in question can not be organized more often and at a higher standard is lack of financing, lack of hired librarians which leads to the inability to organize these events due to all the duties and tasks they have within the school library on a daily basis and bureaucracy issues which complicate organizing events for children outside their schools, especially outside of Croatia. Another less emphasized, but still very pertinent issue is the lack of interest in society for such activities. A collabo-



ration between school libraries and cultural and public city institutions does exist, which is clear from the results of this questionnaire.

The value that school libraries have for students, teachers and the community needs to be more emphasized and pointed at. School Library Guidelines are setting a challenge for school libraries "to think globally and act locally". If the school library is an essential component of teaching and learning in the school and if it also contributes to the social goals of a school such as student engagement, inclusion of diverse learners, and relationships with the broader community (IFLA, 2015), school libraries should get more understanding and incentives. They should be more appreciated for what they are trying to do, what they are accomplishing despite obstacles: teaching and learning for all.

## References

- American Association of School Librarians. (2015). Toolkit for Promoting School Library Programs. Retrieved from <http://www.ala.org/aasl/advocacy/tools/toolkits/promoting>
- Galić, Sanja. (2012). Suvremeno školsko knjižničarstvo. Život i škola: časopis za teoriju i praksu odgoja i obrazovanja 28(58): 207-218. Retrieved from [https://hrcak.srce.hr/index.php?show=clanak&id\\_clanak\\_jezik=140279](https://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=140279)
- Hrvatsko knjižničarsko društvo. (2013). Standard za školske knjižnice. Retrieved from [https://www.hkdrustvo.hr/clanovi/alib/datoteke/file/novosti/Novi\\_Standard\\_za\\_skolske\\_knjiznice\\_2013\\_za\\_javnu\\_raspravu.pdf](https://www.hkdrustvo.hr/clanovi/alib/datoteke/file/novosti/Novi_Standard_za_skolske_knjiznice_2013_za_javnu_raspravu.pdf)
- IFLA. (2015). IFLA School Library Guidelines. Retrieved from <https://www.ifla.org/node/9512>
- Kovačević D.; Lasić-Lazić J.; Lovrinčević J. (2004). Školska knjižnica - korak dalje. Završetak za informacijske studije Odsjeka za informacijske znanosti.
- Nastavni plan i program za osnovnu školu (2006). Retrieved from <https://www.azoo.hr/index.php?view=article&id=5867&naziv=nastavni-plan-i-program-za-osnovnu-kolu-hnos-i-ostali-programi->
- Powell, R.; Connaway, L.S. (2004). Basic research methods for librarians.
- Standard za školske knjižnice. (2000) Retrieved from [https://narodne-novine.nn.hr/clanci/sluzbeni/2000\\_03\\_34\\_698.html](https://narodne-novine.nn.hr/clanci/sluzbeni/2000_03_34_698.html)
- Standard za školske knjižnice. (2013) Retrieved from [https://webcache.googleusercontent.com/search?q=cache:dgLx0741h5YJ:https://www.hkdrustvo.hr/clanovi/alib/datoteke/file/novosti/Novi\\_Standard\\_za\\_skolske\\_knjiznice\\_2013\\_za\\_javnu\\_raspravu.pdf+&cd=2&hl=hr&ct=clnk&gl=hr&client=firefox-b](https://webcache.googleusercontent.com/search?q=cache:dgLx0741h5YJ:https://www.hkdrustvo.hr/clanovi/alib/datoteke/file/novosti/Novi_Standard_za_skolske_knjiznice_2013_za_javnu_raspravu.pdf+&cd=2&hl=hr&ct=clnk&gl=hr&client=firefox-b)



## A STUDY OF THE TEACHERS' MOTIVATION IN THE PROCESS OF TEACHING DIGITAL SKILLS: CASE STUDY OF THE MEGAMISJA PROGRAM

Agnieszka Sułkowska

Master Student, Faculty of Journalism, Information and Book Studies,  
University of Warsaw, Warsaw, Poland  
am.sulkowska@student.uw.edu.pl

### Abstract

*The aim of the study was, among others, to describe the motivation of the teachers in the process of teaching digital skills. The study was conducted among teachers participating in the MegaMisja Program, the educational project aimed at developing the knowledge and digital competence of teachers, day care centers educators, and students. Due to the complexity of the subject, the study focused on several threads which together allowed to shed light on the motivation of teachers and educators who participated in MegaMisja. Apart from the main task, i.e. the examination of internal and external factors that may influence the level of respondents motivation (Dymek, 2004; Zimbardo, Weber and Johnson, 2003), the study explored how the teachers and educators evaluated their participation in the MegaMisja Program, what was their motivation to participate in the program and which areas of digital skills were the most worth teaching to children, in their opinion. The study showed that respondents indicated the factors from the category of intrinsic motivation as those motivating them the most often. Their intrinsic motivation was intensified by the satisfaction derived from performing their duties and awareness that they carried out tasks that were considered socially important (Dymek, 2004). Due to the development of new technologies and the increasing access to them, especially among the youngest, it is necessary to prepare their users to use them effectively and safely. The issue of motivation among this group is crucial since teachers and educators are responsible for high-quality, efficient, and effective teaching. The importance of this study lies in its usefulness for further improving of educational programs. Additionally, exploring the motivation of teachers can help in a future cooperation with this group, supporting their work with students and in developing key digital skills both among students and teachers.*

**Keywords:** digital skills, motivation, MegaMisja Program, educational program, teachers



## The background and purpose of the study

This paper presents the study conducted for the purpose of the bachelor thesis. The thesis was carried out in cooperation with the Orange Foundation (<https://fundacja.orange.pl/en/>) and concerned the educational program *MegaMisja* (<https://megamisja.pl/>).

The Orange Foundation is a Polish foundation established in 2005 by Orange Polska S. A. The Foundation intends to pursue socially useful goals. Its mission is to disseminate knowledge in the field of new technologies. The foundation's activities aims at encouraging children and youth to acquire knowledge, participate in culture, and create communities using new technologies. All projects aim at preparing the citizens to function in the 21<sup>st</sup> century society (<https://fundacja.orange.pl/en/>).

The *MegaMisja* Program is the first digital education program for after-school clubs in Poland. The aim of the program is to raise digital skills and spread digital education in the areas of: (1) privacy protection, (2) copyright, (3) use of information, (4) creative use of media, and (5) safety in the use of media (<https://platforma.megamisja.pl/baza-wiedzy/>). The beneficiaries of the program are both students and educators (Fundacja Orange, 2017). Classes are intended for children at the age of 6-10 and are conducted with the elements of gamification. Gamification is the form that relies on the application of typical elements of game playing (such as competition, taking up challenges, providing entertainment) to encourage student's involvement (Iwasiński, 2017; Wróblewski, 2016).

The *MegaMisja* is particularly worth attention because its coverage is nationwide, participation is free of charge, and the project develops both digital and social competences of participants. Nowadays, the development of digital skills is particularly important because of the ever-growing modern technologies and their ever-increasing influence on everyday human life. Since teachers are responsible for teaching and its quality, the issue of motivation among this group, which is responsible for the efficiency and effectiveness of this process, becomes important.

The purpose of the study was to describe the motivation of teachers in the process of teaching digital skills. This was descriptive study, its main goal was to examine: (1) What are the external and internal factors influence the motivation of teachers participating in *MegaMisja* in the teaching of digital skills; and (2) Which of these external or internal factors influence to a greater extent motivation of teachers and their sense of satisfaction associated with participation in *MegaMisja*.



## Research methods and techniques

The survey method was applied in the study. Ultimately, I chose this method because it seemed to be the most appropriate one for descriptive purposes, in a research project where individuals were the units of analysis, to collect original data from a large and dispersed group of respondents in a short time. It could also be used to ask many questions on the selected topic, thus it allowed for a significant flexibility in analyzing the collected responses (Babbie, 2002).

To determine the factors influencing the motivation for work, I constructed a questionnaire containing a set of various statements. The data were collected by an online questionnaire that respondents filled out by themselves (CAWI - Computer Assisted Web Interview). The questionnaire consisted of 27 questions: 25 closed questions and 2 open questions. The questions concerned mainly: (1) educators' opinions on participation in the *MegaMisja*, (2) the impact of participation in the program on teachers and their school environment, (3) educators' opinions on digital skills, and (4) a series of statements exploring the reasons for participating in the program. The questions aimed at assessing teachers' motivations in the process of teaching digital skills on the basis of measured indicators to the extent indicated in the study goals described above. The study was conducted between May 16 and June 7, 2018. The survey was created on the platform OneClickSURVEY (<https://www.1ka.si/d/en>), an open source solution. It was disseminated by Orange Foundation who used their own contact database.

### Respondents

The study used non-stable, purposeful selection. The target sample was a biased test and was not representative. The respondents were those who wanted willingly to share their experience in the field of motivation in the process of teaching digital skills. The study captured 100 respondents.

### Findings - internal and external factors influencing teachers' motivation

One of the objectives of the study was to describe the motivations of teachers participating in *MegaMisja* Program, with particular attention to internal as well as external factors that may affect the level of respondents' motivation. The concepts of extrinsic and intrinsic motivation based on those of:

**Intrinsic motivation** is the desire to engage in an activity for its own sake, rather than for some external consequence, such as a reward.



**Extrinsic motivation** is the desire to engage in an activity to achieve an external consequence, such as a reward (Zimbardo, Weber and Johnson, 2003, p. 357).

Sine motivation is the result of both internal and external factors, an attempt was made to check whether it was possible to determine which of those factors were dominant among the teachers participating in *MegaMisja*.

In the literature, we find two categories of motivation. For example, Dymek (2004, p. 275) has assigned to each of them factors influencing their formation. These are as follows:

Intrinsic motivation:

- passion and interest in work
- commitment to fulfilling tasks
- identification with the institution and collaborators
- adopted norms and principles.

Extrinsic motivation:

- needs related to self-determination and establishing one's place among others
- needs related to maintaining control over one's own situation
- needs related to the protection and strengthening of self-esteem.

In the questionnaire, I used a five point Likert Scale and respondents had to express their judgment on the 16 statements that were referring to an ordered set of categories reflecting the degree of intensity of each particular assessment (Frankfort-Nachmias and Nachmias, 1996). The set of answers used in the Likert Scale was as follows: Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree. However, to present phenomena being a subject of the study in a clearer way, I reduced a number of categories to the main three: Disagree (combination of answers Strongly disagree and disagree), Neither agree nor disagree and Agree (combination of answers Agree and Strongly agree).

The factors of intrinsic motivation were assigned within following categories, according to the abovementioned division by Dymek (2004):

- Passion and interest in work:
  - Willingness to take action and joy of the undertaken tasks (94% of respondents agreed; 4% – neither agreed or disagreed; 2% of respondents disagreed)



- Willingness to take up new challenges and to test oneself (93% of respondents agreed; 4% – neither agreed or disagreed; 3% of respondents disagreed)
- Willingness to meet other active teachers (69% of respondents agreed; 23% – neither agreed or disagreed; 8% of respondents disagreed)
- Developing one's own competencies (87% of respondents agreed; 8% – neither agreed or disagreed; 5% of respondents disagreed).
- Commitment to fulfilling tasks:
  - Willingness to participate in an interesting project (95% of respondents agreed; 2% – neither agreed or disagreed; 3% of respondents disagreed)
  - Willingness to contribute to children's development (96% of respondents agreed; 1% – neither agreed or disagreed; 3% of respondents disagreed)
  - The importance of developing children's digital skills in children (97% of respondents agreed; 1% – neither agreed or disagreed; 2% of respondents disagreed).
- Identification with the institution and collaborators:
  - Willingness to motivate other teachers to take action (49% of respondents agreed; 36% – neither agreed or disagreed; 15% of respondents disagreed)
  - Willingness to activate the school (70% of respondents agreed; 23% – neither agreed or disagreed; 7% of respondents disagreed).

The analysis of the results showed that the factors that motivated the respondents to act the most belonged to the group *Commitment to fulfilling tasks*. A definition of commitment may help understand how important element of motivation it is. Stankiewicz and Moczulska (2013) define commitment as an effort put into work. They also note that commitment (for example in activities, projects, tasks) is undertaken voluntarily, and associated with positive emotions and promotes additional effort. There were three statements in this group on which the largest percentage of respondents agreed. These were: (1) *The importance of developing children's digital skills* (97%), (2) *Willingness to contribute to children's development* (96%), and (3) *Willingness to participate in an interesting project* (95%). A large percentage of respondents also agreed with the statement that belonged to the group *Passion and interest in work*, where the most positive answers related to the question about *Willingness to take action and joy of the un-*



*dertaken tasks* (94%), and *Willingness to take up new challenges and to test oneself* (93 %). Answers from this group may be commented in the light of Maslow's hierarchy of needs because in his theory Maslow stated that the sources of human motivation are biological drives, social needs, and the needs of creative activity. In the case of this study, the participation in the *MegaMisja* Program was for respondents a way of satisfying their need for recognition and self-fulfillment (social needs and the needs of creative activity). Where the needs for recognition can be described as the need to like oneself, perception of oneself as a competent and effective person, and the need for self-fulfillment as a searching for opportunities for personal and professional development (Dymek, 2004). The statement that gained the smallest number of "Agree" answers was the one belonging to the group *Identification with the institution and team of colleagues* and it was *Willingness to motivate other teachers to take action* (49%). The fact that educators tend to focus more on themselves and their students rather than on their colleagues may explain this result.

The factors of extrinsic motivation were also assigned to the following categories, according to the abovementioned division proposed by Dymek (2004):

- Needs related to self-determination and finding one's place among others:
  - Willingness to improve communication with students (86% of respondents agreed; 12% – neither agreed or disagreed; 2% of respondents disagreed)
  - Willingness to prove own activity (68% of respondents agreed; 19% – neither agreed or disagreed; 13% of respondents disagreed)
  - Willingness to stand out from colleagues (47% of respondents agreed; 34% – neither agreed or disagreed; 19% of respondents disagreed).
- Needs related to protection and strengthening of self-esteem:
- By accident (11% of respondents agreed; 11% – neither agreed or disagreed; 78% of respondents disagreed)
- Willingness to expand the educational offer (95% of respondents agreed; 2% – neither agreed or disagreed; 3% of respondents disagreed)
- Willingness to please school director (27% of respondents agreed; 38% – neither agreed or disagreed; 35% of respondents disagreed)
- Willingness to bring joy to children (96% of respondents agreed; 2% – neither agreed or disagreed; 2% of respondents disagreed).

The analysis of responses on the statements related to extrinsic motivation revealed a greater discrepancy between individual statements. There was less



coherence in the group of questions on extrinsic motivation responses in comparison to the group referring to intrinsic motivation. The statements from the group *Needs related to the protection and strengthening of self-esteem* were the most divergent. As much as 78% of respondents did not agree with the statement referring to the accidental participation in *MegaMisja*. This answer may indicate a high awareness of the respondents in making decisions and their strong own initiative (Rheinberg, 2004). Another statement that gained a large percentage of “Disagree” (35%) and “Neither agree nor disagree” (38%) responses, was *Willingness to please school director*. According to Rheinberg (2004), this may indicate that teachers are very independent in making decisions and suggest that participation in the *MegaMisja* was an uncontrolled activity which means that there is no extrinsic motivation among educators coming from the approval or disapproval of other people, especially those who are important to them or those who are in the position of power or authority (in this case, the school’s director). As for the next two statements from this group, the majority of respondents (96%) agreed on *Willingness to bring joy to children* and on *Willingness to expand the educational offer* (95%). Agreed statements assigned to the group *Needs related to self-determination and finding one’s place among others*, were as follows: *Willingness to improve communication with students* (86%), *Willingness to prove on activity* (69%) and *Willingness to stand from colleagues* (47%). Responses to statements regarding the extrinsic motivation can be divided into yet one more way. The statements regarding the direct and indirect answers about students as well as answers concerning educators. When the statements are divided in this way, then a more coherent picture appears, where the statements regarding the students were mainly “Agreed” and a group of statements about educators were either “Neither agreed or disagreed” or “Disagree”. Statements about the students, largely agreed by respondents were *Willingness to improve communication with students* (86%), *Willingness to expand the educational offer* (95%), and *Willingness to bring joy to children* (96%). The second group of statements concerning teachers where respondents less often chose “Agree” was *Willingness to prove own activity* (68%), *Willingness to stand out from colleagues* (47%), accidental participation in *MegaMisja* (11%) and *Willingness to please school director* (27%). These results may indicate that students were the the main reason affecting the motivation of teachers.

## Discussion, further study directions

The results of the study on the internal and external motivation factors did not allow to clearly state which of those factors had a greater impact on teachers’



motivation and their sense of satisfaction related to participation in *MegaMisja* Program. In case of the results on intrinsic motivation factors, there was a greater coherence of the response comparing to those from the group referring to extrinsic motivation. To a greater extent, this could have been due to the selection of statements on which respondents had to respond rather than due to the influence of the type of motivation. However, it can be concluded that the statements belonging to the group *Commitment to fulfilling tasks* and *Passion and interest in work* were agreed by the highest percentage of respondents. The statements that met the greatest respondents' support concerned the following issues: (1) personal development of educators, (2) job satisfaction, (3) development of children's competences, (4) improving communication with students, and (5) making children happy. Hence, it can be noticed that the students were a very important part of the *MegaMisja* in respondents' opinion, and they also belonged to the external factors motivating educators' to participate in *MegaMisja*. An in-depth research should be carried out to unequivocally verify which internal or external factors influence the motivation of teachers to a greater extent.

## Conclusion

The findings of this study showed that the factors that motivated respondents to take action came from two categories: intrinsic motivation and extrinsic motivation. The motivation can be divided into seven groups. The factors containing the statement that the respondents had to assess were appropriately assigned to each of those groups. The development of this study allowed to specify which of them were most frequently indicated. The respondents most often pointed to factors from the groups *Commitment to performing tasks* and *Passion and interest in work*. Both groups belong to the category of intrinsic motivation and focused on getting satisfaction from performing professional activities and carrying out tasks considered to be socially important. In the case of this study development of students' competencies appeared to be crucial issue.

## References

- Babbie, E. R. (2002). *The basics of social research*. Belmont, CA: Wadsworth Thomson Learning.
- Dymek, M. (2004). *Motywacja nauczycieli do pracy: studium pedagogiczno-psychologiczne*. Radom: Wydawnictwo Politechniki Radomskiej.



- Frankfort-Nachmias, C., & Nachmias, D. (1996). *Research methods in the social sciences*. New York: St. Martin's Press.
- Fundacja Orange (2017). *Regulamin programu edukacyjnego MegaMisja, edycja 2017/2018*. Retrieved from: [https://megamisja.pl/wp-content/uploads/2015/09/Regulamin-MegaMisja\\_2017\\_2018-1.pdf](https://megamisja.pl/wp-content/uploads/2015/09/Regulamin-MegaMisja_2017_2018-1.pdf), [Accessed: 20.11.2018].
- Iwasiński, Ł. (2017). Quantified Self. Self-tracking a problem tożsamości, *ZIN-Zagadnienia Informatyki Naukowej. Studia Informacyjne*, 55(2), 126-136.
- Rheinberg, F. (2004). *Motivation*. Stuttgart: Kohlhammer.
- Stankiewicz, J., & Moczulska, M. (2013). Wartości jako czynnik warunkujący zaangażowanie pracowników w organizacji (w świetle badań empirycznych), *Zarządzanie i Finanse*, 4(1), 333-345.
- Wróblewski M. (2016). Nowe szaty healthismu. Self-tracking, neoliberalizm i kapitalizm kognitywny, *Acta Universitatis Lodziensis. Folia Sociologica*, 58, 7-25.
- Zimbardo, P. G., Weber, A. L., & Johnson, R. L. (2003). *Psychology: core concepts*. Boston: Allyn and Bacon.



## USING DIGITAL COLLECTIONS: A COMPARATIVE ANALYSIS IN THE CASE OF THREE PUBLIC LIBRARIES IN SERBIA

Andela Stošić

PhD Candidate, Library and Information science at Faculty of Philology,  
University of Belgrade, Serbia

andjela.stosic@fil.bg.ac.rs

### Abstract

*The aim of this paper is to point out the necessity of research of users needs during the formation and developing of public libraries digital collections. Only when the library has information on how much its digital collection is used, it can plan further arrangements for managing, organizing and promoting. The survey of parent public libraries' websites in Serbia showed that 75% of these libraries have at least one digital collection available online. It is also evident that, when digitizing the fund, libraries focus the most attention on the amount of digitized material, and the least on monitoring the use of this material. Following the search, three libraries, that are different in the organizational structure, the size of the fund and the size of the community they serve, have been selected as the most active in this business. These three libraries were requested to provide data on the use of digital collections i.e. the activity of websites where a digital library is maintained. On the example of the Stevan Sremac Public Library in Nis, it can be seen that users spend a few minutes on average using its digital collections. An example of the Belgrade City Library has shown that every 25th visit to the digital collection was based on the use of one digital object. Public library Vladislav Petkovic Dis in Cacak has not collected yet information on usage of digital library. The results of this paper suggest that if libraries want to achieve the maximum usage of digital funds, in addition to a website that is clearly organized, searchable and easy to use, they should gain an insight into the current state of affairs by monitoring the quantitative indicators of attendance, which public libraries in Serbia almost do not conduct nowadays.*

**Keywords:** digital collections, digital libraries, digitization, public libraries of Serbia, using digital collections



## Introduction

In the library circles, for years, there has been much talk about the importance of digitization for the preservation and wider availability of cultural and scientific goods, but very little about the real use of digital collections and the examination of the needs of their existing and potential users.<sup>1</sup> In research papers, the subject of digital libraries is mostly focused on technical issues (methods for finding information, software architecture, etc.) (Dobрева, O'Dwyer and Konstantelos, 2012). Therefore, the goal of this paper is to deal more with digital collections' using.

Public libraries in Serbia have been digitizing parts of their collections since 2005, of course, not with the same intensity and success. Heritage collections are the most frequent subject of digitization of these libraries. This process mainly depends on individual efforts, as the National Strategy for the Digitalization of Cultural Heritage does not exist yet.

It is difficult to point out precisely who are users of digital libraries, what are their expectations, how satisfied they are with service, whether they get answers to their queries and frequency of using digital objects that libraries possess. Unoften researches about using of digital collections actually indicate that they are not sufficiently used.

The aim of this paper is to highlight importance of involving users in planning, organization and management of digital libraries. The step ahead is that libraries find out how much their digital collections are used.

## Methodology

In order to provide current information on how many parent public libraries and in which manner publish digitized material from their funds in Serbia, their websites were searched thoroughly from 1 October 2017 to 28 February 2018<sup>2</sup>.

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<sup>1</sup> The research in this paper is part of a master thesis entitled "Development and use of digital collections: the case of the Vladislav Petković Dis City Library in Čačak, Belgrade City Library and the Public library Stevan Sremac in Nis" defended on July 10, 2018. In front of the commission consisting of mentor Gordana Stokić Simončić, full professor and Miloš Utvić, docent.

<sup>2</sup> There are 28 public libraries in the territory of the Republic of Serbia, whose additional task is to supervise public libraries, school libraries, special libraries, as well as information centers with other institutions, organizations or associations. Basic information about each of them are available at the address [https://www.nb.rs/for\\_librarians/directory.php](https://www.nb.rs/for_librarians/directory.php).



Three parent public libraries, the ones in Cacak, Belgrade and Nis are recognized as the most active in the process of digitization. For that reason they were chosen for comparison which has been conducted based on the characteristics regarding the organization and search. In addition, the statistics of using was analyzed. Every library was requested to present the statistic data for its digital library in 2017 as following:

1. visits,
2. total number of users/visitors (one user can visit a website multiple times, thereof the representative user is the one who visits the website for the first time),
3. pageviews,
4. time on the website,
5. 10 of the most used publications.

Having in mind that libraries in Serbia are not obliged to evaluate visits and using of their digital collections, none of libraries were available to fully answer the query.

## Findings about digital collections of parent public libraries in Serbia

Digitization of the first library collections in Serbia has started in 2003. The first digital collection of public library was set up on the Internet three years later. Digitization of this type of libraries begins with photo documents, i.e. old postcards and photographs. This type of material does not require a lot of technical support and it is easy to organize it in a digital collection (Trifunović, 2010). By presenting heritage collections, libraries get an opportunity to become closer to the communities they exist for.

The result of research is that the majority or 21 parent public libraries (75%) have already digitized and published at least one digital collection, while 25% have not yet done so. One of them, the Library Vuk Karadzic in Kosovska Mitrovica, does not have its own website, but is accessible to users only through Facebook. Only six of libraries that are involved in digitization have a department whose primary goal is digitization.

The digitized material in parent libraries comes mostly from heritage collections. The libraries in Bor (*Digital Homeland*) and Kraljevo (*Kraljevo and Kraljevcani*) have already indicated that there is pure heritage material by their names.



Postcards and posters are the most prevalent type of material, besides them local periodicals are also interesting. Only two libraries, the library in Vranje and Prokuplje do not have digitized periodical publication. In addition, in digital libraries there can also be found collections of old and rare books, cartographic materials, press clipping, collection of heritage books.

When it comes to the option of searching digitized material, it is certainly available for public library collections within the digital National Library of Serbia, and this option is also available in digital collections of the City Library of Belgrade (full text search, title, author and keywords search), the library in Sombor (words from articles in the newspapers), Kraljevo (keywords, title, author, place, time, language), Cacak and Nis, while the libraries in Jagodina and Sabac have the possibility to search the entire site and thus can be found and titles of digitized publications. Full text searching of digital publications is possible only at the Library of the City of Belgrade, the digital heritage collection of Krusevac library and the library in Cacak (only monographic publications).

For most libraries, it is evident that the digitization process is under development, that it is still working on setting up, completing collections, securing the search. Inconsistence and different interpretation of concepts were also noted. Although the Cultural Heritage Digitalization Guidelines have recently introduced, they leave the possibility for libraries to work in different ways. For example, textual material and resources are suggested as a compressed document format, both PDF and JPEG, while some libraries turn a single publication into a single digital object, in some libraries every page of publication provide a special digital object.

### What about using of digital collections?

The expansion of the user population is highlighted as one of the general goals of digitization, however, in the Rulebook on Detailed Conditions for Digitization of Library and Information Material and Sources<sup>3</sup>, it is stated that “each library is obliged to continuously represent digitized material and in this way promotes and improve its use” and thus omit the need for digital libraries to monitor the use of their collections and the needs of their current and potential users.

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<sup>3</sup> This Rulebook prescribes more detailed conditions for the digitization of library and information material and resources regarding the purpose, goals and scope of digitization of library and information material and sources, the creation of digital documents, the formation and processing of digital collections and libraries, the storage of digital objects, the provision of access to digital collections and other issues that are of importance for keeping the database of digitized material.



Another problem is that the term “evaluation” does not appear in the aforementioned Rulebook, although it would be of great use in improving the quality of services, but also in determining the impact of digital libraries. We need to know to what extent and in what way they help in the process of learning, education, cultural development, research, preservation of national heritage, collective and personal identity.

Contrary to the mentioned opinion, Ben Showers (2012) emphasizes reasons why determination of impact is important. The main reasons are as follow:

- finding and presenting indisputable arguments for continuing project financing,
- making the corpus of evidence on influence and value of digital resources,
- promoting of future innovations, new types of researches and asking new questions (finding the questions that could not be asked earlier).

The influence could not be measured if it is unknown who and how much uses digital objects of the libraries.

### **Digital collection of Vladislav Petkovic Dis Public Library in Cacak**

The Cacak Digital Library<sup>4</sup> is organized in seven collections: Books, Newspapers, Magazines, Posters, Photo materials, Multimedia and Various. The digital library uses a language that is closer to everyday use, the home page is easy to navigate with clearly separated content.

The lack of this website is a navigation system menu at various levels of collections, which could be recognize as problem for the user who, while moving through collection, wants to return to a previous level and proceed the other way. All pages open in the same window of the web browser, and the best way for the user is to plan his/her return point and starts next step by opening a new window in a flyer. This problem comes to light when browsing some of the digitized publications, because they are a series of linked html pages with scanned page images, without the possibility of jumping on a particular page, the beginning of the publication, or its end. (Simoncic, 2012)

The Digital library can be searched on multiple bases, by choosing keyword, author, title, or full text publications. It is important to note that certain collections give search results only for keywords. Such is a collection of digitized newspapers. The terms that the user searches can not be combined with logical

<sup>4</sup> Retrived from [http://www.cacak-dis.rs/dig\\_bibl/index.html](http://www.cacak-dis.rs/dig_bibl/index.html).



operators. The search results are displayed in the same browser window, grouped by ten on the page.

The disadvantage of this library is the disconnection with the online catalog. Namely, the description of publications in the unified online catalog for material that is digitized and found in the digital library Cacak, contains no URL or any information that the publication is available online or in the digital library.

### Quantitative data on the usage

Even though the Library in Cacak has been investing in digitalization for quite some time, it still doesn't keep any particular statistics of the Digital library attendance. On the Figures 1, we can see the statistics of server attendance, from March 2017 to February 2018, which show the number of data, viewed files, websites, as well as the average number of visits per day and in total.

It is evident that the number of visits, viewed pages and data are enormous. Employees have noticed the overloaded database, which testifies that a good part of that goes on the Digital library. Employees suggest that the Digital library probably has more active users, because there is less and less direct entry to the website, while for the news and event announcements, social networks are increasingly being used.<sup>5</sup>

Summary by Month										
Month	Daily Avg			Monthly Totals						
	Hits	Files	Pages	Visits	Sites	kB F	Visits	Pages	Files	Hits
Feb 2018	43685	41452	37035	3727	12675	43528067	96915	962923	1077775	1135813
Jan 2018	66844	62876	61030	6713	14449	66073708	208120	1891951	1949176	2072193
Dec 2017	102414	99363	94873	5664	14812	75709809	175599	2941075	3080269	3174861
Nov 2017	52781	50647	46202	4094	13425	49018937	122832	1386060	1519432	1583449
Oct 2017	41326	37877	35658	3217	13665	44064154	99749	1105400	1174199	1281128
Sep 2017	35462	32648	31827	2746	13048	21614754	82385	954832	979455	1063879
Aug 2017	37574	33500	33059	5014	13480	40574138	155448	1024832	1038510	1164802
Jul 2017	37071	33358	32458	5092	14559	44573642	157857	1006198	1034103	1149216
Jun 2017	50189	44373	44584	4987	16576	50506153	149627	1337527	1331201	1505688
May 2017	37354	32333	30433	4071	21764	38583976	126220	943437	1002324	1157986
Apr 2017	29354	25093	22996	4006	23914	33319740	120202	689892	752793	880621
Mar 2017	20709	17415	14599	2593	17948	23758377	80392	452578	539871	642005
Totals	531325455 1575346 14696705 15479108 16811641									

<sup>5</sup> Data are provided by BogdanTrifunović, library director.



## Digital collection of the Belgrade City Library

Belgrade City digital library<sup>6</sup> is organized in five collections: Photographs, Magazines, Library Annual reports, Monographic publications and Plans of Belgrade.

For each publication the user can choose whether he wants its description, information, content, the method of displaying content, similar editions or whether he wants to download the complete publication. Metadata are available in two other languages (English and Polish), which is certainly a recommendation of already mentioned Rulebook for digitalization. The most recent publications are listed on the home page, as well those most frequently used.

The users are given the option of advanced search in full text, however, the results are not entirely relevant because, even though the publications went through the program for optical character recognition, it seems that the errors that the program had made haven't been corrected, at least not for all of the publications. So is, for example, the text from the book "Fifty years of work of engineer Miloš Savčić: 1889-1939" which reads:

“ПОСЛЕ ПЕДЕСЕТ ГОДИНА ЊЕГОВОГА ПЛОДНОГ И БЛАГОТВОРНОГ РАДА НА ПРИВРЕДНОМ, ЕКОНОМСКОМ, КУЛТУРНОМ И ДРУШТВЕНОМ ПОДИЗАЊУ НАРОДА И ОТАЏБИНЕ, - ЗА УСПОМЕНУ НА ПРОШЛОСТ КАО ПРИМЕР САДАШЊИЦИ И РАДИ ПОТСТРЕКА НОВИХ НАСТОЈАЊА У БУДУЋНОСТИ.”<sup>7</sup>

the program interpreted this way:

“ПОС.ЛЕ ПЕДЕСЕТ ГОАИНА ЊЕГОВОГ А ПЛОДНОГ И БЛАГОТВОРНОГ РАДА НА ПРИВРЕДНОМ, ЕКОНОМ. СКОМ, КУЛТУРНОМ И ДРУШТВЕНОМ ПОАИЗДЊУ НАРОДА И ОТАЏБИНЕ, - ЗА УСПОМЕНУ НА ПРО. ШЛОСТ. КАО ПРИМЕР САААШЊИЦИ И РААИ ПОТСТРЕКА НОВИХ НАСТОЈАЊА У БУДУЋНОСТИ.”<sup>8</sup>

<sup>6</sup> Retrived from <http://dlibra.bgb.rs/dlibra>.

<sup>7</sup> Translated: “AFTER THE FIFTY YEARS OF HIS FRUITFUL AND BENEFICIAL WORK IN THE ECONOMIC, CULTURAL AND SOCIAL RAISING OF THE PEOPLE AND THE HOMELAND, - FOR THE MEMORY OF THE PAST, EXAMPLE OF THE PRESENT AND FOR INCITEMENT OF NEW ATTEMPTS IN THE FUTURE. “.

<sup>8</sup> Translated into English, the text with uncorrected mistakes may be looking in this way: “AFT. eR THE FIFTY YEZRS OF HIS FRUITFUL AND B.ENEFCIAL WORK IN THE ECONOM. IC, CULTURAL AND SOCIAL RAJSING OF THE PEOPIE AND THE HOMELAND, - FOR THE MEMORY OF THE P. A.S.T. EXAMPLE OF THE PRFSENT AND FUR INCITEMENT OF NEW ATTEMPTS IN THE FUTURE. “.



The Belgrade City Digital Library, unlike the one in Cacak, keeps track of the data which relates to the total number of visits and total views for every publication from the moment of uploading to the internet, 17.8.2012.

The total number of visits to the Digital library in year 2017 was 207.961, or, in average, 17.300 monthly, or 570 visits per day.<sup>9</sup>

On the page *The most commonly requested publications* there is the list of all digital objects of the Library, sorted descending according to the number of uses. A total of seven publications were used more than 500 times, and even 617 publications less than 100 times.<sup>10</sup>

When we sum up the numbers which show the number of usage (views/downloads)<sup>11</sup> for every one of 683 publications which are stored in the Digital BCL, a total of 37.985 viewed publications is obtained.<sup>12</sup> Every publication is used just 56 times in average, and as the total number of visits in the moment of acquiring this information was 951.021, a result is reached that shows that just every 25th visit to the Digital library implies the use of some publication. This only shows that the large number of visits does not mean the relatively wide usage of the digital library. So, we are left with a question what do visitors of this library search in it, when the publications are so rarely used.

### Digital collection of Stevan Sremac Public Library in Nis

The whole structure of Digital library<sup>13</sup> is divided into 6 collections: Pictorial structure, Periodicals, Books, Multimedia, Various and Graphics cabinet.

With each one of the collections from the Digital library, stands an information about the number of subcollections and number of documents in the collection. When we click on the publication which we want to see, by simply choosing the option (+) or (-) it is possible to adjust a larger or smaller page view.

<sup>9</sup> Ljubica Ćorović, librarian advisor for digitalization and cultural heritage, has provided the data

<sup>10</sup> The most commonly requested publications, <http://dlibra.bgb.rs/dlibra/collectionstats?dirids?=1&lenght=-1> (downloaded 13.3.2018)

<sup>11</sup> For the period from 17.08.2012. to 22.6.2018

<sup>12</sup> This number is equivalent to the total number of borrowings in a traditional library.

<sup>13</sup> Retrived from <http://91.187.147.10:8000/webnibis/switch.do?page=/KolekcijePrikaz.do&prefix=&method=prikazKolekcija>.



It is possible to browse all the digital objects in the same way and from the same place as all the other publications in the library of Nis, with the fact that in basic browsing there is an option for browsing exclusively in the structure which is digitalized. Advanced browsing and browsing by ISBN number is performed exclusively over the entire structure that the library possesses.

What might be considered as a disadvantage when it comes to displaying digital structure is the impossibility of expanding the image over the entire screen, because this option would have surely made the reading easier to the users.

### Quantitative indicators of usage

Although the attendance analysis of digital libraries is not yet an acting practice, the situation is slowly changing. That can be seen on the example of the Stevan Sremac Library which has started to track the attendance statistics of its Digital library at the beginning of this year. For the period from the 22nd of January 2018 to the 22nd of February 2018 these are the data:

- 568 unique users accessed the site
- 1325 sessions
- 2,34 sessions per user
- 5,27 minutes is the average duration of the session
- 12.865 page views
- 0,37 minutes is the average time spent on one page.<sup>14</sup>

Among these numbers we can see that an average user spent a bit more than 5 minutes in the Digital library in the given period during one visit. Again the question about how much can be seen and read for five minutes. Many of the users are probably still examining the field of the Digital library and reviewing what can be found there. On the other hand, 12.865 page views is not a small number in comparison to 1325 sessions.

### Concluding observations

Based on this work it can be concluded that the majority of parent public libraries in Serbia has accepted digitalization as an inevitable path to the future. The lack of assets, personnel and organization on the national level, these are

<sup>14</sup> Aleksandra Adžić, head of the Department for the development of digital library and information technology, provided the data.



just some of the most visible obstacles that the libraries face in the field of digitalization which would make them into modern institutions of culture which do not wait for the users to approach them first, but they would go to them.

Public libraries in Belgrade, Nis and Cacak started developing their libraries in different times, but all three are considered to be a good example of practice. BCL has an advantage because of its multilingual collection, while the Cacak and Nis libraries offer the browsing of structure by multiple parameters. Digital libraries in Cacak and Belgrade are lagging behind the one in Nis because of their detachment with the library electronic catalog. While in the Digital library of the city of Belgrade, one publication is one digital object, in the Cacak library it is every page of the publication. All these differences are indicators of that the libraries have managed to sustain in different ways in accordance with their capabilities and plans.

As all three described libraries continue to complement their collections, it would be expected that in the future they will be more concerned with the usage issue, because libraries justify their existence only to be of use to people.

So to reach its optimum, besides the webpage which is clearly organized, searchable and unique for usage, the Digital library must have its mission and development strategy, clearly defined target group of users for which it is intended, as well as to examine their needs. Publicly accessible libraries are available to all, however, in practice it turned out that greater success can be reached when targeting a specific, clearly defined group. Users have to be asked how satisfied they are with library offer. Before all that an insight in the current state must be acquired by tracking quantitative indicators of attendance.

## References

- Butigan-Vucaj, T. (2010). Digitalna Tvrdava: nacionalna strategija Digitalizacije u Srbiji [Digital Fortress: A National Strategy for Digitization in Serbia]. *Kultura*, 129, 63-73.
- Djukic, P. & Trifunovic B. (2012). IFLA/UNESCO manifest za digitalne biblioteke – srpski prevod [IFLA/UNESCO Manifesto for Digital Libraries – the Serbian Translation]. *Infoteka*, 8(1), 65-68.
- Dobрева, M., O'Dwyer, A. & Konstantelos, L. (2012). User Needs in Digitalization. In L.M. Hughes (Ed.). *Evaluating and measuring the value, use and impact of digital collections* (pp. 73-84). London: Facet



- Ministry of Culture and Informing. (2017, November 17). Pravilnik o bližim uslovima za digitalizaciju bibliotečko-informacione grade i izvora [RuleBook on Detailed Conditions for Digitization of Library and Information Material and Sources]. *Ministry of Culture and Informing of Republic of Serbia*. Retrived from <http://www.kultura.gov.rs/cyr/dokumenti/propisi-iz-oblasti-kulture/pravilnik-o-blizim-uslovima-za-digitalizaciju-bibliotecko-informacione-gradje-i-izvora>
- Stokic Simoncic, G. & Vuckovic. (2012). Koliko koristimo digitalne biblioteke [How Much Do We Use Digital Libraries]. *Kultura*, 135, 114-120.
- Vukotic, B. (2015). Decenija Digitalizacije [Decade of Digitization]. *Citaliste*, 26(1), 99-101.
- Showers, B. (2012). A Strategic Approach to the Understanding and Evaluation of Impact. In L. M. Hughes (Ed.). *Evaluating and measuring the value, use and impact of digital collections* (pp. 63-72). London: Facet
- Directory of public libraries in Serbia*. Retrived from [https://www.nb.rs/for\\_librarians/directory.php](https://www.nb.rs/for_librarians/directory.php).
- Simoncic, D. (2012). *Književni časopisi u digitalnim bibliotekama Srbije: aktuelna praksa i nove mogućnosti* [Literature journals in digital libraries Serbia: current practice and new opportunities]. Master thesis, Faculty of Philology in Belgrade.



## DEVELOPMENT OF READING-RELATED PROGRAMS FOR TEENAGERS: A SURVEY OF THE COMPONENTS OF TEEN SERVICES IN JAPANESE PUBLIC LIBRARIES

Ryoko Uragami

Master Student, Graduate School of Library, Information and Media  
Studies, University of Tsukuba, Tsukuba, Japan  
s1411502@klis.tsukuba.ac.jp

Tomoya Igarashi

Master Student, Graduate School of Library, Information and Media  
Studies, University of Tsukuba, Tsukuba, Japan  
s1411492@klis.tsukuba.ac.jp

Marika Kawamoto

Doctoral Student, Graduate School of Library, Information and Media  
Studies, University of Tsukuba, Tsukuba, Japan  
marika@slis.tsukuba.ac.jp

Issei Suzuki

Doctoral Student, Graduate School of Library, Information and Media  
Studies, University of Tsukuba, Tsukuba, Japan  
s1830503@s.tsukuba.ac.jp

Masanori Koizumi

Assistant Professor, Faculty of Library, Information and Media Science,  
University of Tsukuba, Tsukuba, Japan  
koizumi@slis.tsukuba.ac.jp

Keiko Tamaki

Doctoral Student, Graduate School of Library, Information and Media  
Studies, University of Tsukuba, Tsukuba, Japan  
s1830502@s.tsukuba.ac.jp



## Abstract

*We surveyed teen services in Japanese public libraries and systematically organizes them. This study conducted a qualitative content analysis of literature regarding actual teen services, and published in Japan from January 2002 to May 2018. A total of 200 cases were analyzed from this literature. By focusing on the contents of teen services described in each case, we clarified the structure of the services and discussed the current situation and topics in each element of the services. Teen services in Japanese public libraries exhibited eight elements and 44 topics. The eight elements are, 1) Information Resources, 2) Staff, 3) Target, 4) Facility, 5) Programs, 6) Management, 7) Cooperating with other organizations, and 8) Holistic Services. In Japan, it is said that many teenagers have stopped reading books in favor of other forms of entertainment. However, believing that reading will have many good effects, Japanese public libraries continue to try to attract teens to the library by promoting reading. Little is known about the whole concept of teen services in Japanese public libraries. This is the first research study that comprehensively discusses teen services in Japanese public libraries. This study will play a very important role in reviewing services for teenagers.*

**Keywords:** public library, teen services, young adults, content analysis, promoting reading, Japan

## Research Background

It is important to actively provide library services to teenagers. Teen services are included in infant and child services in Japanese public libraries. Since teen library users are decreasing, it is recommended that public libraries provide services that specifically target teenagers. Teen services have been actively developed in public libraries by encouraging the enactment of laws that promote reading among youth in 2002, but the penetration rate is still at 70% (Hirata et al., 2015; Inoue et al., 2016).

Only a few studies have comprehensively discussed teen services in recent Japanese public libraries. Matsumoto (2003) outlined the historical discussion of teen services in public libraries in Japan and the United States. In particular, she stated that the concept of teen services finally spread around the 2000s. Inoue (2010) reviewed literature on children and teen services from 2000 to 2009. She said that while there were many practical reports in her review, there are only a few systematic research studies on teen services.

From the research above, it turns out that teen services in Japan have been actively practiced since the 2000s. However, as pointed out in the review by In-



oue, there are still only a few systematic studies regarding teen services. In future, in order to establish teen service in Japanese public libraries, it is necessary to clarify the elements of teen service in Japanese public libraries comprehensively and systematically.

The purpose of this research study is to overview and systematically summarize the concept of teen services in public libraries. We gathered cases since January 2002 when the Japanese cabinet implemented a “basic plan concerning the promotion of children’s reading activities which was considered to be a trigger for the new development of services for teenagers in Japanese public libraries. This plan targets public libraries but does not include school libraries. Although many systematic research studies on school libraries already exist, there are only a few systematic studies on teen services in public libraries. By investigating teen services in public libraries in this research, we believe that the discussion on library services for teenagers will spread and contribute to further research.

## Research method

In this research study, qualitative content analysis was conducted on documents. The specific procedure is as shown in Figure 1.

First, we gathered documents published between January 2002 and the end of May 2017. We also collected documents that contained actual cases in public libraries. In addition, the research papers mentioned in actual cases were included. However, we excluded documents that were distributed exclusively to target members. Next, cited references of literature found during the document search were verified, and literature from which examples could be extracted were included in the analysis.

We searched and collected documents from “CiNii Articles”, “Kikuzoh II Visual”, “Current Awareness Portal” and “Annual Report of Children’s Library” databases. Additionally, we searched databases and web pages in Japanese. “CiNii Articles” is a database of academic literature and is generally accessed and used while researching journal articles in Japan. We used five search keywords concerning teen services: “Young Adult services”, “YA service”, “middle school students & library”, “high school students & library”, “middle/high school students & library”. “Kikuzoh II Visual” is a database that offers access to articles from “Asahi Shimbun” newspaper, which is one of the most popular newspapers in Japan. We typed in the target words that considered Japanese nuances rather than the ones used in the search of “CiNii Articles”. “Current Awareness



Portal” is a website concerning the Japanese National Diet Library. It provides information on libraries, and includes many cases concerning the public library. We performed a search using the keywords, “young adult,” “middle / high school student,” “middle school student,” “high school student,” or “teen”. We used the 2007 and the 2012 editions of “Annual Report on Children’s Library”. This is a book issued by the Japan Library Association and in which trends of teen services in public libraries are published offering examples of the concept.

Two important books from the cited documents and a total of 206 literary works were examined.

Secondly, we picked out topics and discussed them. Thirdly, we studied topics and identified elements. Finally, we analyzed each article.

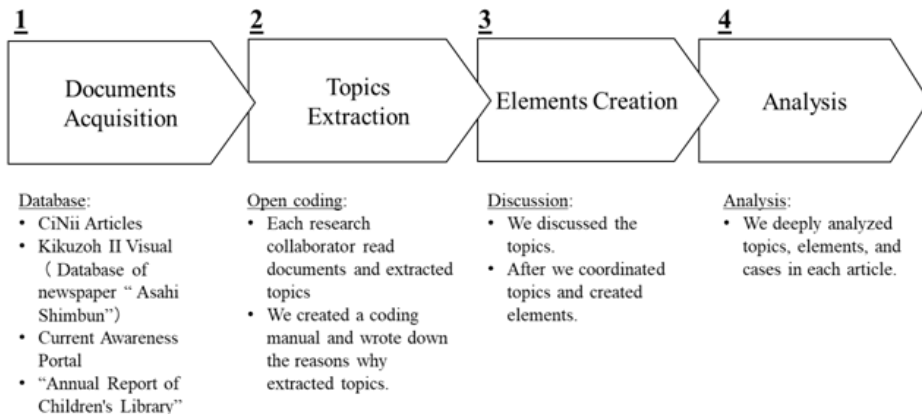


Figure 1. Research Methods

## Results

The number of documents collected from each database and used in the survey was indicated in Table 1. “Basic plan concerning the promotion of children’s reading activities” mentioned in Chapter 1 was the first plan on teen services and was formulated in 2002. The second plan was formulated in 2008, and the third plan was formulated in 2013. Feature articles on teen services are often prepared after each plan is formulated. It is therefore possible that the basic plan may be an opportunity to reconsider teen services. Therefore, we divided the target period in this research into three parts; the first term of teen services (2002 -



2007), the second term of teen services (2008 - 2012), and the third term of teen services (2013 - 2018). We outline the tendencies of cases in each period below.

Table 1. Number of documents

Database \ Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Current Awareness Portal							2			2		3		5	10	15	3
					1	1	4		1	2	1	2	1	1	7	12	3
CiNii Articles	4	2	3	3	4	1	7	10	6			1	8	1	1		
				1	1	3	2	1			1	1					
Kikuzoh II Visual	1	1	1	1	3	3	6	5	3	2	5	1	2	1	4	5	1
														1			
Annual Report of Children's Library						3					8						
Book		1				1			2								
			1									1					
Term	First Term of Teen Services						Second Term of Teen Services					Third Term of Teen Services					

## First Term of Teen Services

The first term of teen services refers to the period during which teen services began to draw attention, as shown in three feature articles on teen services in academic journals. As a case, a lecture on teen services targeting librarians was conducted. We sought to identify the kinds of services that should be offered to teenagers. We also included a case that examined the teen services of the Arakawa Ward Library. Since we occasionally came across related literature, it was clear that this was one of the pioneering libraries in teen services and that it became a role model for other organizations. At that time, the Arakawa Ward Library was conducting activities such as making YA corners, preparing book lists for teenagers, giving book talks to neighboring middle schools and so on.

## Second Term of Teen Services

In the second phase of teen services, mobile phones became popular among teenagers, and the transition to smart phones begun. As a case, a library that established a website for teenagers was identified, and teen services in the digital age were reviewed. Additionally, increase in unemployed people became a popular topic at the time. Cases of career and employment support increased, such as the establishment of a public employment service web site for teenagers, and the holding of workshops in which teenagers could experience the work of



librarians. Additionally, many activities are considered to promote reading activities, such as lectures to teenagers about methods of reading stories, and making book lists for teenagers.

### Third Term of Teen Services

In the third phase of teen services, the number of documents that could be collected from the current awareness portal increased rapidly. Activities of little relevance to the library, such as the provision of “taking place” for teenagers, the creation of “Gateau chocolat”, escape games are sometimes conducted to draw teenagers to the library. As mentioned earlier, Matsumoto (2002) pointed out that teen services in the United States developed from the “document center” to the “program center” since the latter half of the 1970s. In Japan, the United States trend of aggressively providing programs and the traditional document-based flow of Japan are fused together. An example is, “Dokusho Koshien”, a book cover contest, and book review comedy skit contest. As shown above, recently, the promotion of reading activities has been diversified in a bid to attract teenagers’ interest, and to encourage them to visit the library.

### Content Analysis

As a result of the analysis, 44 topics were extracted and categorized into eight elements: *Information Resource*, *Staff*, *Target*, *Equipment*, *Program*, *Management*, *Cooperation with Other Organizations*, and *Holistic Services* (Table 2).

*Information Resource* is an element that summarizes topics concerning library materials. This element comprises six topics: data collection, document selection, electronic materials / contents on the Web, book list, book review, group lending. This element contains topics most directly related to reading activities that have been emphasized in Japan regarding teen services.

*Staff* is an element that summarizes topics concerning personnel engaged in library activities as management. There are four topics in this element: librarian participation, participation of teenagers, external experts, and training for librarians. This element includes topics related to librarians.

*Target* is an element that summarizes the topics relating to the service target of library activities. This element has four topics: middle school student, high school student, student preparing for an exam, and disabled teenagers. This ele-



ment includes topics related to various teen services, such as changes attributable the growth; and factors such as students and disabled persons.

*Equipment* is an element that summarizes topics concerning space and supplies. This element is composed of five topics: exclusive corner, arrangement of furniture, shelving, seat, and furniture.

*Program* is an element that summarizes topics concerning specific contents of library activities. In this element, there are 11 topics: events, events related to reading, homework support, a website for teenagers, career / employment, notebooks (booklets) for teenagers, library circle of teenagers, workplace experience, library use education, book talks, and storytelling.

*Management* is an element that summarizes topics concerning library management. This element comprises three topics: policy, staffing and promotion.

*Cooperation with Other Organizations* is an element that summarizes the topics concerning the cooperation of library organizations in multiple organizations. There are six topics in this element: school and school library, teachers, public libraries excluding school libraries, organization excluding libraries, dispatching librarians, and cooperation on reference services.

*Holistic Services* is an element that summarizes miscellaneous topics. It has five topics: survey, research, general statements, reports, and guidelines.

Table 2. List of elements and topics

Constituents	Topics
Information Resource	Data collection, Document selection, Book list, Book review, Electronic materials / Contents on the Web, and Group lending
Staff	Librarian participation, External experts, Training for librarians, and Participation of teenagers
Target	Middle school student, High-school student, Disabled teenagers, and Student preparing for an exam
Equipment	Exclusive corner, Arrangement, Shelving, Seat, and Furniture
Program	Events, Events related to reading, Homework support, Website for teenagers, Career / Employment, Storytelling, Notebook (booklet) for teenagers, Library circle of teenagers, Workplace experience, Library use education, and Book talk
Management	Policy, Staffing, and Promotion
Cooperation with Other Organizations	School and school library, Teachers, Libraries excepting school libraries, Organization excepting libraries, Dispatching librarians, and Cooperation on reference services
Holistic Services	Surveys, Research, General statements, Reports, and Guidelines



## Conclusion

Through the qualitative content analysis of previous documents in this research, the eight elements and 44 topics of teen services in public libraries in Japan were clarified. These elements and topics are the foundation for discussing the teen services of modern Japanese public libraries.

Among the eight elements, in particular, *Information Resource* and *Program* were more characteristic than other elements. A lot of eye-catching events such as making “Gateau chocolat” and escape games were held for teenagers. Japanese teenagers often spend time learning at school and in club activities, so opportunities to use public libraries are decreasing. Consequently, we infer that first of all, Japanese public libraries can get teenagers to go to the library through such activities. In addition, many lecture presentations and reading sessions by storytellers in *Program*, and activities related to reading books such as providing a book list for teenagers were observed in *Information Resource*. There are various forms of book lists. Some of them are created by several libraries and others consists of teenagers’ recommendations.

Apparently, in Japanese public libraries, (1) many activities aim at first getting teenagers to the library, and (2) often carry out activities to promote reading. In Japan, the primary role of public libraries is facilitating reading. In other words, citizens hope to promote reading rather than education in the library. Moreover, organizations other than libraries are aiding in educating the poor to some extent. Therefore, we inferred that libraries engage actively in activities to support reading rather than education. Libraries concentrate on supporting reading activities and contributing to society.

The problem of teen services research in modern Japanese public libraries is that there are many case reports but few research literature. Librarians need to make great effort, because it is necessary to provide flexible services for teenagers. It is especially necessary to clarify the general view of public libraries’ teen services. The elements and topics of teen services in public libraries presented in this research play an important role in considering future teen services.

## References

Executive committee of promoting reading among the Young Adult Generation. (2008). *Report on Children’s reading support project: “Children’s reading cheering team promotion project”*. Retrieved from [http://www2.hplibra.pref.hiroshima.jp/?page\\_id=1223](http://www2.hplibra.pref.hiroshima.jp/?page_id=1223)



- Hirata, M., Nakanishi, M., Hioki, M., & Inoue, Y. (2015). National Survey on Young Adult Services at Public Libraries in Japan (Part1). *The library world*, 67(2), 86–95.
- Inoue, Y. (2010). Library services for children/Young Adults. *The library world*, 61(5), 469–475.
- Inoue, Y., Hirata, M., Nakanishi, M., & Hioki, M. (2016). National Survey on Young Adult Services at Public Libraries in Japan (Part2). *The library world*, 68(2), 134–140.
- Matsumoto, Y. (2002). Expanding YA's way of YA service - think about progress toward information service. *Annual report of Doshisha University*, (29), 54-85.
- Nakajima, M. (2013). *E1510 – Report of library expedition event “mystery quest”*. Retrieved from <http://current.ndl.go.jp/e1510>
- National Diet Library. (2015). “*Night library -talking place-*” at Sanyo Onoda City Central Library in Yamaguchi pref. Retrieved from <http://current.ndl.go.jp/node/29420>
- National Diet Library. (2016). *Yao City Ryuge Library in Osaka will hold an event on making “Gateau chocolat”*. Retrieved from <http://current.ndl.go.jp/node/33173>
- Nishino, K. (2009). High school student and picture books: Development of students' minds through storytelling. *Library for all*, (383), 28-35.
- Onuki, S. (2016). Let's increase the number of child readers: The Day of OSAKA PAGE ONE / Osaka. *Asahi Shimbun*, 2016-07-20, 29.
- Shoi, S. “Hello Work” for young adults: creating opportunities for middle and high school students to think about their career. *The library journal*, 103(5), 288-289.
- Takahashi, M. (2004). Young adult services in Arakawa ward library: Great strategy to get children users. *Zu Bon: Book of library and media*, (9), 78-84.
- Wada, M. (2014). SBR Grand Prix in Osaka. *Library for all*, (452), 24-34.
- Yoshida, A. (2009). Accepting the work experience of middle school students: From the case of Tsukuba Central Library. *The library world*, 60(6), 457.
- Yoshioka, H. (2013). Reading books deepens your lives: Recruitment of works for the 4th Dokusho Koshien. *Asahi Shimbun*, 2013-04-28, 14.



## HOW MODERN AND INNOVATIVE ARE CZECH MUSEUMS? RESULTS OF QUANTITATIVE RESEARCH

Nina Wančová

Doctoral Student at the Institute of Information Science and  
Librarianship, Faculty of Arts, Charles University Prague, Czech Republic  
nina@wvi.cz

### Abstract

*Museums, as a part of the information infrastructure, play an important role in the society. Nowadays, museums have to reconsider their approach to visitors in order to prosper and to remain relevant. Therefore museums need to innovate. With increasing frequency, new media, other technologies and various participation strategies are used for building information environment and functional communities around the museums. This article's objective was to examine how Czech museums accommodate their visitors' needs represented by their communication types. Based on psychological, biological and neuro-linguistic theories four communication types (**H**aptic-social, **I**ntellectual, **V**isual, **A**uditive) were linked with presentation techniques used in exhibitions – such as typical displays and accompanying programs. We used the data from a questionnaire survey conducted in 2015. The questionnaire included thirteen questions, we used two of these for this article; the questions regarding the types of display and the accompanying programs. In total, 203 Czech museums responded. According to the official statistics there were 486 museums in 2015. We thus surveyed almost 42 % of Czech museums. We found out that Czech museums' displays and accompanying programs are most suitable for the **I**ntellectual type (31.3%) and the **V**isual type (32.3%). The displays and accompanying programs are less suitable for the **H**aptic-social type (17.6%) and the **A**uditive type (18.8%). The results regarding the innovation status of the museums were not affected by the size of the museums in question. The work sets a baseline for monitoring the level of innovation in Czech museums. We identified the need to consider both by-whom and for-whom the displays and activities are created. Also, possibilities to better fulfil the museums' function lie in better accommodating of the Haptic-social type.*

**Keywords:** museum Innovation, exhibition design, accompanying programs, individual communication types



## Background and Purpose

Museums are important for the society. They help people to understand the world around them, provide new experience through participation in different activities, and allow to explore new topics. They present the world which had disappeared centuries ago but is still present in our contemporary ways of thinking. Museums also prepare people for the future (Tanner et al., 2005). Fulfilling these functions requires a long-term strategy, consisting of many activities. Nevertheless, an universal way to fulfill museums' diverse functions does not exist. Each institution must find its own specific role, vision, purpose and a way to be relevant for the specific audience.

Museums' main and most visible communication platform are the exhibitions. Furthermore, the accompanying programs are supposed to cover specific or advanced topics for diverse audience, ranging from laymen to experts. Visitors like to be in the middle of an action and want to absorb meaningful content prepared to meet their individual needs and preferences (Simon, 2010). Therefore, the unique learning potential is the object based learning (Vayne, 2012), which can be manifested through accompanying programs.

The history of museums, in other words the history of systematic object collection, begun about 3 000 years B.C. in the Ancient Egypt. Over time, the phenomenon of collecting has changed and passed several stages. In the 19th century what we perceive as a modern museum was born (Holman, 2010). The characteristic trait of the modern museums was the focus on the objects themselves, and on the scientific and systematic development of the collection.

The last few decades of museology show two fundamental shifts. The first of these turned attention from the object to the observer. Consequently, the exhibitions started to be *for someone* not only *about something*, and museums started to be visitor-centered (Polly and Janet, 2013). The implementation of the idea of visitor-centered museums gradually resulted in the second shift. The visitor has transformed into a collaborator, and as a result the visit is associated with ideas of *dialogue, partnership, equality, openness, interpretation* etc. This change requires re-definition of museums' essential characteristics, such as their expert authoritative nature (Simon, 2010). This entails innovation. Furthermore, contemporary museums also compete with other leisure activities, which exerts economic pressure to develop engaging activities (Camareroa et al., 2014). Innovation is also needed in order to attract visitors or keep them interested.



## **Innovation in Museums**

There are various ways of applying innovation in contemporary museums. Some museums started to innovate the exhibitions by engaging multimedia, technological displays and interactive activities. However, others returned to conventional displays (Sklenář et al., 2017) in order to highlight the traditional purpose of museums – observation of authentic objects (Midgley, Henderson, 2005). According to Camarero et al. (2014) developments in museums are linked with the “economy of experience” where experience is defined as “memorable events that engage each customer in an inherently personal way”. Personal engagement puts great demands on the museum and results in the necessity to innovate.

Innovation in museums can be divided into two categories. First, the innovation associated with exhibition design. Innovative designs include diverse displays and accompanying activities used in order to develop a long-term relationship with visitors, who return frequently, find something new during each visit and are offered opportunities for personal growth. The second type is the innovation in the organizational procedures, management, leadership and interaction with people (Polly and Janet, 2013). Irrespective of the innovation, the museum needs to consider the visitors’ communication style in order to communicate properly. Otherwise it is not possible to create the information environment described by Camarero et al. (2014).

## **Communication Types**

Communication types play an important role in many fields, such as business, art, marketing, or medical services. They are also important for museums. Theories of communication types have their foundation in psychology, pedagogy and also in neuro-biology. The theories built on the idea that we get information through all of our senses and that we code, execute and combine information in our minds in way based on a unique pattern of thinking (Knight, 2009). The scholars provide multiple ways of dividing individuals into communication types. Neuro-linguists, like Knight, divide people into three main categories - visual, auditive and emotional. On the other hand, Vester (1999) defined four or five primary communication types: a verbal, haptic, visual, auditive and possibly communicative type.

Using the methods of addressing the individual communication types is important in school or other places of learning, such as museums. Consequently,



the employees of museums should consider the needs of the individual communication types and exhibitions should be presented differently. Besides, other aspects like the subject, environment and current emotional state are also important for learning. However, according to Vester we need to ask if our learning environments are designed for different communication types.

## Purpose

Consequently, the aim of this study was to analyze how displays and accompanying programs in Czech museums respond to diverse communication types. In order to address this question, based on Vester (1999), Knight (2009) and knowledge about museums, four communication types were defined: 1. **H**aptic-social type 2. **I**ntellectual type 3. **V**isual type 4. **A**uditive type (see the definitions below).

## Methods

### The Context of the Czech Republic

This paper describes the situation of Czech museums in 2015. Current state of Czech museums has its roots in the political and socio-economic development of the 20th century. In 1946 there were about 360 museums with approximately 4 millions of specimens. During the 1950s many museums were affected by the Communist Party propaganda and historical facts were falsified. During the period of "Normalisation" (1968-1980) after occupation by Russian army, Czech museums begun to stay behind the European scene, especially from technical and material point of view and in providing services to the visitors. Meanwhile, the number of objects increased to about 60 millions in 1989, which is 15 times more than in 1946. After the fall of the Communist regime in 1989, the Czech museums started to deal with the heritage of previous decades and to form new attitudes in a democratic society (Žalman, 2002).

### Survey Methodology

We used an online quantitative survey (<https://goo.gl/3auEyj>), released on 6th June 2015. The museums were invited to participate via e-mail. The email addresses were taken from the list available on the website of Czech Association of Museums and Galleries (<http://www.cz-museums.cz/adresar/>). The list consists



of about 800 contacts but only 500 of these belong to museums. The remaining contacts belong to other institutions: monuments, zoos, information centers, or university departments. Initially, 109 completed surveys were received. However, the aim was to receive at least 150 responses. Therefore, reminders were sent out in November 2015. The surveys should have been filled by the employees responsible for the exhibition.

The questionnaire consisted of 13 questions, five questions about the institution (number of employees, the main category of visitors etc.). The rest was focused on exhibitions, accompanying programs and online communication. Questions 1 to 4 were used for this purpose. Question one asked about the types of objects and displays. Question four focused on the types of accompanying activities. The data were anonymized and analyses programmed in Python.

### Displays and Accompanying Programs in Relation to Communication Styles

We linked each type of display or accompanying program with communication style(s) it targets. Each display and activity could be suitable for several communication types and was based on contemporary practices in museums. Classification and definition of each communication type follow.

1. **Haptic-social type:** learns best by doing things, needs to touch, feel and become deeply involved in the activity. Needs enough time for practical testing and for appreciating the sensation. Likes to share knowledge, cooperate and learn from other people. Needs to feel accepted by others. The atmosphere of the learning session and sense of safety is extremely important for them.

Museums displays and activities for the **H** type:

- Music: Adds atmosphere, acts on emotions.
- 3D objects: Hands-on activities allow for sensory experiences.
- Visit based on a narrative story with main character: Visitors can identify with and experience the topic through the character.
- Games: co-operative games in particular fulfill the social needs.
- Workshops: Allow for social engagement and involvement in the activity.
- Family programs: Opportunity to share intergenerational experience and “be together”.

2. **Intellectual type:** Has well developed abstract and conceptual thinking. Can concentrate for long time (unlike the other types). Absorbs information presented in logical structures, such as charts, numbers, tables. Is good in analyzing



texts, likes specific information. Likes identifying how particular parts are connected in logical way. Learns well independently, without a partner.

Museums displays and activities for the **I** type:

- Information panels: Panels include text, charts and structured information.
- Handed-out texts: Structured information and facts.
- Visualization: Often presents logical or chronological data.
- Comics: Stories divided into parts with logical order and detailed information.
- Touch screens: Allow independent learning, usually contain text, pictures, and detailed information.
- Games: quizzes and logical games that can be played individually.
- Lectures and discussion: Lectures are structured and presented by an expert. Discussions engage abstract thinking.
- Working sheets: Frequently contain logical steps and allow analytic exploration of the topic.

3. **V** Visual type: Thinks in images, likes an image overview of the topic. Details can be too disturbing for them. Thinks fast and creates an image in their head. Is very creative but may make a false image of reality if not provided with good input information. Likes different colours, underlining, or different fonts for each part of text or information, and dynamic, expressive exposure to information. Is not particularly patient, needs engaging activities.

Museums displays and activities for the **V** type:

- Information panels: if they contain images and charts.
- Video: provides a visual image of the situation.
- Visualisation: Ideal for this type, especially if visually engaging.
- Comics: Information is provided by pictures.
- Touch screens: Provide images, are dynamic and engaging.
- 3D objects: Provide overview and visual examination of the topic.
- Videomapping: Immersive display with imaginative pictures.
- Working sheets: Can be graphically rich and engaging, dynamic activity.
- Authentic objects: Are provided for visual examination.

4. **A** Auditive type: Prefers audio information sources. Does not need to make notes; easily remembers the heard information. The **A** types are able listen longer than the other types and they also like speaking. Doing other things while listening is disturbing for them and results in worse recalling of information. The



noise level is important for the **A** type. They usually need quiet environment or music of their choice.

Museums displays and activities for the **A** type:

- Audio: Spoken commentary.
- Music: Allows engagement of the auditory system.
- Video: Provides information in speech.
- Lecture and discussion: Give opportunity to listen and speak.

## Results

After removing the duplicates, the sample included responses of 203 museums. In order to examine whether the research is representative, the sample was compared with official statistics of the National Information and Consulting Centre for Culture (NIPOS). We chose the number of employees as the factor of comparison because human resources are crucial for the institution's management. Larger institutions are more likely to have an innovation, communication or educational specialist and are thus more likely to include displays and activities for diverse communication types. We divided the institutions into small (1-10 employees), medium (11-25 employees) and large institutions (>26).

According to the NIPOS statistics, there were 486 museums in 2015 (NIPOS, 2016). Our sample is therefore quite representative (Figure 1). In both samples 65 % of the museums are small. In the NIPOS sample medium museums constitute 16 %, as opposed to the 17,3 % in our sample, and large museums constitute 18,9 % as opposed to the 17,7 % in our sample. The major target group of visitors in all the museums were school groups and tourists.



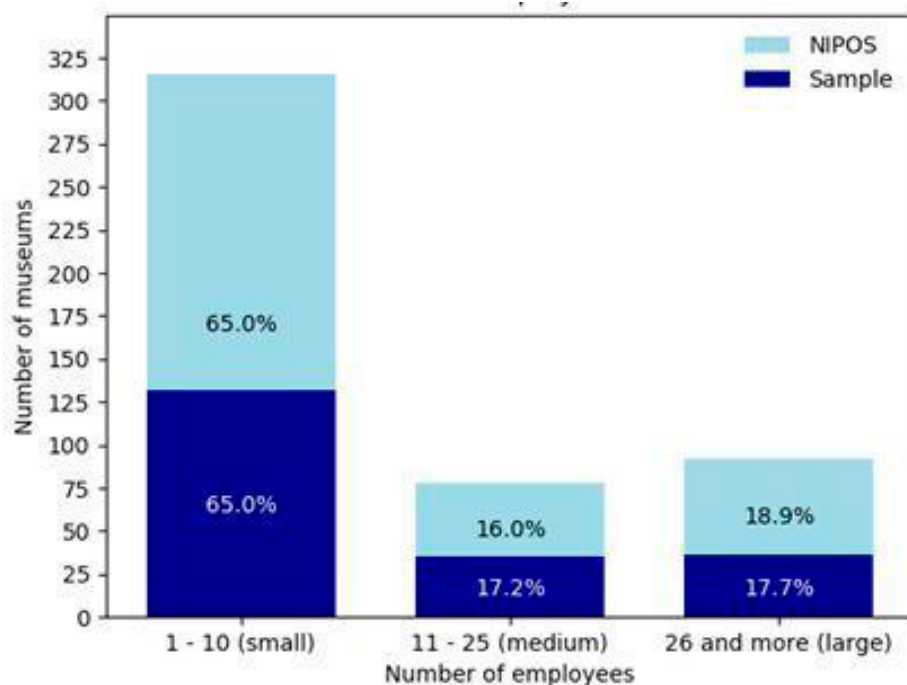


Figure 1. Distribution of employee count in museums

The respondents could select multiple options in their answers. Thus, they marked all the types of displays and accompanying programs used. All the reported types were counted, including the authentic objects, supplemental displays and events. We presumed that an ideal museum would equally respect all the communication types and would have 25% of displays and activities for each of the four types. Our examination (Figure 2) showed that Czech museum's displays and accompanying programs are most suitable for the **I**ntellectual type (31.3%) and the **V**isual type (32.3%). The **H**aptic-social type (17.6%) and the **A**uditive type (18.8%) are less addressed by the displays and accompanying programs. We also examined the distribution in a subset of museums according to the following factors – size (small, medium and large museums) and innovation status (modernized museums, small modernized museums). The distribution did not significantly differ in these analyses. Classifying certain types of displays and accompanying programs can be inaccurate and the distribution may be influenced by the most common category of authentic objects. Therefore, we reanalyzed the data without the authentic objects. Subsequently, the **I**ntellectual type was the most addressed (34,3%). The **V**isual type was offered fewer exhibits



(25,8%). The **H**aptic-social type (19.3%) and the **A**uditive type (20.6%) still had a substantial amount of activities available.

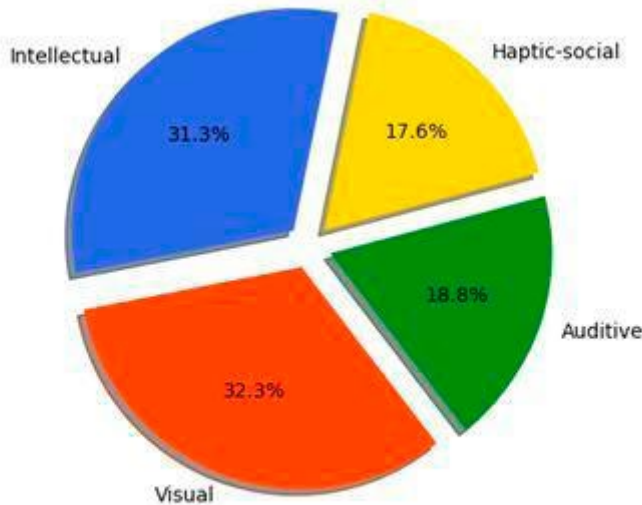


Figure 2. Representation of preferred communication types in museums

## Discussion

This paper examined to what extent the visitor's needs based on their communication type are taken into account in Czech museums. The presented work is the first original research of this topic in the Czech Republic. All the communication types were represented, irrespective of the size of the museum or innovation status. Perhaps unsurprisingly, the most represented communication type in museums' displays and communication programs was the **V** type (32,3 %). However, this result was influenced by including authentic objects, which were the most common type of display, in the analysis.

Generally, assigning displays and accompanying activities to communication types has its limitations. Above all, we could not consider the specific design, dramaturgical concept and particular goal of each display or program due to data collection via questionnaire. Also we did not include guided tours, which were considered a traditional activity which can be reserved on demand, in the survey. Thus we might have underestimated the activities for the **A** type, currently



at 18,8%. Besides, authentic objects may be hard to understand because many specimens have lost their primary function (Šobáňová, 2014; Šobáňová and Lažová, 2016) and visitors have no idea what they are watching (Šebek, 2010). Visitors can only make superficial observations regarding size, value or other properties. Such objects are especially challenging for the **I** or **H** type if touching objects is not possible, nor detailed information is provided. In such cases, the object is a source of information only to the advanced visitors or experts.

The **V**isual and **I**ntellectual types were the most common. However, it is possible that the observed distribution does not reflect the visitors' needs, but rather the employees' communication types. Museums are often managed by **I** types, scientists and experts, and also creative visual individuals. This may influence the exhibition design. For example, Vester (1999) described parallel situation, where textbooks target **I** types and are produced by them. In general, the producers of information are likely to present the information in the form most suitable for them. The potential topic for a future research is to describe the distribution of the individual communication types among the visitors.

Cost is an important factor to consider. Producing a text display is cheaper than producing events or high-tech displays, which need special hardware and software. Text can be created by museum professionals without co-operating with expensive specialists. Based on our data visitors read texts only *a bit*, on a scale *not at all – a bit – middle – significantly – dominantly*. They clearly preferred examining objects and listening to the guide.

Museums may be missing their opportunities by not targeting the **H**aptic-social type more, especially since school groups and tourists are the major visitors and expect engaging experience. **H** was the least represented communication type (17,7 %). However, these types of displays, activities and special visits based on object stories (Vayne, 2012) are a unique opportunity for museums to be different from other leisure activities (Polly and Janet, 2013). Furthermore, all the **H** activities fulfil the current role of museum as described by Camarero et al. (2014) – to engage in personal way, and comply with the principles of visitor as a collaborator or co-creator of the museum life. Also, designing a museum visit based on co-operation facilitates meeting strangers or engagement with family or friends beyond the usual. This leads to personal growth and improves understanding others, which is important for teenagers and school groups (Simon, 2010).



## Conclusion

This paper examined intersection of museum innovations, design of exhibition and accompanying programs with visitor's needs represented by communication types. With deeper analysis and in context of changing paradigms in museums, it is clear that Czech museums do not fulfill the needs of the **H**aptic-social and **A**uditive types. The constraints to meeting these needs should be examined in the future research. In general, the information environments should take into consideration the different communication types of the audience and possible favouring of the producers' own communication type when preparing the display.

## References

- Camareroa, C., Garridoa, M. J., & Vicente, E. (2014). Achieving effective visitor orientation in European museums. Innovation versus custodial. *Journal Of Cultural Heritage*, 16(2), 228-235. <http://doi.org/10.1016/j.culher.2014.05.006>
- Holman, P. (2010). Dějiny sběratelství a muzejnictví. In M. Buriánková, A. Komárková, & F. Šebek, Úvod do muzejní praxe: Učební texty základního kurzu Školy muzejní propedeutiky (pp. 21-68). Praha: Asociace muzeí a galerií České republiky.
- Doering, Z. D. (2010). Strangers, Guests, or Clients? Visitor: Experiences in Museums. *Curator: The Museum Journal*, 42(2), 74-87. <http://doi.org/10.1111/j.2151-6952.1999.tb01132.x>
- Knight, S. (2009). *NLP at Work: The Essence of Excellence* (3rd ed.). London: NB.
- Midgley, C., & Henderson, M. (2005). Museum peace after the Sharp shooting? [Online]. *The Times*. Retrieved from <https://www.thetimes.co.uk/article/museum-peace-after-the-sharp-shooting-dl55cr2m8kx>
- NIPOS. (2016). Kultura České republiky v číslech: Vybrané údaje ze statistických šetření. Praha: Národní informační a poradenské středisko pro kulturu. Retrieved from [http://www.nipos-mk.cz/wp-content/uploads/2013/05/Kultura\\_v\\_cislech\\_2016\\_web.pdf](http://www.nipos-mk.cz/wp-content/uploads/2013/05/Kultura_v_cislech_2016_web.pdf)
- Polly, M. K. -C., & Janet A., K. (2013). *Creating Exhibitions: Collaboration in the Planning, Development, and Design of Innovative Experiences*. USA: Wiley.
- Simon, N. (2010). *The participatory museum*. California: Museum 2.0.
- Sklenář, J., Sejkora, J., & Macek, I. (2017). Příroda. *Muzeum: Muzejní A Vlastivědná Práce*, 55(Zvláštní vydání), 11-17. <http://doi.org/10.1515/mmvp-2017-0030>



- Šebek, F. (2010). Zpřístupnění sbírek muzeí veřejnosti. In M. Buriánková, A. Komárková, & F. Šebek, Úvod do muzejní praxe: Učební texty základního kurzu Školy muzejní propedeutiky (pp. 245-283). Praha: Asociace muzeí a galerií ČR.
- Šobáňová, P. (2014). Muzejní expozice jako edukační médium. Olomouc: Univerzita Palackého v Olomouci.
- Šobáňová, P., Lažová, J., & , kol. (2016). Muzeum versus digitální éra. Olomouc: Univerzita Palackého v Olomouci.
- Tanner, R., & , et. al. (2005). A Strategy for the Museum Sector in New Zealand. Wellington: Museums Aotearoa Te Tari o Nga Whare Taonga o te Motu, The Museums of New Zealand. Retrieved from <http://www.museumsaotearoa.org.nz/sites/default/files/strategy.pdf>
- Vayne, J. (2012). Wonderful Things: Learning with Museum Objects (2nd ed.). UK: MuseumsEtc.
- Vester, F. (1999). Myslet, učit se... a zapomínat?. Plzeň: FRAUS.
- Žalman, J. (2002). Historie českých, moravských a slezských muzeí a galerií [Online]. Retrieved November 28, 2018, from <https://www.cesonline.cz/ar1-ces/cs/ces-historie/>



## DIGITAL SKILLS OF YOUNG PEOPLE AND ACTIVE PARTICIPATION IN SOCIETY

Lucija Žilić

MA Information Sciences, Department of Information sciences,  
University of Zadar, Croatia  
luczilic@student.unizd.hr

### Abstract

*The term digital skills, which will be used in this paper, describes a special set of skills which include operational skills, formal skills, information skills, communication skills, content creation skills and strategic skills. Digital skills are considered to be a key for information society, because using digital technology requires a new set of skills, which go beyond the basic skills of reading, writing and computing. This paper presents research on digital skills on Zadar high school students. The goal of this paper is to analyze the digital skills level of high school students in the context of Internet usage, and to research whether students who believe possess higher level of digital skills are more willing to actively participate in society. This research answered three research questions: 1. how high school students estimate level of their digital skills through self-assessment; 2. does active participation in society (especially political, culture activities, creation of media content...) depend on level of development of digital skills; 3. does retrieving information online correlates to increasing active participation in society. The research was conducted through self-assessment questionnaire and included a sample of 150 high school students from five different high schools located in Zadar area. The results show that respondent's asses high level of digital skills in the case of operational, communicational and informational skills. Active participation in society is partly connected with digital skills, in this case with formal and informational digital skills. Retrieving information online does affects social activity, and students which use Internet for informing about different topics, are more likely to actively participate in society. This paper can be used as a starting point in further research of students' digital skills, which can lead to raising awareness on digital skills importance in Croatian community and producing educational changes.*

**Keywords:** active participation in society, digital skills, high-school students, youth



## Introduction

Information society, which is characterized by global availability and usage of information and development of technology, caused changes in all aspects of everyday life. While using digital technology, Van Dijk & Van Deursen, 2014., state that every individual goes through 'four phases' which influence usage success. Technology usage starts with motivation for usage - fear of technology effects usage, which is especially seen in the case of older people who just started to use technology. Second phase is gaining physical access to technology. Nowadays, technology is more affordable, so more people have it in their homes. Also, there are institutions like libraries which are public spaces that provide access to technology for free or for a symbolic price. Third phase of the circle consists of skills needed for actual usage of digital technology, which includes operational, formal, informational, communicational, content creation skills and strategic skills. Those skills are considered to be a precondition for participating in almost every aspect of society. Therefore, lack of digital skills can lead to societal exclusion of those who do not have highly developed digital skills. Final phase refers to actual technology usage, but it cannot happen without motivation, physical access and digital skills (Van Dijk & Van Deursen, 2014). This shows how important digital skills are for every individual, and for the society as a whole. Still, in Croatia digital skills are not included in formal education. This paper presents research on digital skills of high school students from Zadar, Croatia and their active participation in society. The skills are researched in the context of Internet usage. This paper highlights the importance of digital skills research and points out aspects that should be included in curriculums in order to make it possible for young people to use the full potential of today's society and become active participants in the society.

## Digital skills

Digital media became a huge part of everyday life, so it is necessary for a person to constantly develop digital skills in order to fully use the potential of digital media for everyday living. Digital skills are essential for economic participation (for example, work related tasks that require computers and Internet), educational participation (they are needed in every aspect of education), political participation (for example, informing about political life), societal participation (social media, communication, online dating etc.), spatial participation, cultural participation and institutional participation (Van Dijk & Van Deursen, 2014).



Digital skills include skills related to *medium* (operation and formal) and skills related to *content* (informational, communicational, strategic, content creation skills).

According to Van Dijk & Van Deursen, 2014., operational skills are necessary to operate different kinds of Internet services, regardless of the device on which they are accessed, e.g. downloading files or identifying different formats. Although they are considered to be basic skills, which an individual needs to possess in order to acquire other digital skills, they can be problematic due to design differences in systems.

Formal skills are related to the structures on which the medium is built, and include navigation and interpretation abilities, e.g. not becoming disoriented when navigating between websites (Van Dijk & Van Deursen, 2014). Lack of formal skills often results in user's frustrations and lack of interest for Internet usage. Formal skills are often acquired using trial and error method.

Van Dijk and Van Deursen (2014) described informational skills as person's ability to locate the needed information through a five-step process. The first step refers to defining the information problem, which includes the ability to understand the type of information needed to solve the information problem. Next, the person must choose the right website or search system which needs to be evaluated using criteria such as reliability, authorship etc. The third step includes query formulation and can be quite a complicated process. Then, the person should choose the right information for their needs and finally, evaluate the obtained information in specific context.

Communicational skills, in the context of Internet usage, include ability to encode and decode messages to construct, understand and exchange meaning in the use of digital media (e.g. using e-mail or social media). Van Dijk & Van Deursen, 2014., also listed all the abilities that communicational skills include: the ability to search, choose and evaluate online contact, to code messages: to create meaning, to decode messages: to understand the meaning, to exchange messages, to attract attention online, to create online identities, to exchange data with others, to play games and use simulations etc.

Strategic skills include the capacity to use computer and network sources as the means of reaching particular goals, which makes them the most advanced Internet skills and therefore the most difficult to master, and even more difficult to teach.



Content creation skills are required to utilize Internet content to construct, understand and exchange meaning (e.g. creating music or video content). They require a high level of communicational skills, since the purpose of content creation, in most cases, is sharing with others. Internet users can be content creators or content users, but almost every individual Internet user, in some point of Internet usage, was a content creator. Content creation can vary from creating interactive web sites, uploading personal work online (e.g. photographs), participating in online discussions, all the way to writing comments on Facebook (Van Dijk & Van Deursen, 2014).

Described digital skills form a precondition for using the full potential of the Internet. Some skills, like operational, are relatively easy to teach through formal and informal learning methods, while other, like strategic, largely depend on the personality and the way of thinking of every individual.

Although digital skills are essential for everyone's participation in the society, young people who are growing up surrounded with technology are focus of this research. It is assumed that young people use technology very well, but digital skills are often neglected in school. Most common thought is that digital skills should be part of the Informatics' subject/course curriculum.. In Croatia, Informatics is not an obligatory course in most schools. Still, some elementary schools offer the subject as obligatory course, so Croatian young people have very different skill sets.

## Digital skills and active participation in society

Thompson et al., 2014. state that digital skills enable economic, educational, political, social, cultural, spatial and institutional participation in the society, thus people who do not have adequately developed digital skills tend to miss out a number of opportunities for active participation in society. Active participation in society includes understanding social situations and social problems, and taking steps in social problem solving, which in today's world, largely depends on information access. Although technology enables access to and usage of information, skills needed for using technology can generate challenges linked to social inclusion and social equality. Without information access, the person cannot understand the social changes, and without digital skills, a person cannot participate in those changes.

By providing access to information, Internet can provide numerous opportunities for active participation in society. For example, exploring volunteering op-



tions can encourage a person to do volunteering work in their community. Also, a person can volunteer on the Internet itself, for example taking the time to write a recommendation on which computer to buy. Although at first, that doesn't look like real like volunteering work, a person uses their skills, energy and time to help others. Mossberger, Tolber & McNeal, 2008., wrote about how Internet can cause real life social participation in politics. During elections in USA in 2004, Internet was a medium that helped in organizing political gatherings. Elections were promoted on different websites, and that encouraged people to meet in real life in order to coordinate their activities in supporting certain candidates.

## Digital skills research

The importance of digital skills for everyday life is being recognized, and a lot has been written about it. Digital skills also appear in a number of government and policy maker's documents, e.g. Digital Agenda for Europe. But before implementing those kinds of documents, or deciding to take part in different digital skills projects, it is important to research the level of digital skills in our surrounding. Data collected via research will give better understanding of the current situation and will serve as guidelines in deciding which documents to implement or which project to take part in (Gui & Argentin, 2011). Digital skills of high-school students were not researched in Croatia, so this research is a valuable contribution for better understanding of this topic in Croatian domain.

The goal of this paper is to analyze the digital skills level of high school students in the context of Internet usage, and to research whether students who believe they possess higher level of digital skills are more willing to actively participate in the society. The purpose is to provide data about self-assessed level of digital skills in high schools students and data about Internet usage for societal participation. Since digital skills are very important for active participation in society, it is important to research the current state and the level of digital skills of the students.

This research answered three research questions: 1. How high school students estimate level of their digital skills through self-assessment; 2. Does active participation in the society (especially political, culture activities, creation of media content...) depend on level of development of digital skills and 3. Does retrieving information online correlates to increase active participation in society.



## Methodology

Survey used in this research was taken and adapted the paper *Measuring Digital Skills: from Digital Skills to Tangible Outcomes project* report and translated into Croatian. The survey contained questions about operational, formal, informational, communicational skills and content creation skills, which are researched in the context of Internet usage. Also, several questions were added: about the usage of the Internet for informing about different social events, about participation in the society, about the influence of the information from the Internet on the real life behavior and digital skills acquisition. The survey contained 13 questions.

Examinees were high school students which attend high school in the city of Zadar, Croatia. Five high schools took part in this research (Tehnička škola Zadar, Gimnazija Vladimira Nazora, Klasična gimnazija Ivana Pavla II., Obrtnička škola Gojka Matuline i Prirodoslovno-grafička škola). In total it makes a sample of 150 high school students. Since a number of students were under-aged, parents signed a written consent in which they gave their permission for their child participating in this research. Questionnaire was prepared with the Lime Survey, but due to lack of computer equipment in schools, paper surveys were used.

## Results and discussion

The first set of questions (1-3) researched the respondent's school, age and sex. I total 77 female and 73 male students participated in this research, which makes N=150 students. Examinees were from 17 to 20 years old.

Questions 4-8 were self-assessment questions that researched digital skills: operational skills (q4), formal skills (q5), informational (q6), communicational (q7) and content creation skills (q8). Table 1. (Self-assessed level of digital skills) shows average answers for all claims. Students assessed their skills the highest in questions that relate to operational, communicational and informational skills. This result was expected, while young people grew up surrounded with technology, so it is not unusual for them to think they know how to use it (operational skills). In communicational skills, social media played a big role, since young people use it daily. Informational skills are often thought in schools through many subjects, especially informatics. Examinees assessed their skills the lowest in question that relates to formal skills. Formal skills include the ability to orientate in different Internet structures, understanding of the web sites architecture and awareness of subject's location in different Internet forms. Those skills are more difficult to acquire than e.g. operational skills. This result can serve as an



indicator of which digital skills should be implemented in teaching programs. Apart from formal, students' assessed lower level of content creation skills. Both of lower assessed skills can be easily taught and implemented in school curricula.

*Table 1. Self-assessed level of digital skills*

		<b>Descriptive statistics</b>			
	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
P4 – operational skills	114	1,08	4,00	3,6586	,47804
P5- formal skills	120	1,00	4,00	2,4143	,61742
P6 – informational skills	110	2,00	4,00	3,0313	,37691
P7- communicational skills	134	1,00	4,00	3,7562	,51122
P8 – content creation skills	115	1,00	4,00	2,7896	,80300
Digital skills	69	2,06	4,00	3,1859	,33972

The goal of the next question (question 9) was to research how often students use Internet for informing about different social events. Table 2. (Using Internet for informing about different events) shows that students use Internet to inform about social events and concerts very often or often. In the case of using Internet for finding information about theater plays, museum exhibitions etc., 21% of students stated that they inform about them very often, but 25% never uses Internet to inform about that topic. I total 24% stated that they very often use Internet to inform themselves about political events, but also, 23% never use it to find information about political events. Volunteering is not a popular topic for informing, where the biggest number of students inform occasionally or rarely. Most of the students occasionally uses the Internet for informing themselves about sport events.

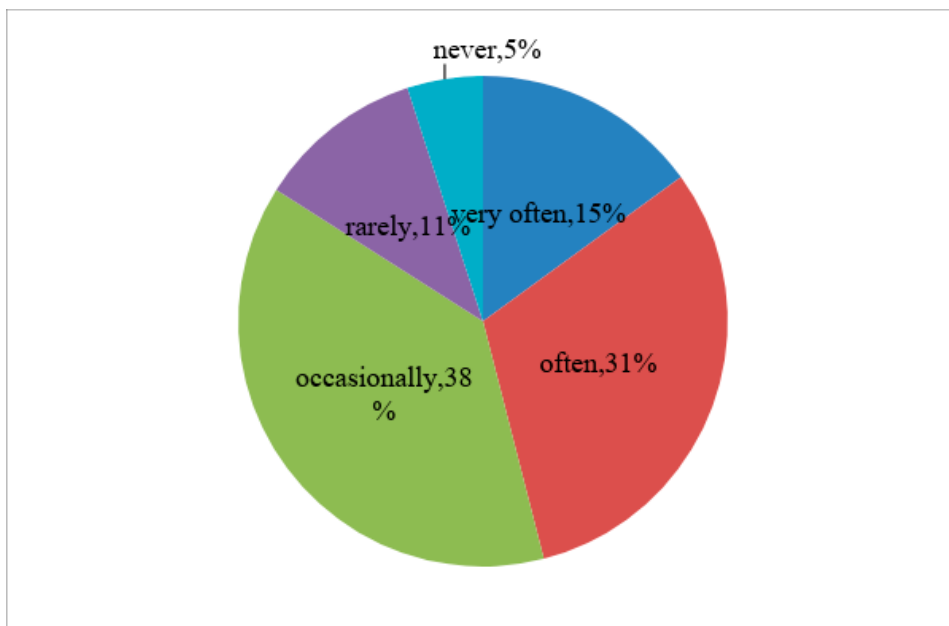
*Table 2. Using Internet for informing about different events*

	<b>Very often</b>	<b>often</b>	<b>occasionally</b>	<b>rarely</b>	<b>never</b>
Informing about social events	42%	30,67%	20%	4,67%	2,66%
Informing about concerts	40,67%	20,67%	21,33%	12,67%	4,67%
Informing about theater plays, museum exhibitions etc.	21,33%	14,67%	18,67%	20%	25,33%
Informing about political events	24%	14,67%	18,67%	16,67%	23,33%
Informing about free lectures, workshops, classes etc.	13,33%	13,33%	27,33%	25,33%	20,67%
Informing about volunteering possibilities	14%	8,67%	28,67%	24%	24,67%
Informing about sport events	23,33%	16%	30%	14%	16%



In question 10 students were given a few statements and were asked to mark their agreement with them on a scale from “I don’t agree at all” to “I completely agree” on the topic where they acquired their digital skills. Total of 42% of students’ completely agree with the statement that they acquired digital skills themselves, using trial and error method, and 36% mostly agree with that statement. Furthermore, students mostly do not agree that they acquired digital skills by learning from their parents or guardians, from books, manuals, visiting lectures and workshops or in libraries. They are mostly neutral to the statement that they acquired them in their formal education (school).

Since students stated that they use Internet for informing about social events, we researched their opinion about online information influence on real-life activity. Most of the examinees stated that Internet occasionally or often encourages their real-life activity.



*Figure 1. Influence of Internet information on real life activity*

Next set of questions researched active participation in society. Results show that most of the students visit cultural events (museum exhibitions, theater plays, concerts etc.), a few times a year. Sport events are visited more often, and most of the students visit them monthly or a few times a year. Volunteering is not popular amongst students. 36% never volunteer and 40% volunteer once in a couple of years or once a year. The same case is with participating in free lectures, workshops etc., where almost 50% of students never visits them. Hu-



manitarian work is more present in students' lives, and most of them participate in those kinds of events once a year or a few times a year.

Last question was designed to research whether student plan on voting on political elections. Since examinees are age 17-20 years old, most of them can, or will be able to participate in next Croatian political elections. 41% of students stated that they will surely vote on elections, 23% that they will probably vote, and only 4% stated that they will surely not vote on political elections.

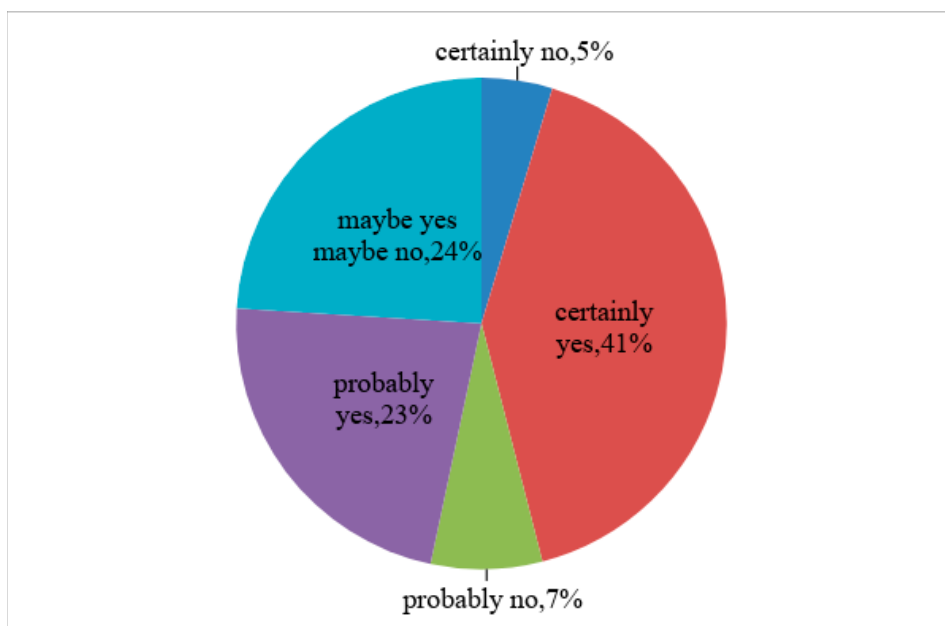


Figure 2. Planning on participating in political elections

Before conducting the survey, next research questions were set: 1. how high school students estimate level of their digital skills through self-assessment; 2. does active participation in society (especially political, culture activities, creation of media content...) depend on level of development of digital skills; 3. does retrieving information online correlates to increasing active participation in society. This research show that student self-asses relatively high level of digital skills, especially in the case of formal, information and communicational skills. When asked where they acquired those skills, most of them stated that they learned themselves, using trial and error method. Students do use Internet to inform about different social topics, in this case especially social events and concerts. Students stated that Internet occasionally encourages them for real life activity. Regarding active participation in society, students mostly visit sport



and cultural events. They participate in humanitarian events once a year or once in few years, and they rarely visit free lectures and workshops. They also stated that they are interested in politics, and most of them plan on voting on next Croatian political elections.

Based on research data, we can conclude that students estimate relatively high level of digital skills, especially operational, communicational and informational skills. Participating in society is partly connected with digital skills (formal and informational skills), and using Internet for informing is connected with higher societal activity, in this case with participating in political elections (voting).

In order to make more general conclusions on eventual connection of digital skills and active participation in society, the research should include more examinees. Also, since this research included self-assessment survey, the presented data cannot be considered completely accurate, since it is possible that examinees are not fully aware of their knowledge or lack of knowledge. Also, it is noticed that a lot of students, which took part in this research, spent minimum of time reading the questions, and marked "I fully agree" on most of them, probably thinking it is the correct answer. All of this should be considered in planning further steps in research of this topic.

## Conclusion

Since today's society is characterized by high usage of technology, digital skills enable the performance of many everyday activities, from educational to political participation in society. Digital skills can be thought through many schools subjects, but are often related to informatics, which is not yet an obligatory subject for neither elementary schools nor high schools. Still, many schools recognize the importance of teaching digital skills, so they participate in different projects, in order to educate their students better. Before deciding to take part in project connected to digital skills, or deciding on changing the school curriculums, digital skills of young people should be research in order to gain full understanding of high school student's skills, which will point out aspects that need to be taught more deeply. This paper presented research on digital skills of high school students which attend school in the city of Zadar. The research included 150 high school students from 5 different high schools. Research showed that students estimate high levels of digital skills, especially operational, communicational and informational skills. They stated that they acquired those skills by themselves, using trial and error method. Students use the Internet for inform-



ing about different topics, which are most commonly social events, concerts and sport events, and they mostly regularly visit sports and cultural events. They rarely volunteer or participate in humanitarian events, but most of them state that they are interested in voting on political elections.

This research shows current state and opinions of high school student's examinees about their own digital skills and participation in society. The sample is not big enough for us to be able to make general conclusions on this topic, but it can be used as a starting point in further research of digital skills and active participation in society. It can also be used as guidelines for teachers and librarians in designing educational programs and workshops for high school students, since it points out certain aspects that students need more education about.

## References

- Gui M. & Argentin, G. (2011). The digital skills of Internet-natives: the role of ascriptive differences in the possession of different forms of digital literacy in a random sample of northern Italian high school students. *New Media and society*, 13 (6), 1-28.
- Mossberger, K., Tolber, C. J. & McNeal, R. S. (2008). *Digital Citizenship: The Internet, Society and Participation*. London: The MIT Press.
- Thompson, K.M.et al. (2014) *Digital Literacy and Digital Inclusion: Information Policy and the Public Library*. London: Rowman & Littlefield.
- Van Deursenn, A.J.A.M., Helsper, E. J. & Eynon, R. (2014). *Measuring digital skills: from Digital Skills to Tangible Outcomes project report*. Retrieved from <https://goo.gl/ev1ZPN>
- Van Dijk, J.A.G.M. & Van Deursenn, A.J.A.M. (2014). *Digital skills: Unlocking the information society*. New York: Palgrave Macmillan.



## P A P E R S

S u b t h e m e :  
Innovative technologies



## NEW INDUSTRIAL REVOLUTION, EMERGING TECHNOLOGIES AND INFORMATION INSTITUTIONS: IS THERE A ROADMAP TO THE FUTURE?

Milijana Mičunović

Assistant Professor, Department of Information Sciences, Faculty of Humanities and Social Sciences, University of Osijek, Osijek, Croatia  
mmicunov@ffos.hr

### Abstract

*There is a lot of talk lately about new industrial revolution (NIR), emerging technologies and economic metamorphosis and how they impact our professional and private lives. Many experts think that in order to respond successfully to our sociocultural evolution, organisations should be set up in a more decentralized and flexible way while relying on strong change management, cluster dynamics, interdisciplinary thinking, competency shift and dynamic digital environment, to name a few. They believe that our existing value chain will be quite disrupted by new driving forces. But how do we respond? It is understandable that we need to rethink our educational and business models, but does that make us fully ready to meet this revolutionary paradigm shift? Is there a roadmap to show us how to successfully participate in these new ecosystems? What are the incentives, actions and programs that best leverage all the change that awaits us?*

**Keywords:** 4th industrial revolution, emerging technologies, socioeconomic changes, new economy, jobs

### Introduction

*„Here’s what happened.”*

(Adrian Monk, *Monk*)

We are entering a phase named by many as the beginning of the 4th industrial revolution. How did we come to this? Well, if we go back to 1960s, 1970s and 1980s we will see three ‘revolutions’ being born – computer revolution, information revolution and digital revolution. All three have created a powerful



framework for new socio-technological system we now call information society i.e. informationalism.

Today we can knock down challenges as they come. For the most part, at least. Thanks to technology and science transitions as well as integration of info-tech, biotech, AI, machine learning, bots, algorithms, robotics, Blockchain technology, Big Data and other disruptive technologies, we are witnessing the birth of new self-sustainable society.

This increasing automation and reliance on technology set the foundation for 'contemporary' posthumanism<sup>1</sup> where trends like reductionism, relativism, uncertainty and unpredictability fundamentally changed the nature of our reality and, once again in history, changed the relationship between God(s), nature and human. We live in a society where nothing is certain. Of course, nothing was ever certain through history of human kind. But the difference this time, some (Pepperell, 2003) will say, is that we are left with much less hope and resolution. Nor God, nor science, nor all powerful human with all his gadgets and apps can give us finite answers for the change that is too fast and too great.

How does this new paradigm shift and diffusion of almost all borders and definitions, where everything is probable and relative, affect our socio-economic ecology? Is it inevitable for the society, institutions and individuals to lose their identity and slowly disintegrate in this new fusion of science, technology and economic development? Well, everything is probable!

## Here comes technology

*„This, Jen, is the Internet.“*

(Maurice Moss, *The IT Crowd*)

If all the predictions come true, soon we'll be feasting on 3D-printed powder mixtures that solidify into appealing meal, we'll commute to work skating 150 miles per hour through a high-speed underground tunnels, and we'll never feel lonely or neglected again thanks to our "uncanny valley" companions.

What worries us the most is the later, the rise of AI and (humanoid) robots. Besides triggering an uneasy awareness of our own mortality, they might steal our jobs, kidnap our relationships, and maybe even turn against us. For the time

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<sup>1</sup> As opposed to the more futuristic view on posthumanism that can be found in the writings and works of Moravec, Minsky, Tipler and other posthumanists.



being, we are mostly concerned with the jobs issue. There are two predominant perspectives on AI and automation that range from utopian, where machines create technological miracles and marvels, to dystopian, where labour is replaced by software and malevolent robots. In the former technology creates far more opportunities than it destroys. For instance, people will be able to produce new identities for themselves and assume new roles at work, like programming robots or performing more intricate tasks. The latter is built on fear that robots, AI and automation will change the distribution of power making our jobs obsolete and phasing us out just like horses were thanks to Henry Ford. According to Masthene (2014, p. 683) “*technology has two faces: one that is full of promise, and one that can discourage and defeat us*”. However, he is aware that this biased approach can fail to recognize other important questions, like the importance of having the right “economic and manpower policy” or the importance of proper educational policies, etc.

History has showed us that technology is nothing if not liberating. Every day we’re enjoying the benefits of living in the new technology-oriented ecosystem we’ve been building for the last couple of decades. Yet, we still tend to romanticize the past and fear the new incoming industrial revolution. Why is that?

As it turns out, things are a bit more complex than the previously mentioned biased perception of the changes. We have to be careful not to oversimplify and generalise the relationship of society and technology and the dynamics of their interaction. Yes, many times it is hard to distinctively point to and explain certain social, political, cultural, economic or even psychological change that reflects on our life and work. It is hard to describe and understand all the nuances. Every new technology redefines our society as a whole. New social paradigm emerges, our perception of good and bad, and important and unimportant shifts, and concepts like knowledge and truth change. It’s not just about enjoying the fruits of tech evolution but how they change our economic and social system, life conditions and, yes, work circumstances (Bard and Söderqvist, 2012; Dombrowski and Wagner, 2014). These changes might be upsetting as they might seem degrading and destructive to our current value system. One of these values is collectivism, i.e. the culture of sharing. As Masthene (2014) and Rundle (2014, p. 58) point out, the problem of industrial revolution isn’t technological support of material production but information production and privatisation of the process which causes us to distance ourselves from the sharing culture and collectivisation.

Despite these and other issues, given future technology will certainly revamp humanity. According to some authors and their research (Fuchs 2014; World Economic Forum, 2016; Harari 2018; Information, people & technology) current



technological disruption, such as rise of AI, robotics, developments in genetics, Blockchain revolution and cryptocurrencies, biotechnology, nanotechnology, information technology, 3D printing, IoT, Big Data, cheap computing power and expanding processing power, to name a few, will alter every single aspect of our lives – work, leisure, monetary system, market, education, governance, legal system, etc. Amongst them, Internet has been more revolutionary than many of us recognize and has changed the world in many positive ways. It has set the conditions for collaborative society and participatory culture thus further supporting the idea of collectivism. Still, technology can't do all the work. Foundations are laid, but there are few things left that are up to us. First, we have to choose the guiding principles. Is it competition and profitability or collaboration and sustainability (Fuchs, 2018)? Second, we have to realize that we have limited control over the tools (technology) we use and over the direction we're heading to. Shirky (2008, p. 300) compares it to steering a kayak: *"Our principle challenge is not to decide where we want to go but rather stay upright as we go there."*

Despite existing polarised nature of technological changes, one thing is certain – we are living in the best of times. Thanks to the coming age of technology there is less poverty and hunger than ever before, we live longer and healthier lives, the level of education and literacy is amongst highest in history, and we can face our obstacles using highly developed 'tools'. So, where's the problem?

## So, where's the problem?

*„Everything is amazing and nobody is happy.“*

(Louis C. K.)

If we recall famous Dicken's novel *"A tale of two cities"* then we become more realistic. Yes, it is the best of times – full of wisdom, light, belief and great things before us. But for some it is also the worst of times – there is great deal of despair, incredulity, foolishness displayed, with nothing good before us. While recognizing many of the benefits of living in a high-technology and knowledge-based society, few authors (Naam, 2013; Masthene, 2014; Harari, 2018; Lanier, 2018) agree there are a number of problems we need to address.

### *1. Lack of preparedness*

Government, agencies and institutions, public education and current economy aren't equipped enough for the change, nor do they have an ability to foresee and anticipate negative externalities and make them a part of their policy planning and structural changes. It is especially hard to prepare when



you don't know exactly what it is you're preparing for and what the consequences will be. In the report published by World Economic Forum (2016, p.3) it is said that *"by one popular estimate, 65% of children entering primary school today will ultimately end up working in completely new job types that don't yet exist."* Even if we are not sure what future workplaces will look like, we can better prepare for whatever is coming if we start working on improving our education and government and economic policies.

## 2. *No possibility to 'opt out'*

An individual can opt out. A man can choose to go off-the-grid. But opting out as a society is effectively impossible due to network effects, i.e. lock-ins. Lanier (2018) mentions the problem of lock-ins in the context of social media, but the same could apply to the whole socio-technological system. Can we decide not to live in a technological society? Can we ban the process of innovation and refuse to use advanced technological solutions to prevent job losses? Theoretically, it is possible. Practically, we've probably become too dependent on scientific and technological innovation to be able to opt out. Slowing the introduction of innovation may be possible, but it opens other questions such as who should control this process (governments or corporations or a third party), how should it be carried out, etc.. For Lanier the option of not using the tools and services becomes like a trial. After all, the merging of people and machines (automation, robots, AI) might become so big that it will be hard to imagine the survival of humanity without them.

## 3. *The conflict of values*

Traditional values of leisure and play, as well as work-life balance, stand against values of increased productivity and constant economic growth. Besides, technology tends to create conditions for the rise of ever new values and new ways of social and economic organization thus pressuring us to constantly re-examine our perception and views.

## 4. *The pressure of constant economic growth*

Business dynamics is slowing down and current economy functions at a zero-sum level. But the imperative to grow bigger and produce more remains. This results in less cooperation and more competition. *"If there's no way to increase wealth without taking it from another, the world becomes a much darker, more violent place."* (Naam, 2013, p. 94). Promoting the economy of sharing and collaboration and culture of participation becomes much harder in these conditions.



### 5. *Who are the designers of our future?*

Technological revolution is led by engineers, scientists, technological know-how and entrepreneurs. They haven't been chosen to represent us but we feel the consequences of their decisions and actions in our everyday life. Moreover, they are not politicians, sociologists, and ethicist so it's not in their job description to contemplate social and political implications of their decisions and actions.

### 6. *Development of biotechnology*

Developing biotechnology implies a necessity to reflect on its possible consequences. Economic inequality we're witnessing today could easily turn into biological inequality. Society could become divided into different "biological castes" (Harari, 2018, p. 68) which would further deepen social inequality. If part of the future workforce 'develops' enhanced skills and becomes more capable and competitive, what will happen to others? Just look at the recent trials of exoskeletons by production line staff in some factories.<sup>2</sup> And this is just the beginning.

### 7. *Combination of infotech and biotech will steal even the 'off the table' jobs*

Harari (2018) is cautious when it comes to confluence of information technology and biotechnology. If we perceive human emotions, desires and thoughts as mere biochemical algorithms, there is no reason why artificial neural networks wouldn't be able to replace humans even at creative and highly 'intuitive' jobs. And if we add ethical guidelines to the network, AI could do the work where it will need to make important life decision; maybe even more successfully than humans since they wouldn't make mistakes based on their emotions or having a 'strong gut feeling'.

### 8. *The rise of algorithms*

Confluence of infotech and biotech will result in different distribution of authority and in possible shift in decision-making process from humans to computers. Harari (2018, p. 45) warns us of possible "digital dictatorship" where Big Data algorithms would monitor and understand our emotions better than ourselves while making our own feelings less reliable. This could create new data-processing ecosystem where our free will and decision-making would disintegrate under the manipulation of governments, agencies and corporations. Algorithms impose additional risk when it comes to surveil-

<sup>2</sup> In September this year Reuters has reported of German artificial limb manufacturer Ottobock's plan to sell mechanical exoskeletons with the aim to make manual labour for factory workers easier, i.e. making workers more powerful.



lance. They might be intelligent and solve problems, but they will always lack consciousness and ability to understand joy, pain and other complex emotions that may be a necessary leverage in a more complex decision making.

Besides aforementioned there are other issues, like decline of working age population or social and psychological displacement.

Though all these problems affect us directly or indirectly, some problems seem to be impose greater threat than others; probably because they are already here. They are: a) the rise of new economy and new business models, and consequently b) transformation, i.e. loss of jobs.

## Surfing on the waves of change

*„And now for something completely different ...”*

(Monty Python)

In today's dynamic environment everything changes – the way we live our lives and how we spend our leisure time, the way we communicate, but also how we work and conduct our businesses. Many industries and occupations are undergoing fundamental transformation with certain changes being highly specific to the industry. Thus some industries will change more slowly while others will go through change at a much faster rate. *“Concurrent to this technological revolution are a set of broader socio-economic, geopolitical and demographic developments, each interacting in multiple directions and intensifying each another.”* (World Economic Forum, 2016, p. 8).

If we were to analyse latest developments in technology and science and their relation to society, economy and politics, we would be able to identify the most prominent drivers of change. According to Berger (2014) constant digitalization and virtualization of industry and introduction of automation, AI, smart robots and machines will transform business models of many industries – educational, cultural, information industry, energy industry, etc. Kennedy (2017), as Berger (2014), believes that IoT will lead us to an increasingly connected world which will serve as a potential for 4th industrial revolution. IoT will improve work efficiency at a less cost and this is why some predict that half of new businesses will run on IoT by the year 2020 (Gartner, 2016). Big Data and the rise of cloud computing will create new ways to leverage information, to improve business management and to move the business value chain (Rifkin, 2011; Berger, 2014; World Economic Forum, 2016). 3D printing, new modes of mobility and new



communication technologies (Rifkin, 2011; Rundle, 2014) will create possibilities for the emergence of new kind of prosumers. They will also lead to mass customization and changing of the consumer needs. Blockchain technology will change the distribution of power placing data ownership more in the hands of the prosumers than in the hands of different platforms, i.e. companies. This technology is the backbone of a new type of internet. And we all know what disruption 'the first type' brought. Last, but not least, technologies like nanotechnology, biotechnology and genetics (World Economic Forum, 2016) will certainly bring us closer to science-fiction scenarios, and of all the technologies, they will define our future the most, especially when they start converging.

We can conclude that industry 4.0. and future technological changes will be fast and disruptive. Technologies like information technology (info tech) and biotechnology (biotech) will not only disrupt business models, but change the socio-economical production and reshape the socio-economic space. (Rifkin, 2011; Berger, 2014; Dombrowsky and Wagner, 2014; Harari, 2018). This will lead to the transformation of market economics (the rise of new economy) and labour economics (reshaping work, jobs and occupations).

## New economy

*"The study of economy usually shows us that the best time for purchase is last year."*

(Woody Allen)

Changes are affecting a large part of the economy and they're becoming a driving force of economic growth. Even though we're still living in the manufacturing economy of buying and selling products, social production is reshaping markets pushing us towards decentralized and non-market information economy (Benkler, 2006) and shifting the entire economy from selling goods to providing services (Rifkin, 2011). This is one of the reasons why economists (World Economic Forum, 2016) warn us of the necessity of re-configuring business models and skill sets.

New economy is based on breaking up traditional hierarchical models and creating new cutting-edge business models. Creating new models implies, amongst other things, moving from linear (pipes) to networked business models (platforms) (Rifkin, 2009; Berger, 2014; Harari, 2018). This move does not only impact the business structure, but consumers as well. They are getting more active role in the economy by both creating and consuming values. Thanks to artisan



spirit, technologies such as 3D printing and Blockchain and the rise of maker culture, new active consumers are backing up the rise of sharing economy.

What we have today is new economic values - “wisdom of the crowds”, networking and collaboration, decentralisation and distribution of networks, rise of commons-based peer production, cluster dynamics, cooperation and sharing. As some authors think (Benkler, 2006; Rifkin, 2009; Berger, 2014), these values are positive contribution to economy and society at large.

There are also many trends that influence the rise of new economy, such as a growing number of high-growth startups, use of Blockchain technology and cryptocurrencies, IoT technologies and, as Rifkin (2011) emphasizes, developments in communication, mobility and energy. For Rifkin this new economy represent the beginning of hybrid economy – the merging of capitalism and sharing economy, like in the case of Uber where capitalism tries to absorb sharing economy. Distributed and collaborative culture of sharing economy will certainly challenge centralized and authoritarian culture of (traditional) capitalism which will result in the fragmentation of the value chain. In order to successfully overcome all the challenges we will need to hack the economic infrastructure. But not only that, we will need to hack our own habits and routines and re-examine our values (Rifkin, 2009; Berger, 2014; Masthene, 2014).

Besides the merging of capitalism and sharing economy, there are trends that started to build new framework for the global economic system: introduction of work-shop-play platform in the economics leading to blurring of the boundaries between work time (work) and leisure time (play); data slowly becoming a currency of its own; institution becoming obsolete due to networking and social revolution; rising of transnational networked space, i.e. global network economy which could produce some unwanted results like structural inequalities with few central economic hubs; and certain transitions in the market and workforce – from people to machines, from products to platforms, and from traditional institutions and companies to the crowd (Shirky, 2008; Fuchs, 2014; McAfee and Brynjolfsson, 2017; Fuchs, 2018).

Some of the aforementioned trends are purely positive and some imply possible threats. So the need to improve our economy system goes on, as it did many times before in human history. Maybe this is why the term “new economy” becomes a bit misleading. We put our hopes up that something “new” will bring something “good”. Maybe it is yet another change in the history of humankind that depends on our values, abilities, motivations and readiness to face it just as much as it depends on recent advances in technology. We are witnessing the



democratization of economy and creation of new social and cultural possibilities and alternatives. Today we can see many socially responsible and ethical startup ideas and community-based businesses that support both modern human society and natural ecosystem. The need to be faster and better and the drive to be efficient and successful that push the new economy forward should be appreciated and preserved but not for the price of social and ethical responsibility towards our community, society in general and our environment. Because that is the only way we can avoid the best time to be “last year”.

## New jobs

*„And you wanna be my latex salesman.”*

(Jerry Seinfeld, *Seinfeld*)

Traditional narratives of the changing nature of work are usually focused on the impact of technology on employment and on what governments could do minimize the ‘damage’. The narrative hasn’t changed in the contemporary economy but there is certain transformation taking place – initial hopelessness and fear are giving place to preparing ourselves and adapting to the change.

Global restructuring of the working class is based on: a) the impact technology has on the nature of work and shaping new jobs; b) rise of digital labour and need for new skills; and c) merging of human work and machine work.

### *a) The changing nature of work and emergence of new jobs*

The impact technology has on the nature of work is evident in many industries. Fuchs (2014) refers to intensification of work time, while World Economic Forum (2016) believes there has been a transformation of how and where people work. One thing is sure, the complete work organization has changed.

The dialectics of economic growth is based on the changing nature of work, but also on the changing nature of businesses, companies and institutions. Shirky (2008) has a clear explanation of what is happening to professions and institutions. Thanks to improved and sophisticated technology and social tools, many professions, especially those in the creative industry, are facing mass amateurization. He sees professionals as gatekeepers of the industry. Of course, sometimes professional view on things and professional judgement can be a good thing and sometimes they can become disadvantage and obstacle to understanding the changes to the structure of the profession



itself. Amateurization, or the “relaxing of standards” as Shirky calls it, due to changes in the profession can be beneficial, like in the case of Gutenberg’s printing press. Professional standards of medieval scribes were embedded in the technology of writing and illumination, but then came printing press, woodcuts and engraving, and that changed the standards. *“The entire basis on which the scribes earned their keep vanished not when reading and writing vanished but when reading and writing became ubiquitous. If everyone can do something, it is no longer rare enough to pay for, even if it is vital. ... Instead of mass professionalization, the spread of literacy was a process of mass amateurization.”* (Shirky, 2008, p. 79) .

The changing nature of work leads to the change in job profiles (Harari, 2018) and shaping of new jobs. For instance, this year, one of the world’s largest job and recruiting site, Glassdoor, published a study which found there is a 300% increase in Blockchain-related jobs in the United States. (Zhao, 2018). Other authors (Berger, 2014; Masthene, 2014; World Economic Forum, 2016; Kennedy, 2017, Harari, 2018) point how big amounts of data created by IoT and Big Data will ensure more jobs, not less. We will see more professions like data scientist and data analysts, cyber security, remote control operator, etc. New technologies will enable people to choose from a broad range of work choices.

The change in job profiles and new emerging job categories are going to be complex and multifaceted and they are going to continue to incite conflicting views about how technology generates or displaces jobs and how should society respond to it.

#### *b) The need for new skills*

Technology is shaping new skills needed by the industry and digital labour system. The common fear is that AI and robots will eliminate low-skill jobs, so if we want to keep our jobs, we should rise the skills that aren’t codifiable. There are many suggestions what these skills should be. According to Rifkin (2009), Berger (2014) and Harari (2018) we need differentiation of skills, widening of skill gaps, we need workers with interdisciplinary skills, people with more talent and high skills, like design thinking, critical thinking and problem solving. Also, workers need to have soft skills, like empathy, communication skills, collaboration and perseverance.

Two years ago, World Economic Forum reported about the demand of the job market for reskilling and upskilling. *“Content skills (which include ICT literacy and active learning), cognitive abilities (such as creativity and mathematical*



*reasoning) and process skills (such as active listening and critical thinking) will be a growing part of the core skills requirements for many industries.” (World Economic Forum, 2016, p. 22)*

What we need in the educational curriculum is some more creativity, curiosity, passion critical and divergent thinking, interdisciplinarity, communication, grit, ethics and social responsibility. If we don't want AI and robots to outperform humans<sup>3</sup>, we should invest in educating (future) employees through (public) education and lifelong learning programs. This responsibility should be divided between governments and private sector.

*c) Merging of human work and machine work*

By now, we are all aware that low-skill and routine work is easily replaceable with machines. But besides the displacement of humans, we have a new scenario. As hybrid economy combines capitalism with sharing economy, hybrid work combines human with machine work.

Collaboration between humans and machines will, in some cases, lead to job losses and de-industrialization. But this is not the goal of 4th industrial revolution. *“The 4th Industrial Revolution does not aim the substitution of people in the factory system, but to create a synergetic collaboration between humans and machines.”* (Dombrowski and Wagner, 2014, p.102). Masthe (2014) is also quite optimistic and believes there will still be place for us on the market because we will be able to do things machines cannot do and control and manage machines and processes.

On the other hand, some are worried about what the future of machines might do to human workers. Harari (2018) is cautious about many things. So called ‘professions for life’ could become obsolete and outdated. Technology could push humans out of the job market. He believes machine learning will be a game changer, but even he admits that machines and automation won't replace us when it comes to less routine jobs that demand critical thinking, problem solving, dealing with unforeseen scenarios, and other high and soft skills.

While some see endless opportunities like increased productivity, new jobs, greater public services and better societies, others believe changes in our digitally networked work environment will lead to dislocation of jobs and loosing of

<sup>3</sup> There are still those who think that, despite all efforts, AI's and robots' impact on the future of work will leave humans jobless. More information on this topic is available in C. G. P. Grey's video “Humans need not apply” available on YouTube.



social protection. Labour-displacing technologies, as part of 4th industrial revolution, have great impact on work itself, on planning and management. These changes will affect different job families, not just information and knowledge industry or technical and creative industry. In the case of hybrid economy, special attention should be given to threats concerning so called 'gig-economy' where precarious work opens possibilities for worsening of already present problems, like inequalities (e.g. low wages and few or no benefits) and legal issues.

To prepare ourselves for the changes and to avoid making big mistakes, we should combine our high ambitions and expectations with basic human values and realistic possibilities of today's society. That way, despite the acceleration of innovation and technological change, we will be able to ensure social protection for all of us and benefit from a 'work in tandem'.

## So, what to do?

*„I knew exactly what to do. But in a much more real sense, I had no idea what to do.”*  
(Michael Garry Scott, *The Office*)

Many agree that solutions to the technological change must involve good strategic planning that further involves:

- anticipating and preparing for the upcoming change, but also being proactive and introducing incentives that will accelerate innovation (Naam 2014; Berger, 2014; World Economic Forum, 2016);
- inventing new social and economic models to post-work society and economy, i.e. remaking the infrastructure, retooling the industries and retraining the workers for social market economy (Rifkin, 2009; Harari, 2018);
- partnership, cooperation, cross-industry and private-public collaboration and collaboration between businesses and other key stakeholders; this means we must make a paradigm shift towards collaborative and participatory culture and transform competitive information society into cooperative information society (Rifkin, 2011; Lowitt, 2013; Bocken, Short, Rana et al., 2014 ; World Economic Forum, 2016; Fuchs, 2018; Harari, 2018);
- including governments and public in the process: governments could slow down the pace of automation and/or they could invest in R&D; public should be involved in decision making and should make greater commitment (Rifkin, 2011; Mastehene, 2014; Naam, 2014; Harari, 2018);



- innovating education and incentivizing lifelong learning so that we can develop future workforce with a completely new set of skills (Rifkin, 2011; World Economic Forum, 2016; Harari, 2018);
- following the guidelines of good economy where social and environmental benefits aren't replaced by the economic growth and where human dignity and freedom are integral part of work conditions (Bocken, Short, Rana et al., 2014; Schumacher, 2014).

Many of the issues mentioned have been a part of public debate for some time now and they've inspired a number of discussions about the effects of modern day technology on both life and work. Public and professionals are mostly polarized in their opinions and they all tend to be cautious, no matter how optimistic or pessimistic they are. Still, the question remains – is there a roadmap that will help us successfully tackle all that awaits us?

If we think of a roadmap as a structured and defined strategy with all the steps and major milestones outlined before us leading us to a desired outcome, than the most probable answer is “NO!”. But if we think of it as a navigation guidelines on some of the first consumer GPS devices, then we're closer to “YES”. Yes, there is a chance we may drive down the boat launch into a lake, but there's also a good chance we will soon reach our point of interest – economic prosperity and security, flourishing community, clean environment, society of openness and support, and other desiderata of (post)modern day human. We have many navigation guidelines: creating good and constructive policies, re-shaping institutions, expanding the notion of wealth beyond the monetary value, developing healthy awareness of necessity for trade-offs, being ready to accept the constant of change and, above all, being ready to accept the possibility of taking a detour into unknown.

If we can't stir all the time, we can at least do few things to prepare ourselves for the ride. And, paradoxically, it has nothing to do with technology.

First, we need to keep the right perception, the right view of the coming changes. In their essence, they aren't about technology, jobs and the economy, they aren't about institutions, and buildings, and infrastructure – they are about us, and about what makes us human. And it's not the job, or market, or a building. It's our consciousness and the feeling and thinking part of our animal. And all of the aforementioned (jobs, market and institutions) does not define it, but serve it to its higher purpose. Priority is not a certain job or an institution, but people. We should do whatever it takes to protect them and worry less about protecting a certain job profile.



Second, we need to re-imagine things. Institutions are not dead. Jobs are not dead. Economy is not dead. They will persist through transformation. Institutions can no longer serve as an end-to-end prearranged structures whose goal is self-preservation. As they slowly adopt the politics of cooperation, networking and industry clusters, as they become more flexible and better in anticipating and planning/preparing for the changes to come, they will secure their role as the backbone of collaborative and sustainable society of the future.

Third, despite living in a highly developed material culture, we need to practice, what Shunryu Suzuki Roshi calls, the right kind of renunciation – the non-attachment. (Roshi, in Beck 1989:110). Does it mean we have to make a choice between having and being (Fromm, 1976)? It is not so much about stepping into postmaterialism or renouncing the fruits of scientific and technological development as much as it is about choosing different values and embracing impermanence. We can look at impermanence as an added value to change. Change means moving. And moving means life. We may think that permanence will bring us safety, but we would be wrong. Impermanence is an intrinsic value of the universe up there and inside us. We need to accept that things change and go away.

And fourth, we need to make time. We can easily mistake duration of the time needed to contemplate and reflect on prerequisites, context and consequences of the change with permanence and resistance to change. Living in a technology-oriented society we tend to keep up with the pace of technology; we are racing against it which leaves us with less time to think, plan and reflect. Thus we feel frustrated, we want the time to slow down, we want things to stop changing so we can feel our jobs are secure and everything goes according to plan. Once again, permanence is not the answer, but embracing the change and finding more time to reflect upon it.

Maybe all of the above seems too hard. Changing the mindset and values to secure our future is certainly harder than changing and tweaking the technology. Also, it releases us of responsibility – if something goes wrong, if we make a detour, it wasn't us, it was the technology. But if we can imagine building colonies on Mars and constructing sentient AI that will care for our elder and sick fellow humans then surely we can imagine a more conscious and caring society where well-being of individuals and societies has the same value as securing infinite economic growth, making scientific breakthrough and building cutting-edge technology.



## References

- Bard, A. & Söderqvist, J. (2012). *The futurica trilogy*. Stockholm: Stockholm Text.
- Beck, C. J. (1996). *Everyday Zen: love and work*. London: Thorsons.
- Benkler, Y. (2006). *The wealth of networks: how social production transforms markets and freedom*. New Haven: Yale University Press.
- Berger, R. (2014). *Industry 4.0: the new industrial revolution: how Europe will succeed*. Retrieved from <https://www.rolandberger.com/en/Publications/Industry-4.0-%E2%80%93-the-new-industrial-revolution.html>
- Bocken, N. M. P., Short, S. W., Rana, P. et al. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, 65, 42-56. doi: <http://dx.doi.org/10.1016/j.jclepro.2013.11.039>
- Dombrowski, U. & Wagner, T. (2014). Mental strain as field of action in the 4th industrial revolution. *Procedia CIRP*, 17, 100-105. doi: 10.1016/j.procir.2014.01.077
- Fromm, E. (1976). *To Have or to Be?*. New York: Harper & Row.
- Fuchs, C. (2018). *Internet and society: social theory in the information age*. New York: Routledge.
- Fuchs, C. (2014). *Digital labour and Karl Marx*. New York: Routledge.
- Gartner, Inc. (2016). *Gartner Says By 2020, More Than Half of Major New Business Processes and Systems Will Incorporate Some Element of the Internet of Things*. Retrieved from <https://www.gartner.com/newsroom/id/3185623>
- Harari, Y. N. (2018). *21 lessons for the 21st century*. London: Jonathan Cape.
- Information, people & technology: by Wikipedia with help from Burt Pursel*. Retrieved from <https://psu.pb.unizin.org/ist110/>
- Kennedy, J. (2017). *Revolution 4.0: why the industrial internet of things is the perfect storm*. Retrieved from <https://www.siliconrepublic.com/machines/industrial-internet-of-things-perfect-storm>
- Lanier, J. (2018). *Ten arguments for deleting your social media accounts right now*. New York: Henry Holt and Co.
- Masthene, E. G. (2014). The social impact of technological change. In R. C. Scharff & V. Dusek (Eds.). *Philosophy of technology: the technological condition: an anthology*. (pp. 680-693)
- McAfee, A. & Brynjolfsson, E. (2017). *Machine, Platform, crowd: Harnessing our Digital Future*. New York: W. W. Norton & Company.
- Naam, R. (2013). *The infinite resource: the power of ideas on a finite planet*. Lebanon: University Press of New England.



- Pepperell, R. (2003). *The posthuman condition: consciousness beyond the brain*. Bristol: Intellect Books.
- Rifkin, J. (2009). *The empathic civilization: the race to global consciousness in a world in crisis*. New York: Penguin.
- Rifkin, J. (2011). *The third industrial revolution: how lateral power is transforming energy, the economy, and the world*. New York: Palgrave Macmillan.
- Rundle, G. (2014). *A revolution in the making: 3D printing, robots and the future*. Melbourne: Affirm Press.
- Schumacher, E. F. (2014). Buddhist economics. In R. C. Scharff & V. Dusek (Eds.). *Philosophy of technology: the technological condition: an anthology*. (pp. 421-425)
- Shirky, C. (2008). *Here comes everybody: the power of organizing without organizations*. London: Penguin Books.
- World Economic Forum (2016). *The future of jobs: employment, skills and workforce strategy for the fourth industrial revolution*. Retrieved from [http://www3.weforum.org/docs/WEF\\_Future\\_of\\_Jobs.pdf](http://www3.weforum.org/docs/WEF_Future_of_Jobs.pdf)
- Zhao, D. (2018). *The rise of Bitcoin & Blockchain: a growing demand for talent*. Glassdoor Economic Research Blog. Retrieved from <https://www.glassdoor.com/research/rise-in-bitcoin-jobs/>



## HOW TO BEAT BUREAUCRACY AND STILL DO RESEARCH: TIPS AND TRICKS FROM ERASMUS+ PROJECT EINFOSE

Tatjana Aparac-Jelušić  
University of Zadar, Croatia  
taparac@unizd.hr

### Abstract

*The paper intends to present expectations, outcomes and some doubts that came out of the process of submitting and managing the EINFOSE project (European Information Science Education: Encouraging Mobility and Learning Outcomes Harmonization) under the Erasmus plus program. It deals with some obstacles and offers some tips on how to beat bureaucratic requirements that precede the process of submitting the proposal. These tips are based upon personal experience and shared with a goal to make the whole process easier for those who intend to submit a project proposal. It is also suggested that the basic assumption of the translation of an idea to the Erasmus project is to deal with challenges without any calculation about benefits other than purely academic ones.*

**Keywords:** Erasmus plus program, EINFOSE project, entry requirements, learning outcomes, submission process

### Introduction

The aim of this paper is to present Erasmus plus project named EINFOSE (European Information Science Education: Encouraging Mobility and Learning Outcomes Harmonization) from the perspective of its management activities. The eight Higher Education Institutions (HEIs) were engaged in the project (University of Osijek – the leading HE, Hacettepe University, University of Barcelona, University of Borås, University of Graz, University of Hildesheim, University of Ljubljana and University of Pisa). The goal of this paper is to share the experience and offer some tips which might be helpful to anyone planning to submit an Erasmus or similar EU projects.

As it is well known EU funded projects are an excellent opportunity for Higher Education Institutions (HEIs) to get some reasonable funding for activities



which cannot be covered by regular financial resources from their parent institutions or respective national bodies. There are other benefits, of course, which motivate HEIs to participate in EU projects such as building partnership, sharing experience, perform jointly educational or research programs and expose students and teachers, as well as policy decision-making personal, to challenges of the new approaches in HE.

Information Science (IS) field is especially affected by series of changes which are happening at the organizational and managerial level at European HEs, as many of the previously established Library and Information Science Departments (LIS) or schools have been witnessing organizational restructuring and merging with other departments not always based upon the educational premises but merely on economic factors. Such approaches might end well or could instead lead towards the closure of the LIS programs or merges with other departments. These merges of LIS departments lately result in growing into so called i-School which opens for the (L)IS new perspectives but still there is? not sufficient evidence of the possible better position.

## EINFOSE project

It has to be said that Information Science (IS) education at HEIs in Europe is characterized by various traditions and approaches. EINFOSE project has recognised the need to find out the ways of harmonization of entry requirements and learning outcomes between partner institutions. It was decided among partners that the joint efforts are needed in order to a) detect the main reasons for such a situation, and b) find ways which might allow the overcoming of existing barriers. Since 2005 there were no other EU based initiatives to bring to public eye the importance of IS as an academic discipline and research field that is getting more value in regards to many new profiles of information specialists (cf Aparac-Jelušić and Petr Balog, 2018). Therefore, the EINFOSE partners wanted to increase international cooperation in IS education, explore ways to attract students from other disciplines and foster international student exchange as well as to bring together various stakeholders such as representatives from Association of Information Science and Technology/European Chapter (ASIST/EC), European Network for Workplace Information (ENWI), European Association for Digital Humanities (EADH) International federation of Library and Information Science Professions and Institutions (IFLA), as well as from private or state-owned companies which are developing infrastructure for STEM, humanities and other fields. For the duration of the project, EINFOSE partners managed to



successfully address large portion of the IS community across Europe in order to strengthen cooperation between IS HEIs which was not as strong as in some other academic disciplines.

In short, EINFOSE focused on the following goals: to strengthen partnership between HEIs involved in the project; to present EINFOSE's intellectual outputs (IOs) through Multiplier events (MEs); to organize summer schools (ESSIS 2017 and 2018); to design and deliver EINFOSE platform; to design, deliver and translate four basic Open Educational Resources (OERs) in several languages; to bring in intellectual activities for the preparation of the international symposium FEIS 2018 which offered the arena for discussions about recommendations on how to improve the process of diploma recognition based upon agreeable learning outcomes and strengthen the purposeful mobility at the European level.

Two summer schools that were organized (ESSIS) attracted 40 students (36 with scholarship). Most of the lecturers' presentations were recorded and are included in appropriate OERs. The ESSIS resulted in a unique networking opportunity, which is understood to be crucial for success of future international initiatives. It can be said that some networking has already started since we have several ESSIS students as presenters at this event. In EINFOSE project there were 8 partners – all of them reaching some 1000 students in (L)IS; 38 teachers and trainers were involved in all activities based upon distribution of main responsibilities for each partner HEI. Five planned MEs were organized with a goal to share and discuss draft versions of five intellectual outputs (EINFOSE Platform, OERs, Didactic Framework, Evaluation Framework and Policy recommendations on entry requirements and harmonization of learning outcomes) among multiplier events' participants and partner teams. Four MEs managed to attract some 100 active participants from European countries, and the fifth ME, FEIS 2018 in Pisa, had over 100 participants from 26 countries (Europe, US, Asia and Australia). Participants came from different organizations: educational institutions, governmental agencies, private business companies, ICT sector, libraries, information institutions, and professional associations.

The Project Management Team (PMT) had regular meetings and prepared several plans such as Management Plan, Risk Management Plan, Dissemination Plan, Quality Assurance Plan, Summer Schools Learning Outcomes (<http://einfose.ffos.hr/documents/>). The Risk Management Plan proved very useful as several situations with partners' internal problems had to be solved through the extra efforts.



The sustainability of the project's outcomes is based on an agreement to continue summer schools with a support of internal funding resources and willingness of the project's leading institution to continue to maintain EINFOSE Platform after the official project ending. Students at the partner HEIs benefited from the high quality lessons and the OERs. Any other interested party can benefit now from the experience in designing the EINFOSE Platform that allows the use of all OERs whenever needed, in further education, in working environment, in teaching and research, etc. OERs can help the individuals, but also contribute to the international perspective in teaching at the IS graduate online or classroom based programs.

Members of partners' teams were active in presenting the EINFOSE goals and disseminating its results at domestic and international workshops and conferences such as ASIST 2016 and 2017, Digital Humanities Conference 2016, BOBCATSSS 2017 and 2019, ICI 2017, ECIL 2017, ALISE 2018, LIDA 2018, IFLA 2017 and 2018, i-Schools 2018, COBISS, 2018. Information about EINFOSE was published in a number of professional journals and newsletters, on web sites of partners' universities, local newspapers, radio and TV, as well as through a number of social networks such as ResearchGate, LinkedIn, Facebook and Twitter. The FEIS 2018 conference was recorded: (<http://mediaeventi.unipi.it/category/feis-einfose-2018/160>) and the Conference's e-proceedings is freely available (<http://einfose.ffos.hr/feis-2018/proceedings>)

### **With an eye to the past - hidden dangers**

There is evidence that in the context of EU initiatives EINFOSE contributed to the exchange of ideas and results that are fruit of discussions elaborated in its documents. The final document *Policy Recommendations on Entry Requirements and Harmonization of Learning Outcomes in Information Science* offers some general remarks on the changing environment in HE in Europe and worldwide, and warns about the need to focus on flexible system of design and recognition of new profiles, which relate to other fields not exclusively to IS.

But could this be done better? Could we have saved some time and energy by taking into account some visible obstacles which were not clear to us at the beginning. One might say that careful reading of the Erasmus plus Guide and Do's and Don'ts recommendations helps in avoiding many obstacles. This is indeed a truthful statement! However, there is always something 'hidden' and one learns from exploring challenges and obstacles by fulfilling the agreed upon tasks? Here are some tricks which I discovered and find useful to share.



### 1. How do you choose your partner?

We usually start with colleagues which we know or have some solid experience in working with. They might recommend their colleagues and previous partners in other projects as potential participants in your project. Be careful! You should know what you can expect and you can do it best on the base of personal experience. People often enter in projects' negotiations for several reasons: a) their partner institution wants them to be engaged in EU projects as this engagement brings some more benefits in reaccreditation processes; b) some think that working on EU funded project will bring recognition outside their parent institution and strengthen their international position; c) some believe the partnership could strengthen their personal position inside respective department or university; d) some think the project money could be added as an extra to their salaries; e) there are colleagues who strongly wish to learn from others and enrich their teaching and research. One should be aware of these different motives which are all understandable and acceptable, of course, and could be justified by many project coordinators' experience. However, you should seek to get a clear statement of the reasons or motives of your partners when discussing future cooperation. In fact, this is only a question of academic honesty!

### 2. How can you be sure that all partners in the proposed project have read and understood the content and budget of the project?

During the preparation phase for the submission of the project idea, the written content is usually shared and chosen partners are expected to read and comment each phase of the draft. One cannot expect though that everyone will thoroughly study the rules and guidelines presented in the Erasmus Call. Some confidence and trust in the core planning team (not a single person) is of crucial importance. One might be under the impression that everything that was written in the proposal is acceptable to partners, but this is often not relevant as people read the text and understand their position differently. Therefore, it is also crucial to have written statements from partners about the basic approach, chosen horizontal and field-specific priorities, and their specific fields of expertise.

### 3. Make sure that all partners are involved in the preparation of their particular tasks and responsibilities

One situation which needs to be avoided is that which leaves us think that explanations given about the competencies of each team member at partner institutions will fit in the project goals and tasks. It is important to specify the area of expertise in a way that the desired competencies and experience



properly fit with a particular task and responsibility. Otherwise, if you count only on usual CV, you might not be able to distribute properly the tasks and responsibilities or will distribute them to wrong persons.

#### 4. How do you distribute the tasks and responsibilities?

One could start with an excel table and have all elements for the recognition of specific skills and knowledge brought in the relation to each of the task. It is desirable to manage these by having in mind the need to form teams not only among the members of one partner team, but to combine expertise from at least two members of partner teams. Leaving the choice of duties and responsibilities only to one partner team and excluding others might lead to the situation in which other teams' capacities are neglected and the whole idea of cooperation could be threatened by isolated attempts and lack of knowledge about what was done.

#### 5. How do you manage time?

The time line is a usual technique in Erasmus plus program. If the plan is realistic and well prepared you might avoid last minute panic and taking over the task by someone else who volunteers to jump in. Still, there are many situations one couldn't be aware of (for instance, unexpected illness, maternity leave, workload at the parent institution, other projects taken). In such situation the Risk Management Plan which prescribes the treatment of unexpected and undesired situations, is of enormous help.

#### 6. How to manage the whole project?

The project management is a serious job and it should be run by a team of each partner's coordinators. However, if the coordinators fail to answer to their duties, the main project coordinator has to think of so called Plan B which has to be efficient and diplomatic. Whom to ask to take over? How to avoid an individual feeling endangered or proclaimed for not fulfilling its duties and at the same time have the job done? These are very sensitive issues upon which sometimes depends the success of the whole project.

### Instead of conclusion - important tips

First of all, if you are going to submit a proposal for an Erasmus plus project think of European added value which is expected to be the result of all partners included. This means that each partner's contribution is clearly justified from the perspective of uniqueness of the contribution, valuable role in all phases of relevant analysis processes, comparative studies, etc.



Before submitting the application form, the beneficiary partner's role is to make sure that all partners in the proposed project have read and agreed upon the content and budget of the project. This step is extremely important for the success of the project.

When planning the project website and publication material (leaflet, brochures, etc.) it is important to calculate these activities in the Project Management and Implementation budget. However, the creation or adaptation of a collaborative working or teaching/learning platform could be fitted into Intellectual Outputs section.

Your application should be realistic and demonstrate the ability of the consortia to undertake the planned project, not forgetting to connect it to the priorities of Strategic Partnerships and to the project aims.

Include additional efforts to make sure that all partners are involved in the preparation of the project (design, development, writing, etc.) to avoid possible misunderstandings and save time that you might need to spent on negotiations, modifications of planned time line or redirection of responsibilities.

From the point of view of desired application of an innovative approach in your project, you might wish to include partners from other academic fields as an added value to your project's goals. However, do not force this just for the sake of being original as their involvement doesn't mean a per se to be a sufficient element in order to highlight the cross-sectoral character of the project.

## Afterthought

Strategic Partnerships which was chosen as appropriate key area for EIN-FOSE project helped to outline, develop and support the internationalization of all partner institutions even beyond the borders of (L)IS departments primarily involved. In other words, EIN-FOSE managed to bring together experts from other departments at partner HEIs, such as pedagogy, computer science, psychology and sociology through carefully discussion whom we invited to attend respective ME to discuss EIN-FOSE intellectual outcomes. In this way, the view from other professional and academic perspectives on what was prepared by EIN-FOSE teams helped in finalizing relevant documents and contributed to their quality and possible future applications.

It was quite obvious that project results have been substantially achieved in terms of quality and proved the fact that they could not be achieved by a single



or even few institutions. HEIs participating in EINFOSE project covered to the acceptable level different practices and traditions in Europe as the education and reform of (L)IS study are concerned, from Nordic countries, Mid and South and East Europe. However, some important practices and traditions were not tackled and it is expected that future research and collaboration will make possible to conclude about the advantages/disadvantages of other existing models in Europe and wider.

As one of the requirements of the Erasmus plus policy was to produce sustainable results, we believe that our Summer Schools could serve as a model for entry requirements for graduate programs in IS. EINFOSE OERs could contribute to the openness of teaching and learning in digital environment and motivate others to build on existing OERs their expertise and content which might be seen also as a European added value of the project.

## References:

Aparac-Jelušić, T. and K. Petr Balog (2018). Presentation of the EINFOSE project: challenges and outcomes. // Proceedings of the EINFOSE International Symposium on the Future of Education in Information Science (FEIS 2018). / ed. by T. Aparac-Jelušić, V. Casarosa and E. Macevičiūtė. (Pp 5-14). Osijek: Faculty of Humanities and Social Sciences. On-line proceedings available from: <http://einfose.ffos.hr/feis-2018/proceedings>

EINFOSE project main web site. <http://einfose.ffos.hr/einfose>



## THE LEGITIMACY OF PUBLIC LIBRARY SERVICES: DO THE GENERAL PUBLIC AND LIBRARIANS AGREE?

Ragnar Audunson

Professor, Oslo Metropolitan University, Oslo, Norway

ragnar@oslomet.no

Máté Tóth

Head of Department, National Széchényi Library, Budapest, Hungary

toth.mate@oszk.hu

### Abstract

*The public library has many roles and there can be many reasons for upholding a public library service. The general public and librarian professionals may perceive the roles of public libraries differently. Public libraries are supposed to be public sphere institutions promoting democracy and the free formation of opinion which role can be performed in several ways. Emerging technologies may also change both the perception and the role of public libraries. Survey among librarians working in public libraries was undertaken in six countries during the spring of 2017. The study analyse one particular question of the survey in which librarians were presented 12 reasons for upholding a library service and we are particularly interested in comparing the importance of “new” roles, for example the library as a meeting place and as an arena for debate, with more traditional roles, for example the library as a promoter of the cultural heritage. The general public in the six countries were posed the same question in 2017, that make comparisons possible. The study aims to discuss the following research questions: RQ1: To what extent have libraries in the six countries implemented non-traditional services related to new technology and are there differences between the Scandinavian countries and the countries in Central Europe? RQ2: What do librarians think first and foremost legitimize the use of public resources for upholding a public library service? and What are the similarities and differences between the perception of the general public and professionals about the legitimization of public library services in the six countries. Are the new roles libraries and librarians intend to take perceived by the general public?*

**Keywords:** survey, public library, user perception, comparative analysis



## Introduction

The public library has many roles and there can be many reasons for upholding a public library service. While on the one hand we have a mission of library services that we believe to be eternal like collecting and providing the manifestations of human knowledge, on the other hand we always have new functions to fit better the needs of the continuously changing society. The general public and librarian professionals may perceive the roles and outcomes of public libraries differently, also in comparing with each other or in the different countries all over Europe. (Vakkari, Aabø, Audunson, Huysmans and Oomes, 2014). Public libraries are supposed to be public sphere institutions promoting democracy and the free formation of opinion which role can be performed in several ways. (Widdersheim and Koizumi, 2016), Emerging technologies may also change both the perception and the role of public libraries.

The research that this study is based upon is part of the joint activities of six partner countries (Denmark, Germany, Hungary, Norway, Sweden and Switzerland) under the framework of ALMPUB project (ALM-Field, Digitalization, and the Public Sphere) which is a three-year research initiative financed by the Norwegian Research Council's KULMEDIA Program. The project is administered and co-founded, by the Department of Archivistics, Library, and Information Science, at Oslo Metropolitan University (OsloMet) in Norway. The project intends to find answer to the question how libraries, archives and museums function today as cultural infrastructure promoting access to content and cultural expressions, and as arenas for participation and connectivity, and if they can be instrumental in a policy addressing new challenges like digitisation or fragmented societies?

Both electronic services and functions related to building social cohesion are central part of today's library developments. (Aabø and Audunson, 2012) While statistical figures of lending of traditional material is continuously decreasing in all of the participating countries, the remote use of electronic content and number of programs, events organised by the library and number of community activities are increasing. The common thinking on the future of library services and practical implications of library legislation both suggest that the main directions of library development.

Regarding Hungary as an example a recent modification of the library law in 2013 contained six new paragraphs that made the tasks of the public libraries more concrete for practising professionals. (Act CXL. of 1997) Among them one referred to facilitating the availability of electronic documents, one to supporting the aims of formal education via cooperation with scientific libraries for a more ef-



fective information supply, one to supporting lifelong learning in the field of information literacy, one to the wider use of quality management instruments, and two to functions related to the library as a third place or meeting place. The latter two state: The public library organises cultural, community and other library programs; The public library via its knowledge, information and culture transferring activities contributes to a better quality of life and to the country's competitiveness.

The wide project cooperation let us make comparisons between the different participating countries also addressing differences in national policies and library practices. In this study we are seeking answer for the following two research questions:

RQ1: To what extent have libraries in the six countries implemented non-traditional services related to new technology and are there differences between the Scandinavian countries and the countries in Central Europe?

RQ2: What do librarians think first and foremost legitimize the use of public resources for upholding a public library service? and What are the similarities and differences between the perception of the general public and professionals about the legitimization of public library services in the six countries. Are the new roles libraries and librarians intend to take perceived by the general public?

## Method

Two questionnaire surveys were undertaken in six different partner countries: one among the library professionals and another targeting the general public.

The librarian survey questionnaires were sent out during the spring of 2018 by the partner institutions. Librarians are defined as staff members with an education in Library and Information Science or staff members with any educational background with a professional responsibility developing and mediating library services to the public. The administrative or IT staff weren't regarded as library professionals in this survey. Every partner could choose a proper method for recruiting respondents that fits most to the professional community of the country. Mailing lists, social media and direct mails to library directors asking them to distribute them among their colleagues were also used. The survey can't be considered representative, but as very high number of professionals were addressed we can trust its results.

The other survey targeting the general public on the perception of the libraries new roles and responsibilities was conducted by a professional survey organ-



ization Sentio Research. The company used web panel which is a very cost effective method of data collection and can reach large and diverse samples quickly in every participating country. (Svensson, 2013) This survey could ensure representativeness though weighting was necessary to correct some biases.

Both questionnaire surveys contained the question related to the reasons for upholding library service in which respondents were asked to evaluate the importance of 12 different possible reasons. Among them one can found those concerning more traditional functions like promoting cultural heritage and also that relate to new functions like promoting democracy, functioning as an arena for debate or facilitating digital equality.

In this study we also analyse the results of a question in the librarian questionnaire in which we asked respondents to mark different services if they are provided in their library and if yes it has a central or a marginal role. In this question we listed new types of services like lending e-books, organising events, language coffees and conversational programs, offering digital literacy courses etc.

## Results

First let us see what extent have libraries in the six countries implemented non-traditional services related to new technology. Are there differences between the Scandinavian countries and Hungary and Germany? In the following part we present only the results regarding three options: arranging events in the library, e-book lending and digital literacy initiatives.

Programming and organising events in the library have a growing importance in the libraries' service portfolio in almost every participating countries. (Vårheim, 2011) The function of becoming a meeting place can be grasped for most of the institutions via organising community activities, and arranging events (See figure 1.).



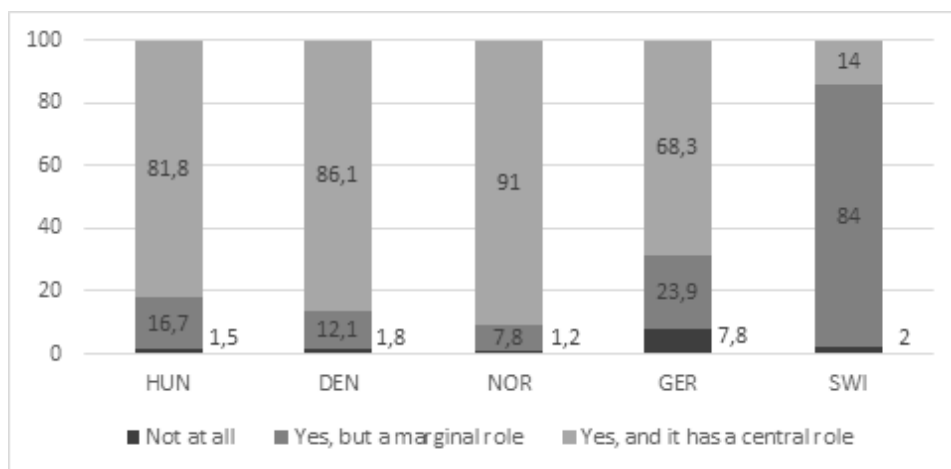


Figure 1. Arranging library events in the participating countries

Only the German respondents considered these kinds of services relatively less, and the Swiss much less important than in other countries. While in Norway 91%, in Hungary 82% and in Denmark 86% of the responding librarians reported that they are arranging events in the library and this has a central role within their service portfolio, in Germany 68% and in Switzerland only 14% selected the same option.

Electronic services have a growing importance in the practice of almost every libraries. Users are provided growing amount of digitised content from the institutions own collections or by giving access to databases.

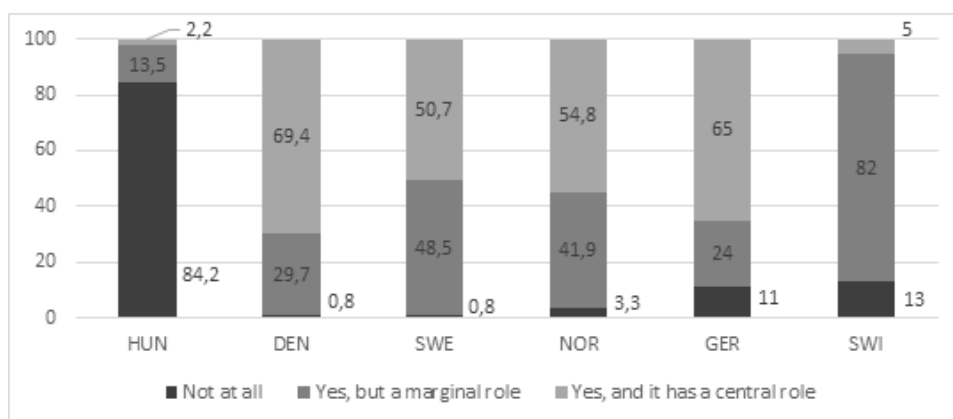


Figure 2. Lending of e-books in the different countries



According to figure 2. the most striking difference can be measured between Hungary and the other participating countries. The growing importance of e-book lending is apparent in every Scandinavian countries, as more than half of the respondents reported that this service has a central role within the service portfolio of their institutions, and except Norway less than 1% do not provide at all this possibility to their users. In Hungary only 2% answered that it takes a central role, and 84% doesn't provide at all e-book lending. While in Western Europe (especially in Scandinavian countries) the legal environment of e-book lending made the spreading of these services possible, in Hungary (and generally in Eastern European countries) no such services could become prevalent. The Swiss usually have these services but they don't consider them very relevant.

Digital literacy initiatives are programs realised in physical space helping individuals in succeeding in a digital environment. Digital literacy initiatives have an important role in both regarding building social cohesion and repositioning libraries in the age of digitisation.

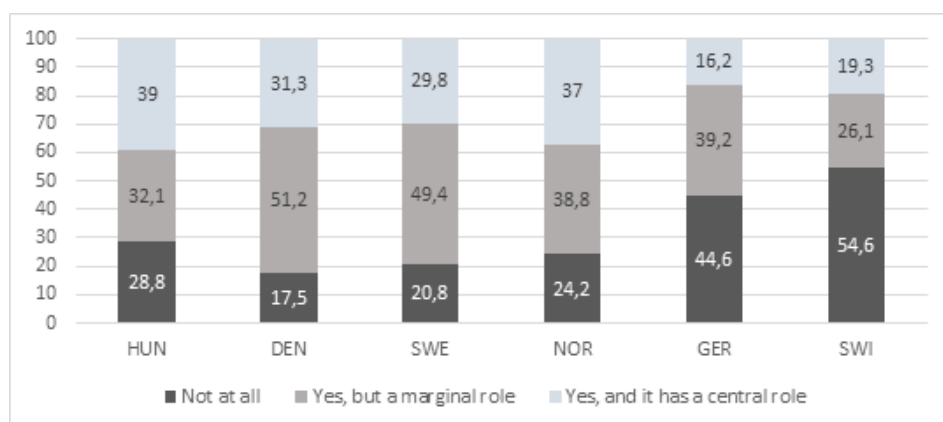


Figure 3. Digital literacy initiatives in libraries

These initiatives have the most important role in Hungary (39%) and Norway (37%), while seem the least relevant for Swiss librarians. (See figure 3.)

According to our data it is clear that the libraries are continuously adapting their services to the new roles need to be taken to meet the requirements of today's societies. In the next research question we analysed how these new roles are perceived by the general public and the library profession itself.

The respondents in the survey with representative samples from the public in our countries as well as the survey among librarians were asked identical questions regarding the legitimacy of using scarce public funds for upholding a local



public library service. The researchers presented the respondents with twelve statements which each of them represented one reason legitimizing the use of scarce resources for upholding a library service. The respondents evaluated each of these statements on a scale from 0 to 10, where 0 indicated that the reason in question is of no importance at all and 10 indicated that it is of vital importance.

The statements covered the following legitimations for using scarce public funds on libraries: Libraries are important because they:

- Provide people with information they need in their everyday lives.
- Provide information people need to be active citizens in their communities.
- Are local arenas for public debate.
- Are important meeting places in their communities.
- Support learning at all levels, formal as well as informal.
- Promote equal access to knowledge. Literature and cultural experiences.
- Promote digital equality.
- Promote contemporary literature of quality.
- Promote innovation and creativity, e.g. via makerspaces, poetry labs, knitting groups etc.
- Promote the cultural heritage.
- Offer their users a meaningful leisure time
- Promote integration and social cohesion, e.g. via services to immigrants and meetings across ethnic and cultural belongings.

The table 1. shows the average value, median, mode and standard deviation given to the different legitimations by the general public.

*Table 1. Mean, median, mode and standard deviation N=6050*

	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>St.dev.</b>
Everyday life information	6,00	6,00	5,00	2,83
Citizen information	6,14	6,00	5,00	2,83
Arenas for debate	5,55	6,00	5,00	2,89
Meeting places	5,67	5,00	6,00	2,93
Learning	6,53	7,00	10,00	2,77
Equal access to knowledge/culture	6,65	7,00	10,00	2,82
Digital equality	6,17	6,00	5,00	2,83
Contemporary literature	6,33	7,00	10,00	2,85
Creativity and innovation	5,79	6,00	5,00	2,85
Cultural heritage	6,82	7,00	10,00	2,77
Meaningful leisure time	6,39	7,00	10,00	2,81



Integration	5,95	6,00	5,00	2,95
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The traditional reasons for upholding a library - their role as cultural heritage institutions, their role in providing equal access to knowledge and literature and their role as arenas for learning – are the three legitimations for upholding a library service, which receives the highest score in all the six countries. (Table 2.) Also, the libraries' role in promoting contemporary literature of quality and providing their users with a meaningful leisure time come high in the ranking. The roles of promoting creativity and innovation (maker space), is a community meeting place and an arena for public debate are ranked on the three last places. We see that the average score varies from 5,55 (arena for public debate) to 6,82 (promoting the cultural heritage, indicating that on the average all the twelve reasons are seen as moderately important. The differences in the mode value, i.e. the most frequent value, and the difference in dispersion as expressed in standard deviation, are interesting. We see that the reasons with the lowest score typically have a mode value of 5 and a higher standard deviation then the reasons regarded as more important, which typically have a mode value of 10, i.e. the largest sub group in our material regard these reasons to be of vital importance and the distribution is skewed to the right. For the less important reasons, a larger part of the scale is used and there is a tendency to cluster in the middle. For the most important reasons, there is a tendency to cluster in higher end of the scale.

There is a difference between the users and non-users, not in the ranking, but in the values attached to the different legitimations. Although they have exactly the same ranking, those who have used the library one time or more last year give all reasons legitimizing the library and average value of 6 or more. Among the non-users, we find a cluster also at the bottom end of the scale. Almost one third of the non-users give value 0,1 or 2 to the importance of the library's role as an arena for public debate.

Although there are some differences between the countries, the main impression is that they rank the reasons legitimizing public libraries strikingly similar. One should, for example, expect that the Norwegian public, given the high focus upon libraries as meeting places and arenas for public debate which is reflected in recent changes in Norwegian library legislation would evaluate these reasons higher than respondents in countries which have not had the same focus on this issue. That is not the case. The Scandinavian respondents in general and the Norwegian I particular do not have a higher score on these legitimations than the respondents from the other countries. One exception is Switzerland. The Swiss respondents tend to give all reasons for upholding a public library significantly



lower values than the respondents in all the other countries, probably reflecting somewhat weaker public library traditions in Switzerland compared to the Scandinavian countries but also compared to Hungary and Germany.

Table 2. Average evaluation of the importance of 12 reasons for upholding a public library service (N = 6050)

	<b>Den- mark</b>	<b>Sweden</b>	<b>Norway</b>	<b>Ger- many</b>	<b>Switzerland</b>	<b>Hungary</b>	<b>Total</b>
Everyday life information	5.74	6.18	6.13	6.10	5.67	6.10	5.99
Citizen information	6.23	6.34	6.40	5.99	5.65	6.22	6.14
Arenas for debate	5.63	5.74	5.57	5.66	5.09	5.60	5.55
Meeting places	5.51	5.96	5.76	5.84	5.36	5.59	5.67
Learning	6.53	6.68	6.84	6.29	5.98	6.85	6.53
Equal access to knowledge/ culture	6.54	6.49	6.83	6.68	6.42	6.97	6.65
Digital equality	5.97	6.12	6.33	6.19	5.76	6.64	6.17
Contemporary literature	6.06	6.53	6.68	6.12	5.87	6.73	6.33
Creativity and innovation	5.70	5.91	5.76	5.67	5.39	6.35	5.79
Cultural heritage	6.75	6.51	7.13	6.66	6.28	6.88	6.82
Meaningful leisure time	6.17	6.09	6.26	6.66	6.28	6.88	6.39
Integration	5.70	5.97	6.29	5.83	5.58	6.34	5.95

What, then, about the librarian's perceptions of the reasons for upholding a public library service? Do their perceptions deviate from the perceptions of the users and are there differences between the librarians in the six countries? (See table 3.)



*Table 3.* The librarians. average evaluation of the importance of 12 reasons for upholding a public library service

	<b>Denmark</b>	<b>Sweden</b>	<b>Norway</b>	<b>Germany</b>	<b>Switzerland</b>	<b>Hungary</b>
Everyday life information	8.86	8.21	7.52	8.63	7.85	8.61
Citizen information	8.98	8.78	8.13	8.58	7.55	8.78
Arenas for debate	7.25	7.30	7.34	8.35	4.46	6.02
Meeting places	8.77	8.97	8.31	9.13	8.13	8.56
Learning	8.62	8.72	8.25	9.00	8.68	8.91
Equal access to knowledge/culture	9.23	8.82	8.54	9.19	8.81	9.20
Digital equality	7.72	8.03	7.60	8.50	7.17	8.62
Contemporary literature	8.38	9.16	8.40	6.37	7.27	8.27
Creativity and innovation	7.24	6.92	6.30	6.26	4.76	8.31
Cultural heritage	7.91	7.91	8.40	7.01	7.15	9.06
Meaningful leisure time	8.62	8.64	8.21	9.05	8.48	8.96
Integration	7.93	7.91	8.10	8.58	7.61	8.02

First, we see that librarians tend to evaluate all reasons as much more important the public. Most reasons have a score between 8 and 9, and the mode value is 10 for most of the reasons, except the library as an arena for debate and the makerspace/innovation dimension. The clustering in the top end of the scale is also reflected in a low standard deviation on most of the items measuring reasons for upholding a library service. Regarding the ranking of the library's role as an arena for public debate and the makerspace role promoting innovation, the librarians like the public have these two legitimations on place 11 and 12. The exception here is Hungary, where the respondents evaluate the maker space/innovation role as more important than the librarians in the other countries. Librarians deviate from the public, however, in ranking the role as a meeting place much higher. Whereas the public rank the role as a meeting place as the 11th most important out of the 12, it is ranked as the 2nd. Most important in Sweden and Germany, the 3rd most important in Denmark and the 4th most important in Norway and Switzerland. In Hungary, where it is ranked at 6th place, the score is very close to the legitimations ranked at place 2 to 5. The Swiss librarians stand out as a group ranking the role of being an arena for public debate and the role related to being a maker space/arena promoting innovation very low indeed, also significantly lower than the Swiss public. This is the only case where librarians give a score to a reason for legitimizing public libraries, which is lower than the score given by the public in the nation in question.



## Conclusion

The pattern in the public's ranking of reasons legitimizing the use of scarce public resources for upholding a public library service are strikingly similar between the six countries. Legitimations referring to the library as a community meeting place, a makerspace promoting innovation and an arena for public debate are ranked on the three last places.

Librarians in all the six countries agree with the public with two major exceptions: Librarians rank the community meeting place roles close to the top, and the librarians tend to assign high values, close to 10, to all the twelve reasons, with makerspace as an exception.

There is an interesting contradiction between perception and practice both among the public and librarians: Although the public perceive the role as a meeting place and arena for debate as the two of least importance, library users use the library as a meeting place frequently, and although librarians rank the library's role as an arena for debate close to the bottom, an overwhelming majority declare that meetings and organized events have a central role in their libraries' portfolio of services.

## References

- Aabø, S. & Audunson, R. (2012), Use of Library Space & the Library as Place. *Library & Information Science Research*, Vol 34, No 2, pp. 138 – 149
- Act CXL (1997). Act CXL of 1997 on museum institutions, public library services and general culture.
- Svensson, J. (2013). Web-panel surveys – can they be designed & used in a scientifically sound way? 59th. ISI World Statistics Congress
- Vakkari, P, Aabø, S, Audunson, R. & Oomes, M. (2014). Perceived Outcomes of Public Libraries in Finland, Norway & the Netherlands. *Journal of Documentation*, Vol. 70, No. 5, pp. 927 - 944
- Vårheim, A. (2011). Gracious Space: Library Programming Activities: Library Programming towards Immigrants as Tools in the Creation of Social Capital. *Library & Information Science Research*, Vol. 33, No. 1, pp. 12 – 18
- Widdersheim, M.M. & Koizumi, M. (2016), Conceptual modelling of the public sphere in public libraries, *Journal of Documentation*, Emerald Group Publishing Limited, Vol. 72 No. 3, pp. 591–610.



## TOWARDS OPEN ACCESS: SUPPORTING OPEN ACCESS PUBLISHING IN CENTRAL EUROPEAN COUNTRIES

Erika Bilicsi

PhD Student, Library and Information Sciences Programme, PhD School of Literature and Literary Theory, Eötvös Loránd University, Budapest, Hungary  
bilicsi.erika@gmail.com

### Abstract

*Advantages of open access publishing are unquestionable: these publications are easily findable and accessible, therefore more readable and more cited, it is easy to reuse them so their effectiveness and efficiency are greater. Every research institution and funding organisation tries to maximize the utilization of the supported researches so they require open access publishing in mandates. But we live in a changing world: according to old school the best publications were published in journals with high impact factor. So researchers still prefer to publish in these journals because it is facilitate their career. The greatest challenge to facilitate open access publishing is to change the current system of research evaluation processes and current habits of researchers. If open access becomes an evaluation aspect, researchers' practice will also change. Although the development of appropriate regulation and the involvement of researchers is indispensable, an efficient, economically support system with the help of appropriate librarians is needed which assists the researchers' everyday work. The paper shows the current research and scholarly communication system and the open access landscape and support system in Hungary, Croatia, Slovakia, Slovenia, Czech Republic and Poland.*

**Keywords:** Central European OA landscape, compliance monitoring, good practices, transition to open access

### Background and purpose

The status of open access is really mixed in the Central European countries: in some areas it is fairly developed, in other areas it is still rudimentary or lacking completely. The first step to change this situation to know good practices and later implement into our services which works well. We try to help to take this first step with presenting the current situation.



## Open access indicators of Central European countries

	<b>Croatia</b>	<b>Czech Republik</b>	<b>Hungary</b>	<b>Poland</b>	<b>Slovakia</b>	<b>Slovenia</b>
Number of higher education institutes and research instituts	39 higher education institutes, 31 research institutes	67 higher education institutes, > 200 research institutes	71 higher education institutes, 48 research institutes	457 higher education institutes, 115 re-search institutes	32 higher education institutes, 6 research institutes	48 higher education institutes, > 50 re-search institutes
National OA policy or strategy	none	The Czech Republic National Strategy of Open Access to Scientific Information for 2017-2020	none	none	none	National Strategy of Open Access to Scientific Publications and Research Data in Slovenia 2015-2020
Number of OA policies (ROARMAP) <sup>1</sup>	2	5	4	6	1	8
Central financing of OA publishing	none	none	none	none	none	none
National OA working group	yes	Association of Libraries of Czech Universities (AKVS)	Hungarian Open Repositories (HUNOR) consortium	none	yes	yes
National OA website	none	yes	yes	none	yes	yes
Number of repositories (ROAR)	7	13	40	90	0	9

<sup>1</sup> We choosed ROARMAP because it was an update of data in the PASTEUR4OA project between 2014 and 2016. Vid. Alma Swan, Yassine Gargouri, Megan Hunt and Stevan Harnad: Report on policy recording exercise, including policy typology and effectiveness and list of further policymaker targets



Number of OA journals (DOAJ)	109	96	30	546	44	50
National CRIS	none	<u>yes</u>	none	none	<u>yes</u>	<u>yes</u>

## Croatia

Open access movement started in 1997 with the launch of the Croatian Scientific Bibliography (CROSBI). It is a national bibliography which stores scientific papers published by Croatian researchers from 1997 to the present. Researchers themselves provide the data into this database. CROSBI provides a digital archive of full-text papers with OA repository functions.

The Digital Academic Archives and Repositories (DABAR) is the key component of self archiving in Croatia. It is a product of collaboration among a large number of institutions and individuals from the academic community. It provides a reliable, flexible and ready-to-use environment to establish an institutional repository to collect, store and disseminate various digital objects.

The national OA working group initiated in 2004 by the Croatian Information and Documentation Society's (HID). The biggest result of this WG is the Hrčak (Hamster), the national open access portal of Croatian scientific journals. It was launched in 2006 to provide access to scientific journals published in Croatia for national and international audiences too. Croatia has 109 OA journals in DOAJ but Hrčak contains more: today we can read 196.661 articles (with full text: 192.219) from 481 journals.

Although national OA policy doesn't exist in this country, CROSBI, DABAR and Hrčak demonstrate the effectiveness of Croatian open access policy initiatives. Furthermore the "Science and technology policy of the Republic of Croatia 2007-2010" document by the Ministry of Science, Education and Sports' is specified that the publicly founded research's results should be accessible to the public through gold open access publications or repositories and this country has an official OA declaration too (2012).

## Czech Republic

Although Czech Republic has national open access mandate, adopting OA is in the initial phase in this country. Mainly local, institutional initiatives, rectors'



directives, university publishers policies declare open access publishing. But this country has a huge advantage: there is a national Current Research Information System (CRIS) which is an excellent tool for managing research activities in the country. It is a national information system with databases on researchers, research organizations and research projects integrated and interconnected among each other. CRIS and the institutional repositories are dynamically linked: CRIS offers metadata and copied the stored full text to the repositories.

## Hungary

Hungary is in the initial phase to adopting open access fortunately it is an active librarian community which supports open access publishing. It is the Hungarian Open Repositories (HUNOR) consortium of Hungarian university libraries and the Library of Hungarian Academy of Sciences but the National Research, Development and Innovation Office – the biggest research funder in Hungary – operates an expert working group. There is also a Thesis mandate vide Government Decree no 33 (7 March 2007) on Doctoral dissertations, but national open access mandate doesn't exist yet.

Hungary has a national bibliographic database like the Croatian CROSBI, it is the Hungarian Scientific Bibliographic Database (MTMT). It is an excellent tool to prepare statistical and scientometric analysis and monitoring the compliance of open access mandates of Hungarian Academy of Sciences (unfortunately the universities have just directives to upload the publications into the institutional repositories). The OA mandate of Hungarian Academy of Sciences contains that it is obligatory to upload into MTMT the URL of the open access version of every publication and to sign the kind of access (gold, green, restricted, closed, with or without embargo period). Librarians are active partners in the database maintenance as they are correcting the data and communicating with scientists in order to improve the accuracy of the data. MTMT has more and more agreement with publishers too: publishers can join to MTMT, they can upload their publications' metadata – automatically as far as possible – and they can prepare statistics about their products. For this reason and for DOI registration more and more Hungarian journals moved to open access publishing, started to use the Open Journal Systems (OJS) platform and archive the articles in an institutional repository.

Electronic Information Service National Programme contracts more and more open choice agreement to facilitate gold open access publication in Hungary.



On 29-30 October 2015 in Budapest was the first Eastern European Meeting of Research Funders and Research Performing Organizations where participants could know the national open access efforts. The meeting was organized by PAS-TEUR4OA project to promote open access policy alignment in the area.

## **Poland**

Open access publication is embraced and implemented almost independently by three different groups in Poland: librarians, researchers and government agencies. The Polish Ministry of Science and Higher Education released the Directions of the development of open access to research publications and research results in Poland document in 2015. It is a general and soft document which contains recommendations only. Even so there are a lot of good central services which facilitate open access.

A national Open Science Platform works by the Interdisciplinary Centre for Mathematical and Computational Modelling at the University of Warsaw with several useful online services. This platform contains the CeON publication repository, the RepOD research data repository, an open journal platform and an open book platform too. A magnificent, interactive tool is the Polish Open Science Platform Legal Assistant for scientists, publishers and research funders to provide legal advice.

Creative Commons Poland is a key player of open access publication in Poland. In 2009 it prepared the Guide to Open Science document.

In 2010 the ICM University of Warsaw, acting on behalf of the Polish Ministry of Science and Higher Education contracted an agreement with Springer in which the open access fees are covered for authors at Polish institutions.

## **Slovakia**

The Government of Slovakia released an Action Plan for Open Government in Slovak Republic, 2017 – 2019 which facilitates open access publication, open data and open education too. The Open Access Contact Office of the Slovak Centre of Scientific and Technical Information (SCSTI) provides practical help for researchers, librarians and publishers in open access issues. In Slovakia the national CRIS helps to implement open access publishing, because researchers deposit their research outputs traditionally into these CRIS systems so everything is available to creating an open access repository and to monitoring how many



articles were published open access. Creative Commons is a key player also in Slovakia, these licences are compatible with Slovak copyright law.

## Slovenia

The Slovenian national open access infrastructure consists two main parts: an information portal on open access and a national publication portal which harvests metadata to full-texts from repositories. The Slovenian researchers' bibliographies are available in SICRIS, the national Slovenian CRIS system. These data is used for research evaluation too.

Research data management is also highly promoted in Slovenia. Using SI-DIH DARIAH search engine it is possible to search for research data in different repositories.

## Conclusion

Although the first open access statement, the Budapest Open Access Initiative (BOAI) was created in this area in 2002, open access movement is a bottom-up initiative in these countries: just two countries, Czech Republic and Slovakia have national open access mandates, but a lot of institutional mandates, policies and similar requirements exist. Accordingly a lot of institutional repositories work and loads of advocacy resources are available. A lot of online open access journals are published in these countries to provide opportunity to publish in national languages and because of paying APCs is a major problem in this area. Therefore due to this fragmentation the collaboration and central platforms are extremely needed.

## References

- Bednarek-Michalska, B. (2007) *Open access in Poland*. [PowerPoint Slides] Retrieved from <http://personales.upv.es/mpesetm/elis/BOMI.pdf>
- Bilsky, L. (2015). *Open Access related activities in Slovakia*. [PowerPoint Slides] Retrieved from [http://openaccess.mtak.hu/presentations-29/OA\\_in\\_Slovakia\\_L\\_Bilsky.pdf](http://openaccess.mtak.hu/presentations-29/OA_in_Slovakia_L_Bilsky.pdf)
- Fabián, O. (2016) Open access in the Czech Republic: an overview. *Library Review*, 62(4-5), 211-223. doi: 10.1108/LR-09-2012-0096



- Global Open Access Portal – Croatia. Retrieved from <http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/access-by-region/europe-and-north-america/croatia/>
- Global Open Access Portal – Czech Republic. Retrieved from <http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/access-by-region/europe-and-north-america/czech-republic/>
- Global Open Access Portal – Hungary. Retrieved from <http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/access-by-region/europe-and-north-america/hungary/>
- Global Open Access Portal – Poland. Retrieved from <http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/access-by-region/europe-and-north-america/poland/>
- Global Open Access Portal – Slovakia. Retrieved from <http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/access-by-region/europe-and-north-america/slovakia/>
- Global Open Access Portal – Slovenia. Retrieved from <http://www.unesco.org/new/en/communication-and-information/portals-and-platforms/goap/access-by-region/europe-and-north-america/slovenia/>
- Holl, A. (2014). *Open Access in Hungary*. [Case study - PDF] Retrieved from <https://zenodo.org/record/35645#.XBVmaVxKiUk>
- Karácsony, Gy. (2013). HUNOR: The Collaboration of Hungarian Open Access Repositories. *Procedia - Social and Behavioral Sciences*, 73, 57-61. doi: 10.1016/j.sbspro.2013.02.019
- Krajcar, U. (2015). *Open access to scientific publications and research data in Slovenia*. [PowerPoint Slides] Retrieved from [http://openaccess.mtak.hu/presentations-29/OA\\_in\\_Slovenia-Budapest-29102015.pdf](http://openaccess.mtak.hu/presentations-29/OA_in_Slovenia-Budapest-29102015.pdf)
- Lhoták, M. (2015). *Open Access in the Czech Academy of Sciences*. [PowerPoint Slides] Retrieved from [http://openaccess.mtak.hu/presentations-30/OA\\_2015\\_Budapest.pdf](http://openaccess.mtak.hu/presentations-30/OA_2015_Budapest.pdf)
- Makara, G., Soós, S., Holl, A. (2015). *Hungarian Academy of Sciences Open Access policies updated*. [PowerPoint Slides] Retrieved from <http://openaccess.mtak.hu/presentations-30/MTAOA.pdf>
- OA in Croatia. Retrieved from <https://www.openaire.eu/oa-in-croatia>
- OA in Czech Republic. Retrieved from <https://www.openaire.eu/oa-in-the-czech-republic>
- OA in Hungary. Retrieved from <https://www.openaire.eu/oa-hungary>



OA in Poland. Retrieved from <https://www.openaire.eu/oa-poland>

OA in Slovakia. Retrieved from <https://www.openaire.eu/oa-slovakia>

OA in Slovenia. Retrieved from <https://www.openaire.eu/oa-slovenia>

*Open Access in Croatia: CROSBİ and the Hrčak Portal of Scientific Journals*. Retrieved from

[https://wessweb.info/index.php/Open\\_Access\\_in\\_Croatia:\\_CROSBİ\\_and\\_the\\_Hr%C4%8DakPortal\\_of\\_Scientific\\_Journals](https://wessweb.info/index.php/Open_Access_in_Croatia:_CROSBİ_and_the_Hr%C4%8DakPortal_of_Scientific_Journals)

[Open Access Mandate of Hungarian Academy of Sciences. Original (2012) and updated (2016) version in Hungarian].

*Az MTA Elnökének 27/2012. (IX. 24.) határozata*. Retrieved from: [http://mta.hu/data/dokumentumok/hatteranyagok/akademiai\\_szabalyozasok/27\\_2012\\_elnoki\\_hat\\_Open\\_Access5.pdf](http://mta.hu/data/dokumentumok/hatteranyagok/akademiai_szabalyozasok/27_2012_elnoki_hat_Open_Access5.pdf)

*Az MTA Elnökének 24/2016. (VII.15.) határozata*. Retrieved from [http://openaccess.mtak.hu/dokumentumok/mta\\_hatarozat\\_oa\\_2016.pdf](http://openaccess.mtak.hu/dokumentumok/mta_hatarozat_oa_2016.pdf)

Stojanovski, J., Petrak, J., Macan, B. (2009) The Croatian national open access journal platform. *Learned Publishing*, 22(4), 263-273. doi: 10.1087/20090402



## THE PRESENCE OF RESEARCHERS AND PROFESSORS OF P. PORTO IN DIGITAL PLATFORMS

Susana Martins

Associate Professor, Department of Information Systems - Porto  
Accounting and Business School - Polytechnic Institute of Porto,  
Matosinhos, Portugal  
susanamartins@iscap.ipp.pt

Milena Carvalho

Associate Professor, Department of Information Systems - Porto  
Accounting and Business School - Polytechnic Institute of Porto,  
Matosinhos, Portugal

### Abstract

*Digital platforms are now an indispensable tool for the vast majority of the working population, the same is true for higher education teachers and researchers. In fact, they currently use a variety of digital platforms with the aim of resorting to repositories and platforms that can go further, offering features that allow peer collaboration and enhance digital communication and its presence and its institutions in the virtual world. The proposed communication focuses on a study aimed at characterizing the presence of the Porto Politécnico faculty on some of these platforms (Linkedin, Research Gate, Academic, Academic and Mendeley), taking into account the differences between them, which required the use of different search criteria. This communication presents itself as original in that it intends to make known how the teachers and researchers of P. Porto use these platforms. It was found that of the P.Porto universe, only researchers and teachers of 3 schools have a more marked presence in these platforms, so the present study allows the different schools of P. Porto to better manage and increase the presence and visibility of their teachers and researchers in these platforms, creating policies that stimulate their use and, thus, enhancing the dissemination of the research they develop as well as the image of the organization, through the improvement of the communication and digital marketing aspects.*

**Keywords:** altmetrics; informational behavior; digital communication; digital platforms



## The background and purpose of the study

The society in which we live is commonly referred to as the “Information Society”<sup>2</sup>, closely related to the development of information and communication technologies, where large amounts of information are produced and transmitted, which defines and / or influences most human activities. Effectively, the way communicative processes transform themselves, influence how socialization takes place, how knowledge is produced and communicated, and the ways in which messages are appropriated intellectually. For this article, we understand the communication of science as that made available by Wenninger, Weingart and Wormer (2017, p. 20) “In a broader sense, science communication encompasses all forms of communication by and about the sciences, within audience as well as in the science-external public sphere (general audience)”. The public should be an integral part of the scientific process (Public Engagement with Science and Technology) and the science channels can provide scientific communication in several formats<sup>3</sup>. Technological innovations promote new possibilities of communication, since “the way people act and interact (with each other and with the environment) is always modified with the arrival of technological innovations” (Ehrenberg and Souza, 2012, p. 33). The fact is that with the advancement and democratization of the Internet it has enabled the individual to create a new way of communicating and acquiring knowledge, influencing their info communication behaviour in the search and use of information as well as innovative socio-technical relations (Costa, Silva and Ramalho, 2014). In higher education institutions, the adherence of teachers and researchers to these digital platforms has brought about a change of behaviour, caused using tools that enable individuals to create an identity and an online professional profile, favouring the creation of a presence in the web (Donelan, 2015; Morais et al., 2014). In Portugal, great majority of the researchers are also teaching at higher education and, for this reason, they develop research and naturally publish their results to create relationships with peers, get feedback on their research. If some researchers assume their presence quite actively on these platforms, others still show some reluctance to use them (Lupton, 2014 cited by Persson and Svenningsson, 2016)<sup>4</sup>.

<sup>2</sup> See Toffler’s book “The Third Wave” (1989) and Zurkowski’s “The Information Service Environment Relationships and Priorities: report 5 (1974)

<sup>3</sup> Specialized books, channels like youtube, blogs, science centres, lectures and discussions and other formats free of the influence of sponsors, educational projects of research institutions and their public relations departments and journalistic reporting by the mass media also play an important role.

<sup>4</sup> Other authors such as Scott, 2013, Wilkinson & Weitkamp, 2013 identify the trend in the United States and the United Kingdom that both universities and funding agencies consider of great importance for the promotion and explanation of research for the public.



Several investigations, in particular those conducted by Bik and Goldstein (2013), Liang et al. (2014), Lupton (2014), Van Noorden (2014) cited by Persson and Svenningsson (2016) indicate that social networks present a high potential for researchers because on one hand they help them to keep up to date in the face of new developments in their field of action, on the other hand, are strong allies for the dissemination of their own research, managing to reach a wider audience and increase their visibility and the impact of their work. Effectively, Liang et al. (2014, p. 776) state that “being cited or mentioned on Twitter may be a new sign of a person’s academic impact”. Persson and Svenningsson (2016) consider the time invested in social networks to be beneficial, since they are a good strategy that will give rise to a return on investment in research. However, they consider a constant updating since these communication channels are constantly in motion and, therefore, it is necessary to use marketing strategies, not only to know the behaviour of the target audience, but for their loyalty. The definition of strategy involves the creation of information and technology policies and the use of scientific marketing, which for Araújo (2015) can be considered a form of marketing that helps to leverage market growth of scientific products. According to Bizzocchi (2002, cited by Araújo, 2015), the basic principle to be adopted by scientific marketing is that knowledge, especially the discourse that contains it, is a product like any other, if it is established as the target of this product, the public and not just the specialized one<sup>5</sup>.

The measurement of the impact of the dissemination of science through social networks is done using the so-called alternative metrics, which are believed to be more democratic than the traditional metrics that according to Vanti and Sanz-Casado (2016) in the ways of measuring information and scientific communication and the use of social networks as communication channels of science. These are alternative metrics that are characterized by the creation and study of new indicators based on Web 2.0, to analyse scientific and academic activities or to explore the properties of measurements based on social networks<sup>6</sup>.

<sup>5</sup> In this way, Carvalho (2003) presents the use of marketing, in the scientific and digital context, in particular of web 2.0, to “consolidate, sell and design a good image of science and its products (companies, scientists and institutions), and thus stimulate confidence and investment in research”.

<sup>6</sup> Vanti & Sanz-Casado INSERIR TÍTULO DO TRABALHO (2016, p.353) state the three main groups that make up the alternative metrics.



## Details of the methods, procedures or instruments used

In this article we intend to identify the presence of the teachers of P. Porto<sup>7</sup> in some of the scientific social networks currently available, namely in Google Scholar, ResearchGate, Academia.edu and Mendeley. The data collection took place in March 2018 and was based on the information available through each platform (Google Scholar: H Index, i10 Index, Number of citations and Publications; ResearchGate: Views, Quotations, Co-authors and Publications; Academia.edu: Mendeley: Index H, Co-authors, Quotations, and Publications). Information was collected on up to four authors, and on certain platforms, there are only two authors associated with P.Porto's schools. Digital information processing was performed through Microsoft Excel software, which allowed for the introduction of the data to facilitate an effective analysis of the collected data.

## Findings, discussion and conclusions

Regarding the data collected about ISCAP (Table 1), we can see that, in general terms, most of publications are in Google Scholar, and we believe that the reason for that is because it is the oldest platform available focused on the availability of research and academic papers, since 2006, whereas the other platforms are from the year 2008. Another interesting factor that we believe influenced these numbers, is the fact that it presents some conventional metrics that are of interest for researchers.

*Table 1.* ISCAP. Data collected

Google Scholar		Research Gate		Academia		Mendeley	
H Index		<b>Visualizations</b>		<b>Visualizations</b>		<b>H Index</b>	
Author A	11	Author A	3618	Author A	24683	Author A	4
Author B	6	Author B	698	Author B	4451	Author B	2
Author C	8	Author C	3602	Author C	2743	Author C	1
Author D	7	Author D	202	Author D	16341	Author D	1

<sup>7</sup> The Polytechnic Institute of Porto was founded in 1985, having initially integrated the Superior Schools of Education (ESE) and Superior of Music (ESMAE). In 1988, the Institute of Accounting and Administration of Porto (ISCAP) and the Institute of Engineering of Porto (ISEP) were integrated, and two years later, in 1990, the School of Industrial Studies and Management (ESEIG) was created. In 1999 the Higher School of Technology and Management (ESTG) was created and in 2004 it was given in the universe of the Polytechnic of Porto of the School of Health (ESS). In 2016, because of the strategic repositioning of P. Porto, ESEIG is extinguished and campus 2 now hosts the School of Arts and Design (ESMAD) and the School of Hospitality and Tourism (ESHT).



i10 Index		Co-Authors		Co-Authors		Co-Authors	
Author A	13	Author A	15	Author A	2	Author A	16
Author B	4	Author B	2	Author B	2	Author B	11
Author C	6	Author C	45	Author C	0	Author C	3
Author D	6	Author D	11	Author D	18	Author D	6
Citations		Citations		NA		Citations	
Author A	360	Author A	78			Author A	48
Author B	350	Author B	43			Author B	14
Author C	222	Author C	87			Author C	1
Author D	211	Author D	68			Author D	4
Publications		Publications		Publications		Publications	
Author A	91	Author A	45	Author A	12	Author A	165
Author B	25	Author B	84	Author B	14	Author B	11
Author C	68	Author C	109	Author C	1	Author C	2
Author D	75	Author D	17	Author D	73	Author D	15

This marked presence has a positive impact on the amount of citations the papers receive. The second most widely used platform is ResearchGate. In this platform the visualization of the profiles of the authors presents considerable numbers. The Academia, although little used for making publications available, is a platform that has higher profile view numbers than ResearchGate. Mendeley is incipient to use and although Author A has 165 publications uploaded on this platform, the others do not exceed 15. Co-authoring data indicate that this is a relatively common practice, which turns out to be multi- and interdisciplinary and integrator of this polytechnic school.

Table 2. ESE. Data collected

Google Scholar		Research Gate		Academia		Mendeley	
H Index		Visualizations		Visualizations		H Index	
Author A	8	Author A	3544	Author A	94	Author A	1
Author B	9	Author B	415	Author B	564	Author B	2
Author C	7	Author C	1962	Author C	37	Author C	2
Author D	5	Author D	1912			Author D	1
i10 Index		Co-Authors		Co-Authors		Co-Authors	
Author A	7	Author A	33	Author A	1	Author A	29
Author B	8	Author B	11	Author B	7	Author B	17
Author C	4	Author C	30	Author C	0	Author C	40
Author D	4	Author D	28			Author D	9
Citations		Citations		NA		Citations	
Author A	503	Author A	73			Author A	3
Author B	282	Author B	78			Author B	43



Author C	227	Author C	95			Author C	16
Author D	146	Author D	105			Author D	15
Publications		<b>Publications</b>		<b>Publications</b>		Publications	
Author A	19	Author A	76	Author A	2	Author A	29
Author B	29	Author B	12	Author B	16	Author B	11
Author C	33	Author C	31	Author C	0	Author C	15
Author D	23	Author D	25			Author D	2

This School of P.Porto (Table 2) uses more ResearchGate as a way of disseminating the publications, however presents a greater number of quotations from Google Scholar, indicating that this will be the platform most used by those who search, and that goes against what is the common and ingrained idea. The Mendeley is little used and the academy presents a very incipient use in this school. The highest h index is 9 and the i10 is 8.

Table 3. ESTG. Data collected

Google Scholar		Research Gate		Academia	
H Index		Visualizations		Visualizations	
Author A	9	Author A	3547	Author A	1319
Author B	5	Author B	1009	Author B	85
Author C	7	Author C	3503	Author C	702
Author D	6	Author D	2114	Author D	502
i10 Index		<b>Co-Authors</b>		<b>Co-Authors</b>	
Author A	8	Author A	38	Author A	6
Author B	3	Author B	27	Author B	1
Author C	6	Author C	23	Author C	0
Author D	3	Author D	21	Author D	0
Citations		Citations		NA	
<b>Author A</b>	252	Author A	92		
<b>Author B</b>	248	Author B	63		
<b>Author C</b>	226	Author C	24		
<b>Author D</b>	107	Author D	24		
Publications		<b>Publications</b>		<b>Publications</b>	
Author A	50	Author A	46	Author A	20
Author B	20	Author B	31	Author B	11
Author C	41	Author C	34	Author C	0
Author D	46	Author D	26	Author D	0

Regarding the presence of researchers of this school of P.Porto (Table 3), in Mendeley there were no indications that it exists. This school, among the schools of P.Porto is a multidisciplinary polytechnic school because it covers different areas but that work in a complementary way different situations. Although Google



Scholar is the most widely used platform, ResearchGate presents similar values at the level of publications. However, the citations values obtained are much higher from Google Scholar, something that can be explained by what was referred to earlier. Regarding the profile visualization, ResearchGate remains the most consulted platform when compared to the Academy, this can be explained by the incipient presence of researchers of this school in this platform, having only been identified two researchers and with few publications inserted in the system. With respect to ICAP and ESE, this organic unit of P. Porto has interesting values of H-index and I-10, and this can be justified by the focus on teaching and research in engineering, technology and business sciences.

Table 4. ESMAE. Data collected

Google Scholar		Research Gate		Academia	
H Index		<b>Visualizations</b>		<b>Visualizations</b>	
Author A	5	Author A	2042	Author A	80
Author B	4	Author B	95	Author B	80
Author C	1	Author C	63	Author C	30
Author D	0	Author D	437	Author D	31
i10 Index		<b>Co-Authors</b>		<b>Co-Authors</b>	
Author A	2	Author A	36	Author A	2
Author B	2	Author B	3	Author B	3
Author C	0	Author C	2	Author C	1
Author D	0	Author D	4	Author D	2
Citations		<b>Citations</b>		<b>NA</b>	
Author A	179	Author A	93		
Author B	55	Author B	0		
Author C	5	Author C	0		
Author D	0	Author D	5		
Publications		<b>Publications</b>		<b>Publications</b>	
Author A	37	Author A	25	Author A	12
Author B	12	Author B	5	Author B	8
Author C	6	Author C	1	Author C	7
Author D	0	Author D	5	Author D	3

As to the presence of ESMAE investigators at Mendeley, no evidence has been found that it exists. About the data collected on this school in the other networks analysed (Table 4), there is a reduced presence in these social networks, being among the analysed, Google Scholar the most used platform / network, being of course, the one with the highest number of citations. The second most popular social network is ResearchGate, although it is expected to have a smaller impact than Google Scholar at the citation level. However, the profiles of the



teachers end up presenting some relevant data regarding their visualization. In this respect, the academy has more homogeneous values than ResearchGate, which features an author with 2042 profile views and other authors with 63 and 95 views. Being an arts school the presence and use of platforms of this nature does not seem to be a top priority for this scientific community, and even the traditional citations and metrics obtained from Google Scholar show that. We believe that this behaviour towards these networks will be consequence of the nature of the scientific area.

Table 5. ISEP. Data collected

Google Scholar		Research Gate		Academia		Mendeley	
H Index		<b>Visualizations</b>		<b>Visualizations</b>		<b>H Index</b>	
<b>Author A</b>	55	Author A	14941	Author A	485	Author A	29
Author B	37	Author B	6617	Author B	699	Author B	40
Author C	82	Author C	28218	Author C	1659	Author C	25
Author D	30	Author D	14178	Author D	376	Author D	14
i10 Index		<b>Co-Authors</b>		<b>Co-Authors</b>		<b>Co-Authors</b>	
Author A	314	Author A	30	Author A	12	Author A	202
Author B	129	Author B	52	Author B	6	Author B	196
Author C	82	Author C	49	Author C	51	Author C	172
Author D	61	Author D	36	Author D	6	Author D	230
Citations		<b>Citations</b>		<b>NA</b>		Citations	
Author A	15863	Author A	4560			Author A	3885
Author B	6382	Author B	10829			Author B	7922
Author C	4141	Author C	5502			Author C	1650
Author D	3976	Author D	1227			Author D	772
Publications		<b>Publications</b>		<b>Publications</b>		<b>Publications</b>	
Author A	1062	Author A	538	Author A	77	Author A	451
Author B	628	Author B	743	Author B	66	Author B	347
Author C	276	Author C	385	Author C	175	Author C	116
Author D	144	Author D	239	Author D	44	Author D	144

According to the data in Table 5, this is the P.Porto school with the strongest presence in all social networks at the level of publications and, consequently, at the level of the other items analysed. It is also the one with the highest indexes for viewing profiles and traditional metrics such as the H index with a value of 82 in Google Scholar and 40 in the Mendeley and the i10 index of 314. This is an



engineering school, an area where profusion of publications is high, we believe to be because of the advances inherent in the research conducted. The fact that these data are overwhelming in relation to other schools seems to indicate that there is a definite policy regarding the dissemination of scientific production on social networks. In fact, several initiatives were effectively developed in ISEP to train teachers and researchers in the writing of scientific articles and in the use of social networks to promote professional success.

Table 6. ESS. Data collected

Google Scholar		Research Gate		Academia	
H Index		<b>Visualizations</b>		<b>Visualizations</b>	
Author A	5	Author A	3544	Author A	71
Author B	4	Author B	415	Author B	18
Author C	1	Author C	1962	Author C	199
Author D	0	Author D	1912	Author D	564
i10 Index		<b>Co-Authors</b>		Co-Authors	
Author A	2	Author A	33	Author A	0
Author B	2	Author B	11	Author B	0
Author C	0	Author C	30	Author C	0
Author D	0	Author D	28	Author D	7
Citations		<b>Citations</b>		<b>NA</b>	
<b>Author A</b>	179	Author A	73		
<b>Author B</b>	55	Author B	78		
<b>Author C</b>	5	Author C	95		
<b>Author D</b>	0	Author D	105		
Publications		<b>Publication</b>		Publications	
Author A	37	Author A	76	Author A	2
Author B	12	Author B	12	Author B	1
Author C	6	Author C	31	Author C	41
Author D	0	Author D	25	Author D	16

Regarding the presence of ESS researchers at Mendeley, no evidence was found that it exists. About the use of the other networks, this being a health school, an area where there is a great profusion of research and dissemination of scientific knowledge, the data falls short of what would be expected. Of all the networks used, the one with a more marked presence of ESS researchers is ResearchGate, the social network where there are more publications, more co-authoring data and more profile views. The number of citations is more homogeneously distributed than the citation data collected from Google Scholar. This is the second platform most used by researchers and teachers of this school of P.Porto. The traditional metrics provided by Google Scholar are low, considering the scientific area to which they refer. Academia appears to be a network that



has attracted the interest of some researchers since there is evidence that it is used to make publications available to some of the researchers and to view and query their profiles.

Table 7. ESHT. Data collected

Google Scholar		Research Gate		Academia	
H Index		<b>Visualizations</b>		<b>Visualizations</b>	
Author A	11	Author A	512	Author A	93
Author B	10	Author B	510	Author B	1658
Author C	4	Author C	7995	Author C	543
Author D	8	Author D	911	Author D	500
i10 Index		<b>Co-Authors</b>		<b>Co-Authors</b>	
<b>Author A</b>	13	Author A	6	Author A	4
Author B	10	Author B	12	Author B	3
Author C	1	Author C	17	Author C	0
Author D	5	Author D	14	Author D	0
Citations		<b>Citations</b>		<b>NA</b>	
<b>Author A</b>	709	Author A	4		
<b>Author B</b>	199	Author B	13		
<b>Author C</b>	70	Author C	39		
<b>Author D</b>	183	Author D	182		
Publications		<b>Publications</b>		<b>Publications</b>	
<b>Author A</b>	27	Author A	6	Author A	1
Author B	98	Author B	27	Author B	16
Author C	62	Author C	46	Author C	2
Author D	41	Author D	75	Author D	5

As for ESHT (Table 7), this school also has no presence at Mendeley. This school has a larger number of publications and citations in Google Scholar. The H and i10 indices are respectively 11 and 13. Researchers also use ResearchGate, albeit less frequently. On this platform co-authors are identified, and it is possible to verify that teacher profiles are visualized, although there is a great discrepancy between the most visualized profile and the remaining three.

Table 8. ESMAD. Data collected

Google Scholar		Research Gate		Academia	
H Index		<b>Visualizations</b>		<b>Visualizations</b>	
Author A	5	Author A	310	Author A	23
Author B	1	Author B	597	Author B	38
Author C	1	Author C	2518	Author C	40
Author D	4	Author D	1604	Author D	38



i10 Index		Co-Authors		Co-Authors	
Author A	2	Author A	2	Author A	0
Author B	0	Author B	2	Author B	0
Author C	1	Author C	9	Author C	0
Author D	3	Author D	12	Author D	0
Citations		Citations		NA	
Author A	82	Author A	38		
<b>Author B</b>	1	Author B	38		
<b>Author C</b>	63	Author C	293		
<b>Author D</b>	48	Author D	38		
Publications		Publications		Publications	
Author A	28	Author A	10	Author A	0
Author B	9	Author B	25	Author B	0
Author C	18	Author C	85	Author C	4
Author D	16	Author D	20	Author D	2

As for ESMAD (Table 8), there is no presence in Mendeley either. This school has a greater presence in ResearchGate, both at the level of publications and citations received. Google Scholar is the second most used network and has the highest H index 5 and i10 Index 3. The Academy is little used at the publications level, no co-authors are identified on this platform and the views are reduced in number.

As general conclusions we can mention that the use of social networks for scientific dissemination is a way of democratizing access to scientific advances, reaching more people and promoting the visibility of researchers and the work they do. It seems to be essential that in order for these networks to be used in an efficient, structured and formal way, it is necessary for the various organizational units to create the conditions for this, through the promotion of training actions directed both at the writing of scientific documents and scientific articles, but also how researchers can use these networks to promote their work, networking among peers and between institutions, and to enhance the visibility and impact of their scientific research. Another aspect that can influence the use of these social networks is the (over) burden that teachers and researchers can experience. The P.Porto presents quite different results among the various schools that compose it, so it seems necessary to define a uniform information policy to be emanated by the institution's maximum body. Through the definition of this policy it would be necessary to identify the available resources, material and immaterial, as well as the social networks to be used and how they should be used.



## References

- Academia.edu. (s.d.) About. Retrieved from <https://www.academia.edu/about>
- Araújo, R. F. (2015). Scientific digital marketing and altmetrics for academic journals: from visibility to engagement. *Perspectivas em Ciência da Informação*, 20(3), 67–84. doi: 10.1590/1981-5344/2402
- Azevedo, J., & Moutinho, N. (2014). A comunicação de ciência em plataformas digitais: As implicações da cultura participativa e da convergência tecnológica. Retrieved from <http://repositorio-aberto.up.pt/handle/10216/115190>
- Barbour, K., & Marshall, D. (2012). The academic online: Constructing persona through the World Wide Web. *First Monday*, 0(0). doi: 10.5210/fm.v0i0.3969
- Barros, A. M. (2014). Redes sociais para pesquisadores e acadêmicos. Retrieved from <https://bsf.org.br/2014/02/27/redes-sociais-para-pesquisadores-e-academicos/>
- Barros, M. (2015). Altmetrics: alternative metrics of scientific impact based on social media. *Perspectivas em Ciência da Informação*, 20(2), 19–37. doi: 10.1590/1981-5344/1782
- Breland, J. Y., Quintiliani, L. M., Schneider, K. L., May, C. N., & Pagoto, S. (2017). Social Media as a Tool to Increase the Impact of Public Health Research. *American Journal of Public Health*, 107(12), 1890–1891. doi: 10.2105/AJPH.2017.304098
- Chung, A. Q. H., Andreev, P., Benyoucef, M., Duane, A., & O'Reilly, P. (2017). Managing an organisation's social media presence: An empirical stages of growth model. *International Journal of Information Management*, 37(1, Part A), 1405–1417. doi: 10.1016/j.ijinfomgt.2016.10.003
- Cintra, F. C. (2010). Marketing digital: a era da tecnologia on-line. *Investigação*, (10) 1, 6-12.
- Costa, L. F., Silva, A. C. P., Ramalho, F. A. (2014). Comportamento infocomunicacional. *Da informação à auditoria de conhecimento para a inteligência organizacional*. João Pessoa: Editora UFPB.
- Davies, J., & Merchant, G. (2007). Looking from the inside out: academic blogging as new literacy. *A new literacies sampler* (pp. 167-197). New York: Peter Lang.
- Donelan, H. (2015). Social media for professional development and networking opportunities in academia. *Journal of Further and Higher Education*, 40(5), 1-24.
- Ehrenberg, K. C., Souza, R. F. (2012). Comunicação mercadológica em mídias digitais e o consumidor internauta. *Acta Científica*, (21), 33-44. Retrieved from <http://revistas.unasp.edu.br/actacientifica/article/view/363>.



- Elsevier. (s.d.). Reference Manager and Academic Social Network - Mendeley Database Elsevier Solutions. (sem data). Retrieved from <https://www.elsevier.com/solutions/mendeley>
- Firpo, D., Kasemvilas, S., Ractham, P., & Zhang, X. (2010). Constructing a Sense of Community in a Graduate Educational Setting using a Web 2.0 Environment. *Technologies and Practices for Constructing Knowledge in Online Environments: Advancements in Learning* (pp. 46-84). Hershey, PA : Information Science Reference
- Fraumann, G. (2017). *Discussing indicators in research funding: What role do altmetrics play?* (2017, Dezembro 15). Retrieved from <https://era.ideasoneurope.eu/2017/12/15/discussing-indicators-research-funding-role-altmetrics-play/>
- Hernandez Barros, R. (2014, Maio 18). *Academic networks contest: ResearchGate vs. Academia vs. Mendeley*. Retrieved from <https://howtopublishinjournals.com/2014/05/18/academic-networks-contest-researchgate-vs-academia-vs-mendeley/>
- Holliman, R. (2008). Communicating science in the digital age - issues and prospects for public engagement. Em *Readings for technical communication* (pp. 68-76). Canadá: Oxford University Press. Retrieved from [https://www.researchgate.net/publication/42796855\\_Communicating\\_science\\_in\\_the\\_digital\\_age\\_-\\_issues\\_and\\_prospects\\_for\\_public\\_engagement](https://www.researchgate.net/publication/42796855_Communicating_science_in_the_digital_age_-_issues_and_prospects_for_public_engagement)
- Jesus, D. L., Cunha, M. B. (2012). Produtos e serviços da Web 2.0 no setor de referência das bibliotecas. *Perspectivas em Ciência da Informação*, (17) 1, 110-133.
- Kjellberg S. (2010). I am a blogging researcher: Motivations for blogging in a scholarly context. *First Monday First Monday*, 15(8).
- Liang, X., Yi-Fan Su, L., K. Yeo, S., A. Scheufele, D., Brossard, D., Xenos, M.,... A. Corley, E. (2014). Building buzz: (Scientists) Communicating science in new media environments. *Journalism & Mass Communication Quarterly*, 91(4), 772-791. doi: 10.1177/1077699014550092
- Lobo Antunes, J., Sanchez, A., & Granado, A. (2014). *Redes Sociais para Cientistas*.
- Martins, D. (2016). Redes sociais acadêmicas: as condições de existência na área das ciências da comunicação no Brasil. *Revista FAMECOS*, 23(3), 23391. doi: 10.15448/1980-3729.2016.3.23391
- Mendeley (s.d.). Connect & Network with Researchers Worldwide. Retrieved from <https://www.mendeley.com/research-network/community>
- Morais, N.; Pombo, L.; Batista, J.; Moreira, A.; Ramos, F. 2014. Uma Revisão de Literatura Sobre o Uso das Tecnologias da Comunicação no Ensino Superior: A Literature Review of the Use of Communication Technologies in Higher Education, *Prisma*, 24, 162 - 185.



- Persson, S., & Svenningsson, M. (2016). Librarians as Advocates of Social Media for Researchers: A Social Media Project Initiated by Linköping University Library, Sweden. *New Review of Academic Librarianship*, 22(2/3), 304–314. doi: 10.1080/13614533.2016.1184693
- Pitrelli, N. (2017). Big data and digital methods in science communication research: opportunities, challenges and limits. *Journal of Science Communication*, 16(2), C01. Retrieved from <https://doi.org/10.22323/2.16020301>
- Piwowar, H. (2013). Altmetrics: Value all research products. *Nature*, 493, 159. doi: 10.1038/493159a
- Rambukkana, N. (2016). *Hashtag publics: the power and politics of discursive networks*. New York: Peter Lang.
- Ribeiro, R. A., Cordeiro, C., & Oliveira, L. (2015). As redes sociais acadêmicas e científicas como mecanismos de visibilidade e internacionalização da produção científica brasileira e portuguesa na área de Biblioteconomia e Ciência da Informação – análise da presença na Rede Social ResearchGate. *Actas do Congresso Nacional de Bibliotecários, Arquivistas e Documentalistas*, 0(12). Retrieved from <https://www.bad.pt/publicacoes/index.php/congressosbad/article/view/1396>
- Ribeiro, R. A., Oliveira, L., & Furtado, C. (2017). A rede social acadêmica researchgate como mecanismo de visibilidade e internacionalização da produção científica brasileira e portuguesa na área de Biblioteconomia e Ciência da Informação. *Perspectivas em Ciência da Informação*, 22(4), 177–207. doi: 10.1590/1981-5344/2937
- Ribeiro, R., Furtado, C., & Oliveira, L. (sem data). As redes sociais acadêmicas e científicas como mecanismos de visibilidade e internacionalização da produção científica brasileira e portuguesa na área de Biblioteconomia e Ciência da Informação – análise da presença na Rede Social ResearchGate, 19.
- Sanchez, A., Granado, A., & Antunes, J. L. (sem data). Redes sociais para cientistas, 56.
- Sedighi, M. (/15). The Role of Social Media in Assessing the Impact of Research (Case Study: The Field of Scientometrics). *Iranian Journal of Information Processing and Management*, 653–653.
- Tajudeen, F. P., Jaafar, N. I., & Ainin, S. (2018). Understanding the impact of social media usage among organizations. *Information & Management*, 55(3), 308–321. doi: 10.1016/j.im.2017.08.004
- Van Eperen, L., & Marincola, F. M. (2011). How scientists use social media to communicate their research. *Journal of Translational Medicine*, 9, 199. doi: 10.1186/1479-5876-9-199



- Vanti, N., Sanz-Casado, E. (2016). Altmetrics: Social media metrics for a more democratic Science. *Transinformação*, 28(3), 349–358. doi: 10.1590/2318-08892016000300009
- Wenninger, A., Weingart, P., & Wormer, H. (Eds.). (2017). *Social Media and Digital Science Communication: Analysis and Recommendations for Dealing with Risks and Opportunities in a Democracy*. München: acatech – National Academy of Science and Engineering.



## KIDSPRINT: DEVELOPMENT AND APPLICATION OF A METHOD FOR COLLABORATIVE DESIGN OF AN APP IN THE CONTEXT OF ENERGY SAVING

Vanessa Brinkmann

Master's degree Student, International Information Management,  
Department for Information Science and Natural Language Processing,  
University of Hildesheim, Hildesheim, Germany  
brink005@uni-hildesheim.de

### Abstract

*Involving users in the design process of digital products can greatly enhance the acceptance of these and secures that information and interaction possibilities given meet the users needs and demands for specific products and services. Regarding this it became common practice to involve adult users in the development process. However, children's input is rarely used. To make the active involvement of children in the design process of digital products more attractive, the KidSprint method tries to provide a methodological framework that ensures authentic children's input without using more resources than while involving adult users. This is done making use of collaborative brainstorming processes inspired by the structure of a design sprint. The first application of the method was influenced by a project dealing with the development of an app for children to learn how to save energy. In this way, methodological research could be associated with a topic that is very popular in today's society.*

**Keywords:** children, collaborative brainstorming, design methods, KidSprint

### Introduction

Researching into user needs provides an interesting insight to their demands for digital products. In this way, devices and services can be specifically adapted to their target group, which heightens the user experience and, in most cases, leads to a higher acceptance of the products and consequently to more revenue being generated by the manufacturer. It has therefore been common practice for years to involve users directly in the development process of products in order to obtain authentic results and an insight into the mental model of the users (cf. Druin 1999, 592). However, children are largely excluded from this methodology, as working with them is more demanding and requires significantly more resources than working with adults.



Referring to this, the thematic framework of the bachelor thesis presented in this paper was chosen. The choice of the final topic of the thesis emerged in the prospect of a project dealing with the development of an app for children. On the one hand, this gave the opportunity to investigate how children can be actively involved in the development process of this app without having to spend more time or other resources. On the other hand, the context of the app, energy saving, represented a socially valuable touch point since the provision of optimal information for efficient energy use is a requirement arising from current climate change. It is a social responsibility of the energy sector to facilitate access to information on energy saving for all age groups and especially for children. In order to adapt the information as optimally as possible to their target group and to give children a voice in the development process, the “KidSprint” method was developed.

In order to evaluate the success of the method, the prototype of a game that could be included in the app was developed in addition to a methodical evaluation. The aim of the research was not to design a mature digital product, but rather to demonstrate that analogue contributions from children can be incorporated into digital products. The prototype is therefore not code-based, but merely a combination of individual screenshots, which nevertheless indicate the success of the KidSprint.

### **Methodological approach and experimental process**

The question of how to reduce the additional consumption of time resources and how to make the inclusion of children in the development process of digital products more attractive was investigated extensively at the beginning of the research. The investigation resulted in two concepts on the basis of which the KidSprint method was designed. In addition to a presentation of the “Mixing Ideas” method (Guha et al. 2004), which deals with the possibility of brainstorming with children and combining the resulting ideas, the “Design Sprint”, an approach from the field of agile work methodology, was also used. Since the implementation framework of a Design Sprint is not standardized and can vary greatly, the guidelines of Knapp, Zeratsky, Kowitz (2016) were used for the benefit of better clarity. In their publication “Sprint”, Knapp, Zeratsky, Kowitz (2016) explain the structural guidelines as they are known in Google companies (cf. Knapp, Zeratsky, Kowitz 2016). As a result, the “Design Sprint Kit” (see Google 2018), an online resource made available by Google, was also used, which deepens the information in the book and also offers materials for further planning. While the Design Sprint thus determines the structure of the implementation planning on which the KidSprint is based, individual methods within the concept were adapted and expanded through findings



from "Mixing Ideas". The entire idea production of the participants took place on analogue materials, so that the children's ideas can be visualized in drawings. On the one hand, this has the advantage that children do not have to learn a new technique to participate in the KidSprint. On the other hand, painting is a valuable method of exploring children's mental models (cf. Barraza 1999, 49-50; Luquet 1991, 47) and combining their ideas (cf. Guha et al. 2004, 41).

For the first implementation, a group of children between 7 and 11 years of age was chosen, because according to developmental psychological findings and experiences of other research, they are most suitable for collaborative brainstorming processes. In addition, a group size of 5 to a maximum of 6 children was determined. A moderator was needed to guide them through the development process. However, the moderator was largely passive and refrained from suggestive contributions, so that the ideas of the children were not influenced by the mental model of an adult. In addition, two recorders were chosen to record the children's contributions and interpersonal interactions during the implementation of the method so that the moderator could concentrate exclusively on the children and still none of the information were lost for a subsequent evaluation.

Based on all previous considerations, the basic structure of the KidSprint was established. On the main level, the method is divided into 3 phases: Preparation, Implementation and Development. The first phase, Preparation, focuses on creating a basis of trust between the participants and the moderator. In addition, the coming together is used to test the given materials and discuss contents. In this way, a thematic basis will be established for the subsequent implementation. For this step it is not mandatory to follow a fixed schedule. However, initial findings have shown that a rough guideline creates an important structure for the children.

The Implementation represents the main phase and thus also the core of the method. It should be organized with a time delay (min. 1 day) in order to give the participants a chance to internalize the previously learned facts, and not to be overwhelmed by all of the information. Based on the specifications of Knapp, Zeratsky, Kowitz (2016) the main phase is divided into four further phases, which in turn contain different methods that pave the way from a single initial idea of a brainstorming process to a creative overall construct at the end of the Implementation. The individual sections build on each other, so that the ideas developed in their framework can also be linked and combined by the children, which characterizes the collaborative character of the final idea. Despite the rigorous planning of the Implementation, the modular structure offers scope for individual configurations in order to adapt them to the given target group. This offers not only advantages in the event of spontaneous changes during the implementation, but also the possibility of incorporating individual ideas during the planning stage or allowing reference to other methods such as those presented in the Google Design Sprint Kit (see Google 2018).



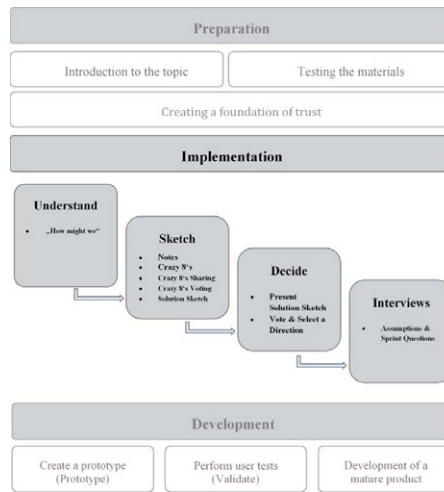


Figure SEQ Figure \\* ARABIC 1 - Structure and Phases of the KidSprint

While the Preparation has little regard to the structural specifications of a design sprint, the Development includes both prototype and validate. In this way all five elementary phases according to Knapp, Zeratsky and Kowitz (2016) (cf. *ibid.*) have been included in the planning. The Development aims to design a first construct for a mature digital product (prototype) from the results of the Implementation and subsequently conduct a user test to verify the concept (validate). These phases can be iterated numerous times until the prototype meets the requirements of the users and the necessary maturity is available to develop a final product.

## Preparation (Day I)

In the beginning the moderator and the recorders met to discuss their respective tasks and make initial assumptions about the expected course of the day, which were later used as a basis for the methodological evaluation. After the participants arrived, the recorders stayed completely in the background so that they would not disturb the event. After an introduction, in which a game was played together with the moderator (cf. Google 2018a), the topic was introduced. For an introduction, the term energy and its meaning for the children was discussed. After a common understanding of the concept was reached, the moderator started to draw attention to the origin of energy. Subsequently, the consequences of high energy use in the context of climate change were discussed. The understanding of the children was ensured by asking frequent questions and repeating important key points that have been mentioned. Discussions initiated by the children also revealed that they



had been able to understand the topic. In order to test one of the main concepts of the KidSprint, a first brainstorming session was initiated in which the children were asked to consider how energy could best be saved. After the presentation of their ideas, the moderator proceeded to describe the course of the next day in order to prepare the children as best as possible for the Implementation. In a final session, the children were asked to test the materials, including paper, colored and felt-tip pens, scissors and glue, by visualizing previously discussed content. The phase in which the children were able to paint helped to counteract their waning attention so that at the end of the preparation day the pictures could be discussed in the plenum before the meeting ended.

### **Implementation (Day II)**

A previously documented guideline was used as a strict schedule for the Implementation. With the help of initial findings from the Preparation, the structure was subsequently improved to ensure a problem-free process. A total working time of three hours was scheduled .

### **Kick-off**

The Kick-off started out with an opening game and the explanation of the rules of the day. The game aimed at the co-development of a story which on the one hand appeals to the creativity of the children and on the other hand strengthens their group feeling, so that the game offers an optimal introduction to the KidSprint. In addition, the role distribution between moderator and participants was discussed. Here it was emphasized that the moderator in his leading role can interrupt or terminate the process if the situation requires it, but that the responsibility for the entire content produced and the generation of ideas lies with the participants, so that they act in the position of experts (or design partners (Druin 2002)).

### **Understand**

The aim was to gain a general understanding of the problem that was going to be solved with the help of short content contributions and questions and to promote initial approaches to solving the problem (Knapp, Zeratsky, Kowitz 2016, 51-91): Through iterative drawing and brainstorming processes and the combination of different ideas, the participants should create a picture showing how much energy electrical devices consume compared to others.



The task did not seem to be sufficiently understood by the children, which is why, after several attempts to give them an understanding of the task, the question was changed to a less complex one so that the topic of energy saving was only addressed on a general basis.

Based on the method “How Might We” (HMW) (cf. Knapp, Zeratsky, Kowitz 2016, 73-75), a brainstorming round followed in which the participants were asked how and with the help of which materials they would design their images to visualize how to save energy. It could be observed that many participants found it difficult to generate ad-hoc ideas.

### Sketch

After a first break the group started into the most important phase of the KidSprint - Sketch. During this phase any drawings were created. The children’s ideas build on each other by following a hierarchical structure of individual methods so that their pictures reach a final form when creating the Solution Sketches (cf. *ibid.*, 109).

For a first collection of ideas, the children were asked to capture initial thoughts in pictures and present them to the plenum (Notes). After that, Crazy 8’s was started, a fast and effective method to rethink, modify or elaborate an initial idea within a limited period of time (cf. *ibid.*, 111-112). For the implementation each participant received a paper, which was divided into four equal sections. Each of these sections represents a modified idea that had to be created in just two minutes. The actual times of Knapp, Zeratsky and Kowitz ((cf. *ibid.*, 11) were once again adapted to the abilities of the children. At the end of the eight minutes, the drawings were again presented to the group (Crazy 8’s Sharing) and evaluated afterwards (Crazy 8’s Voting). The aim was to select the concepts that best reflect the children’s ideas of how to save energy.

After a prolonged break to prepare the children for a long period of concentration (30 minutes), the final solutions, the Solution Sketches, were produced. The Solution Sketches represented the final and therefore most important step of the creative phase of the KidSprint, in which an integrative overall concept was developed from the ideas of the previous sections, to answer the given task. In order to consider the KidSprint a success, it was important to recognize that the ideas of the other participants were not adopted unchanged, but rather contributed as inspiration to the creation of an individual idea based on the basic understanding of the group. In order to create a unified framework that allows a direct comparison of the solutions, each child was given a paper in the shape of a house. It was their



job to equip the house so that they would want to live in it. At the same time, care should be taken to ensure that the equipment was as energy-efficient as possible.

## Decide

After Knapp, Zeratsky and Kowitz (2016), Decide is used to express criticism on the previously created solution sketches and to choose a concept that is to be converted into a prototype (cf. *ibid.*, 128). Since the children are not expected to express criticism on the pictures of other participants in plenary (cf. Read et al. 2002, 54), these are merely presented and an election is initially held without discussion of the decision-making process.

## Interviews

Finally, individual interviews were conducted with each participant to better understand their ideas and to uncover conceptual thoughts about their visualizations.

## Content Evaluation

In order not to falsify the ideas of the children, which in the sense of the method are to be based exclusively on their mental models, with influences of an adult perception, an objective appraisal of the drawings was conducted. It resulted in a classification of the most frequently displayed objects, in order to create a ranking according to relevance and therefore to focus the prototype on essential factors.

Table 1 - Objects presented in Sketch, including their frequency including multiple representations.

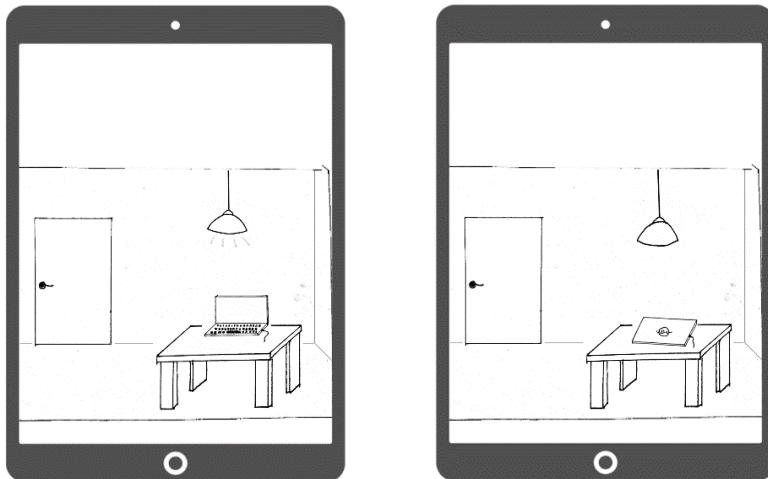
Rang	Object	Solution Sketch	Crazy 8's	Total
1	Lamp	4	6	10
2	TV	4	3	7
3	Sanitary equipment	8	-	8
4	Computer/Laptop	3	3	6
5	People	4	-	4
6	Staircase	4	-	4
7	Refrigerator	2	2	4
8	Door	3	-	3
9	Seating furniture	2	1	3
10	Car	-	3	3



## Development

The prototype, which was produced as a result of the development phase, represents the idea for an exploratory educational game in which players have to search individual rooms in order to locate and eliminate energy-consuming sources. The development of a “low-fidelity” prototype appeared to be a suitable solution with regard to the scope of development and content of the KidSprint. In this way, elements of the children’s drawings could be incorporated into the model of the learning game almost as they were originally drawn. Although the prototype lacks aesthetic and interactive maturity, it could be made clear that the children’s drawings can be embedded in digital products. In this way a first success of the method could be recorded and the user centrality of the prototype could be clarified. Figure 2 -

*Different states of room 2*



## Methodological evaluation

The methodological evaluation provides insights into the successes and failures of the first application of the KidSprint. It results in a catalogue of suggestions for further implementation.

Apart from intraindividual differences, it can be positively noted that the target group had a level of cognitive development that was beneficial for the implementation of the method. In addition, the time planning showed enough structure and at the same time enough flexibility for spontaneous configuration to ensure successful implementation. In addition, it should be noted that the KidSprint allowed children to combine their initial ideas and develop them through the integration of other ideas, a process Guha et al. (2004) already demonstrated in their studies.





*Figure 3 - Development of drawings*

Alongside many positive findings, structures in need of improvement also emerged. The following suggestions for improvement have been drawn up for these, which should be taken into account in further application of the method:

1. Recruit several representatives of one age in order to be able to draw conclusions about their stage of development.
2. Segment participants into development or knowledge categories to avoid decreasing attention during repetitions
3. Offer KidSprint as part of a school event
4. Involve teachers to ensure optimal preparation and age-appropriate communication of any information.

## Conclusion

Despite the strong focus on the objectivity of the evaluation, it must always be remembered when considering the results that this can never be sufficiently guaranteed in the work with children. That's because even observations written down during the day of execution in the form of protocols are influenced by a form of perspective-guided interpretation. (vgl. Heinzl, Kränzl-Nagl, Mierendorff 2012, 19). Still, based on the evaluation carried out, it could be shown that the KidSprint offers a methodical framework that can be used to make the development of digital products for children more user-friendly and intuitive.

In approaching the problem, the time children need to face a task and work on it was underestimated. However, it was still possible to achieve results within the methodological framework that were suitable for working with them and incorporating them into a digital product. Last but not least, this success can be attributed to the modular and flexible design of the KidSprint, which allows spontane-



ous intervention in the planned process. However, it was found that such a drastic reduction in the duration of the project had a negative impact on the quality of the results. However, this could be counteracted with the help of the suggestions for improvement that have been made. Despite all this, the designed structure is a success and offers many opportunities to actively involve children and gain insight into their mental models, so that products can be better adapted to them without being distorted by the ideas of an adult. It remains to be seen whether the acquired knowledge will be confirmed if the method is repeated under more optimal conditions regarding the group of participants and the thematic presentation. However, it should be noted that this work has created a framework on which can be built on.

## References

- Barraza, L. (1999). Children's Drawings about the Environment. *Environmental Education Research*. 5(1), 49-66.
- Druin, A. (2002). The Role of Children in the Design of New Technology. *Behaviour & Information Technology* 21(1), 1-25.
- Druin, A. (1999). Cooperative Inquiry: Developing New Technologies for Children with Children. CHI '99 Proceedings of the SIGCHI conference on Human Factors in Computing Systems. Pennsylvania: ACM Press, 592-599.
- Google (2018). Design Sprint Kit. Retrieved from <https://designsprintkit.withgoogle.com/>
- Google (2018a). Ice Breaker: That takes me to... Retrieved from [https://storage.googleapis.com/designsprintkit/media/ice\\_breakers/that\\_takes\\_me\\_to.pdf](https://storage.googleapis.com/designsprintkit/media/ice_breakers/that_takes_me_to.pdf)
- Guha, M.L., Druin, A., Chipman, G., Fails, J.A., Simms, S., Farber, A. (2004). Mixing Ideas: A new Technique for working with Young Children as Design Partners. *Proceedings of Interaction Design and Children (IDC'2004)*, 35-42.
- Heinzel, F., Kränzl-Nagl, R., Mierendorff, J. (2012). Sozialwissenschaftliche Kindheitsforschung: Annäherung an einen komplexen Forschungsbereich. *Theo Web. Zeitschrift für Religionpädagogik* 11(1), 9-37.
- Knapp, J., Zeratsky, J., Kowitz, B. (2016). *Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days*. New York: Simon & Schuster.
- Luquet, G. (1927/1991). *Children's Drawings ('Les Dessin enfantin')*. 5th translated edit. London, New York: Free Association Books.
- Read, J., Gregory, P., MacFarlane, S., McManus, B., Gray, P., Patel, R. (2002). An Investigation of Participatory Design with Children: Informant, Balanced and Facilitated Design. *Proceedings of Interaction Design and Children International Workshop*, 53-64.



## EMOTIONAL DESIGN IN MOBILE FITNESS APPLICATIONS

Nikolina Duvnjak

Bachelor, Josip Juraj Strossmayer University of Osijek, Croatia  
duvnjak.nikolina@gmail.com

Josipa Bašić

Dr. sc., Universtiy of Zadar, Croatia  
jbasic1@unizd.hr

Franjo Pehar

Doc. dr. sc., University of Zadar, Croatia  
fpehar@unizd.hr

### Abstract

*In recent years, healthy and active lifestyle has become very popular among individuals of different demographics around the globe (Vaquero & Morales Lopez, 2016). Consequently, people use various information sources and tools that help them reach and maintain their health goals, with mobile fitness apps being one of them. Today, mobile apps are deeply embedded in various daily activities, from finding accommodation to losing weight (Yoganathan & Sangaralingam, 2015). Between 2008 and 2017, over 180 billion mobile appss have been downloaded from various Apps stores and, looking at the trend, this number is expected to continue to rise (Statista. Retrieved from: <http://www.statista.com>). In order for mobile apps to attract and retain users, it is essential that they meet a certain user need, are easy to use and build a connection with the user through emotions (Van Gorp & Adams, 2012). Emotional design is a design approach that results with products that elicit emotions in order to create a positive user experience (Van Gorp & Adams, 2012). This paper presents the elements of emotional design available in four popular mobile apps for fitness, including Nike Training Club- Workouts & Fitness Plans, Gym Workout, Fitness & Bodybuilding, and JEFIT. The analysis of mobile apps was conducted using an instrument developed based on the Norman's conceptual model of emotional design, which includes three levels visceral, behavioral and reflective (Norman, 2013). In addition to the most common elements of emotional design in mobile fitness apps, the paper describes the problems identified within each element and provides improvement*



*recommendations based on the literature on emotional design, usability and human-computer interaction models and theories. The paper also provides direction on how to design mobile apps for fitness that attract and engage users, are easy to use and support users in achieving their fitness goals through emotional appeal.*

**Keywords:** *Emotional design, mobile applications, fitness*

## Background

In the last decade technology has developed progressively and is now commonly used to improve and make people's lives easier. The number of mobile apps is growing and they are increasingly used every day. Between 2008 and 2017 over 180 billion mobile apps were downloaded from the world's largest app stores (Statista. Retrieved from: <http://www.statista.com>). Apart from the increased mobile app use, healthy lifestyle has also become popular among general population. Development of technology and fast and easy access to a large number of information, the struggle with overweight and more active role of people in healthy lifestyle encourages individuals to use fitness apps (Yoganathan & Sangaralingen, 2015). Design is what encourages people to use a particular app, thus there is an increasing trend among app designers to create apps that will affect the user's emotions based on experience designed in accordance with emotional design principle (Van Gorp & Adams, 2012).

## Emotions

To understand how to create a relationship between the product and its users we have to understand the interaction between the two on emotional level as well as user psychology during that interaction (Van Gorp & Adams, 2012). Products, including fitness apps are designed to affect user emotions. For the purpose of this paper, it is important to define the notion of emotions, which are often described as a series of different mental and physical states in the literature (Van Gorp & Adams, 2012). Emotions also can change the way users think and behave (Norman, 2004). In this context, there are a few important theories to mention, including Robert Plutchik's Wheel of Emotion, Yerkes-Dodson Law, Flow Theory from Mihaly Csikszentmihalyi and Eyal's Hook model. These theories help to understand the variety of emotions and describe ways how emotional changes, for example stress, affect person's performance when completing a specific task (Van Gorp & Adams, 2012). Wheel of Emotion is often used



by designers to help mix different colors with different levels of emotions that arise as a consequence of using the product (Interaction design. Retrieved from: <https://www.interaction-design.org>). In the context of design, Yerker- Dodson Law is used to understand how people try to bring a higher level of stimulation to the challenge, in task-oriented activities (Van Gorp & Adams, 2012). The Flow Theory helps product team build a product that that creates a state of flow due to its information architecture, interaction design and visual design. For example, clear navigation can help users achieve the state of flow (Van Gorp & Adams, 2012).

## Emotional design

Emotional design has many different definitions. For example, Liz Sanders, expert in design, says that products need to be useful, usable and desirable (Van Gorp & Adams, 2012). Users want the product to be useful and easy to use, and look good; otherwise they will not use it (Van Gorp & Adams, 2012). On the other side, Don Norman, the most distinguished scientist in the field of emotional design, says that the products should meet the needs of the user, while at the same time they must be understandable and usable (Norman, 2013). Based on this, a conclusion can be made that ease of use, aesthetics and product utility are the most important characteristics for the user. Emotional design seeks to create products that generate the proper emotions with the ultimate goal of creating a positive user experience (Interaction design. Retrieved from: <https://www.interaction-design.org>).

## User- centered design

User- centered design is based on interaction with the user, and most on emotional interaction. Don Norman highlighted the importance of user- centered design when creating emotionally appealing products. User-centered design is a process that ensures that design meets the needs and abilities of the people it is intended for (Norman, 2013). To achieve the best user experience when using the product, designers are used with a variety of psychology and HCI models, such as the Hook model and Don Norman's emotional design model. According to user-centered design it is important to user research to better understand end user of the product.



## Don Norman's model

Norman's model focuses on the interaction between people and technology and he explains that the purpose of the product is to create an emotion and create experience. Norman identified three levels of emotional design: visceral, behavioral and reflective level (Norman, 2013). Visceral level is described through appearance, and the first impression and feel (Norman, 2004). At this level Norman points out that aesthetics are important, and that it happens unconsciously. (Norman, 2013). Behavioral level is described through functionality, performance, usability and simplicity. Norman behavioral level associates with expectations, including usability and ease of use (Norman, 2004). The last level, reflective, denotes self-perception, self-image, personal satisfaction, and memories; this level is connected with human memory (Norman, 2004). In the context of emotional design it is what the user remembers after using the system (Interaction design. Retrieved from: <https://www.interaction-design.org>).

## Fitness application design

In order for emotional design to be successful, designers must identify which emotional elements are the most important in the context of the product they are designing (Van Gorp & Adams, 2012). Success in fitness apps can be explained as "heavily used, greatly appreciated and highly recommended fitness apps that meet the fitness needs of the user" (Yoganathan & Sangaralingam, 2015). Based on the heuristic evaluation of FitStar Personal Trainer, Nike + Training Club, Runtastic Six Pack Abs, Fitnet, Argus, MapMyFitness, authors Vaquero and Morales Lopez (2016) have determined that fitness apps should have enough information and tips to help the user know what is going on; for example, to know what exercise he will do next. Furthermore, terminology used has to be familiar, and use of motivational factors, personal; trainers and videos is highly recommended so that users exactly know how to do the exercise (Vaquero & Morales Lopez, 2016). Based on research, the authors found that apps should also include a calendar feature that would allow the user to distribute their exercises, as well as weight, sleep and diet section, and the



ability to set images of progress (Vaquero & Morales Lopez, 2016). This would allow the user to complete several tasks towards the one overreaching goal within the same app, instead of tracking progress in different environments. The authors also add that it is a very important that apps provide good user experience and user guidance not only to start using the app but to continue to use it (Vaquero & Morales Lopez, 2016).

## Research methodology

The purpose of this research is to shed light on the importance of emotional design when designing mobile apps and identify the key design considerations when designing mobile fitness apps. The aim of the research is to find out what elements of emotional design are present in the commonly used fitness apps. The study was conducted on a sample of four fitness apps, including Nike Training Club - Workouts & Fitness Plans, Gym Workout, Fitness & Bodybuilding and JEFIT. These four apps were selected as the most commonly used on the global market (JEFIT and Fitness & Bodybuilding have over five million downloads, Nike Training Club more than 10 million downloads, while Gym Workout has about one million downloads).

The research question that led this study was “what are the elements of emotional design in selected fitness apps”. The instrument used in the research was built based on the Norman conceptual model of emotional design, which is flexible and allows for further elaboration and adaptation in order to fit the context. The Norman model includes visceral, behavioral and reflective levels, which are further elaborated for the purpose of this research based on literature. In the context of this study, the instrument includes only visceral and behavioral levels. Reflective level was not used in evaluation for two reasons. First, this level is subjective and there was only one evaluator conducting the analysis, and, second, a longer period of time is necessary to form the experience, which was not feasible for the purpose of this research.

The instrument contains of visceral and behavior level. Here is the description of elements used on each level:

### Visceral level

- 1) Appearance implies aesthetic and visual design and in the context of user experience influences the first impression of the user.



2) Feel implies the emotion that design challenges to users when they first use the app. Good design in the user can provoke a sense of happiness and excitement for further use of the app.

## Behavioral level

1) Performance tells how well the app is performing the task and whether the user is able to successfully complete the task, which is related to usability.

2) Usability suggests how successful, efficient, and enjoyable the users can do a particular task using the app. This implies navigation inside the app, consistency of the design of the interface and similar.

3) Simplicity means how easy or complicated it is to get exactly the information you want in the system, for example how easy a user is to gain access to a specific body part, such as back exercises.

4) Functions are the functions that the system allows, and specific sub-categories are selected to check if they are implemented in apps. Sub-categories include calendar, chat, meal tracker, weight tracker, sleep tracker, and progress visualization. Subcategories were selected based on the results of research Vaquero and Morales Lopez.

## Evaluation process

One evaluator evaluated each app using the instrument and determined whether each element of emotional design from the instrument was present in the application. For each element, the evaluator assigned a score using a scale from 0 to 3. It is important to emphasize that the ratings are of subjective nature, since user experience is also subjective.

- 0) element is not present in the app
- 1) element is present in the app but is not satisfactory, it needs to be changed
- 2) element is present in the app and acceptable



- 3) element is present in the app, is well implemented

## Results

The Table 1. includes the data collected during the evaluation process, specifically describing what was observed within each of the apps in the sample on visceral and behavioral level.

Table 1. Research instrument containing data

		App1 (Nike Training Club- Workouts & Fitness Plans)	App2 (Gym Workout)	App3 (Fitness& Bodybuilding)	App4 (JEFIT)
VIS- CERAL LEVEL					
Appea- rance/ Look		Score: 3 Attractive look, the content schedule is clear, pi- ctures that shows diffe- rent people in exercise which is motivational.	Score: 1 Too much unstru- ctured content, advertisement on interface.	Score: 1 An obscure look, unattractive colors, the lack of content.	Score: 2 A lot of colors, which is good, too much con- tent on the interface, adve- ritsements, lack of pictures.
Feel		Score: 3 The feeling is associated with a gre- at design, primarily attractive, because the user itself wants to be found in such an en- vironment. The content schedule is such that users can feel very motivated to start using the app.	Score: 1 The feeling is bad, since it is related to appearance. The user feels that his app will not be useful because we get the impression that the app is not expertly made.	Score: 1 There is no mo- tivating content in the app that would encourage user to use it, such as images, information, and content. The user does not have the desire to further explore the app.	Score: 2 If there were images to mo- tivate the user and to reduce the amount of content in one place, the feeling would be much better for the user to have the desire to work and to use the app.



BIHE- VIORAL LEVEL					
Funciona- lity	Calen- dar	Score: 0 No function.	Score: 0 No function.	Score: 0 No function.	Score: 3 The user has a calendar option, so he can plan his trainings.
	Chat	Score: 0 No function.	Score: No function.	Score: 1 Users have a 'Tell a friend' option that connects and sends a message via an e-mail address and sends a link to the app, but may also contain a text message.	Score: 3 Users have the ability to chat with friends that need to be added to the list of personal friends who also use the app.
	Food tracker	Score: 0 No function	Score: 0 No function	Score: 0 No function	Score: 0 No function
	We- ight tracker	Score: 0 No function	Score: 0 No function	Score: 0 No function	Score: 3 Users have the ability to track the weight-change process over time
	Sleep tracker	Score: 0 No function	Score: No function	Score: 0 No function	Score: 0 No function
	Pro- gress visua- lisati- on	Score: 0 No function	Score: 1 Users can only review what they did on previous training sessions	Score: 0 No function	Score: 3 Users have the ability to track personal progress by seeing time, weight, intensity, images from before, and visible results from now on.
Perfor- mance		Score: 3 Exercises are instantly offered to user with instructions which eases the process to user. System tells the user how to properly performe the excrise.	Score: 2 There is a visual vi- sualization of the exercises available to the user, which helps him to do the exercises and the whole training properly.	Score: 2 In addition to the visual, the user has the exact textual descripti- on of each exerci- se available.	Score: 2 Visualization of exercises is also available to the user. The main interface con- tains personal information on trainings and measures so that it is easier to follow the whole process.



Usability		Score: 2 Menu icon, to make it easier to move the system, consistency of interface. Good navigation in the drop-down menu gives you visibility. Different levels of trainings (beginner-medium-advanced).	Score: 1 Unstructured interface makes learning difficult, useful just for one type of training-in gym, the present search engine makes it easier to use. Advertising is frustrating to the user	Score: 2 Visible menu icon, simply in-interface make sit easier to learn. Advertising is frustrating to the user	Score: 1 Users have a constantly available menu icon that helps faster and easier to navigate the system, and contributes to the consistency of the interface. A large amount of content and information makes it difficult for the user to learn because is confusing to him.
Simplicity		Score: 3 The user has offered certain exercises on the site for his previous selections, and it is easier for the user to choose what he wants and to do. Additionally, the user is also available to search exercise by the muscle group and / or the type of training (strength, mobility, yoga) and is so easy to find the desired.	Score: 1 It is difficult for users to get certain exercises, even though they are in the categories on the main interface because the interface is unstructured. A search engine is available that contributes to the simplicity and speed of finding desired information, if the user knows the exact exercise he / she wants to find.	Score: 3 In the initial site there are exercises in the categories in the muscle groups, and it is very easy to choose. The ever-present icon menu allows you to easily navigate the entire system at any time.	Score: 1 The user is offered a lot of content and information that confuses him a bit, and he is so harder and more complicated to do the task or get information.



## Discussion

The results of the research show that the following elements of emotional design are present in the apps:

The visceral level contains of two elements, a look and feel, which are often intertwined. Specifically, the appearance of the app affects how user feels while interacting with the app. The results show that some apps have a good look with motivational images, a good combination of color and the organization of elements on the interface. The excitement that causes the appearance affects the motivation of the user, like in the case of Nike Training Club- Workouts and Fitness Plans. When user is more stimulated, excited, and in this case driven by appearance, she is more motivated to take action and approach to what motivates and interests her (Van Gorp & Adams, 2012). The results show that appearance and feel are the most important elements of user experience that appeal to users in a variety of ways, including content, site organization, images, and overall product aesthetics. Depending on how the product looks, it can attract or reject the user. Research shows that if a user chooses between two systems that have the same capabilities, she will choose the one that looks better (Van Gorp & Adams, 2012).

Colors used in some apps like Gym Workout and JEFIT, and too much content available on the interface also appeared as a layout problem in some apps. This problem is called clutter and it directly affects usability (Nngroup. Retrieved from: <https://www.nngroup.com>). If the website or app has too much content, the user has to invest more mental effort and more time to understand the work of the website or app (Mayer, 2003). This problem can be solved by simplifying the interface and including only the most important information on the interface, especially on the first level of hierarchy (Nielsen & Loranger, 2006). Due to the users' limited capacity of the text processing channel it is necessary to reduce the cognitive burden on users. Besides, removing irrelevant content, this can be accomplished though including characters such as images or colors to highlight the organization's most important content (Mayer, 2003). According to Miller's Law, an average person can only remember seven, plus or minus two, items in the working memory. For this reason, disassembling into parts, such as groups of 5 to 9 items, is an effective method of organization and presentation of a content group (Laws of UX. Retrieved from: <https://lawsOfux.com>).

Behavioral level includes the functionality element, which is further divided into six categories, including calendar, chat, food tracker, weight tracker, sleep tracker and progress visualization. The results show that most of these elements



are not commonly used in all apps from the sample, and are available in only one or two apps out of four apps from the sample. Calendar was available only on one app, JEFIT, and allows users to plan training on individual day basis. Chat is also supported only in JEFIT app, while Fitness & Bodybuilding gives its users the ability to send messages, with the link of the app that leads to the download address. Chat gives users the ability to share experiences as well as share tips with others who use the app. This social support creates the sense of community which can be an additional motivation for the user on their fitness journey (Oinas-Kokkonen & Harjumaa, 2009). Weight tracker feature is available in only one app, JEFIT. It provides the user with the ability to track weight changes over time, so the user has insight into the trend and control over weight. Progress visualization, as the last functionality element, is only available in the JEFIT app. Users of JEFIT have a full overview of their progress, while users of Gym Workout have an overview of their previous training only. This functionality allows the user to monitor his training process to see his progress; aside from the training he has the ability to set up photos to keep track of body changes. User experience is therefore better, since it is easier to track users' goals throughout the process, and motivation increases with visible progress (Vaquero & Morales Lopez, 2016).

Except functionality, there are elements of performance, usability and simplicity at the behavioral level. The results show that all apps from the sample allow the user to perform the task of finding and rendering exercises through offered, pre-prepared training, visual views, textual descriptions. Nike Training Club- Workouts and Fitness Plans app provides users with quick and easy access to exercise plans on the landing page and guides them through correct execution of each exercise. It also gives an audio sign when to the next exercise and informs the user how much remaining time they have. This allows the user not only to perform the exercise correctly but also to focus on the exercise fully without thinking about when to transition to the next exercise. Gym Workout also provides video instructions, which are divided into short segments to allow user to focus on an area they are interested in at the time. However, the segments are not logically organized and there is no search functionality. In addition to exercise video clips, Fitness & Bodybuilding app, also provides a brief textual instructions on how to do the exercise correctly. However, not all the elements meet the requirement of usability and simplicity.

In the context of usability and simplicity, the evaluator looked into app navigation, consistency, access to information and learnability. These two elements are closely related to, especially in regards to information access and learnability.



Three apps (Nike Training Club- Workouts, Gym Workouts, Fitness & Bodybuilding) have consistent placement of the menu icon always in the same place which supports seamless navigation experience and higher learnability of the system. Gym Workout app does not have any indication where the user is in the system, such as breadcrumb feature (allows the user to always know where they are in the system). This can confuse the user and negatively impact the overall navigation experience.

A common usability problem identified across the apps in the sample was too much content available on the landing page. Cluttered interface negatively impacts the navigation, information location and app learnability. Fitness & Body Building app was an exception with the content clearly organized with logical grouping of exercises and image label clearly communicating the type of exercise available in the category. However, there was an overpowering presence of ads which can be distract and annoy the customer and significantly impact the overall experience with the app. On the other hand, the Gym Workout app provides a search functionality to allow to for quick identification and location on the exercise they want based on a key word search. Nike Training Club-Workouts and Fitness app allows search by exercise type. Only one app (Nike Training Club-Workouts and Fitness app) provided different type and level of exercise, having something for all users regardless of their fitness level. It also suggests more exercises based on the previously completed ones, which serves as additional motivation and support towards the user goal. None of the apps from the sample include documentation, about us information, and FAQs.

## Conclusion

The purpose of this paper was to highlight the importance of emotional design and based on this knowledge, conduct a research to evaluate the presence of emotional design elements in four popular fitness apps. The results show that when designing fitness apps, designers should consider two levels, visceral and behavioral. On the visceral variety should prioritize the look and feel that give the user the first impression, and on the behavioral level they should consider elements of functionality, usability and simplicity that will make it easier for the user to use the app. The design that follows the suggestions in the paper contributes to better user experience and has the advantage of having all the required requirements in one app.

Research has shown that there is lack of usability and simplicity in fitness apps. Also some apps have elements like chat and calendar, which helps user to



achieve the goal. In order for the user to be satisfied with the system he uses, it is necessary to provide a good look and feel, a range of functionalities and elements that will help in the execution and usability of the system. When creating a product it's important to know the profile of the product users and what they want expect from it. Therefore, it is important to conduct user research with the product target user group to understand who the users are and what they expect from this type of apps as well as how it can support them on their fitness journey. Additionally, more research is needed to understand the third, reflective level, of Norman's model since it was out of scope for this study.

## Bibliography

Interaction design. Retrieved from:

<https://www.interaction-design.org/literature/article/the-reflective-level-of-emotional-design>

Laws of UX. Retrieved from:

<https://lawsofux.com/millers-law>

Mayer; Moreno. (2003). Nine ways to Reduce Cognitive Load in Multimedia Learning. Retrieved from:

[http://www.tandfonline.com.proxy.mul.missouri.edu/doi/abs/10.1207/S15326985EP3801\\_6](http://www.tandfonline.com.proxy.mul.missouri.edu/doi/abs/10.1207/S15326985EP3801_6)

Nielsen, Jakob; Loranger Hoa. (2006). Prioritizing web usability. Pearson Education

Norman, D. (2004). Emotional design: why we love (or hate) everyday things. New York: Basic Book. Retrieved from:

<https://motamem.org/upload/Emotional-Design-Why-We-Love-or-Hate-Everyday-Things-Donald-Norman.pdf>

Norman, D. (2013). The Design of Everyday Things: Revised and Expanded Edition. New York: Basic books.

Oinas-Kukkonen, H.; Harjumaa, M. (2009). Persuasive systems design: Key issues, process model, and system features. Retrieved from:

<https://aisel.aisnet.org/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=3424&context=cais>

Statista.com. Retrieved from:

<http://www.statista.com/statistics/263794/number-of-downloads-from-the-apple-app-store/>



- Van Gorp, T. & Adams, E. (2012). *Design for emotion*. San Francisco: Morgan Kaufmann.
- Vaquero, R. C. & Morales Lopez, R. (2016). Design and evaluation of a mobile fitness application to encourage people in physical activity. Tampere University of technology. Retrieved from:  
[https://dspace.cc.tut.fi/dpub/bitstream/handle/123456789/24279/Catalina-Vaquero\\_MoralesLopez.pdf?sequence=1&isAllowed=y](https://dspace.cc.tut.fi/dpub/bitstream/handle/123456789/24279/Catalina-Vaquero_MoralesLopez.pdf?sequence=1&isAllowed=y)
- Yoganathan, D. & Sangaralingam, K. (2015). *Designing Fitness Apps Using Persuasive Technology: A Text Mining Approach*. Retrieved from:  
<https://pdfs.semanticscholar.org/7e09/2cc4fc9eb55bd-143c4784b2a09596c37c27c.pdf>



## THE USE OF ONLINE DISCUSSION FORUMS BY PEOPLE WITH ALZHEIMER DISEASE AND THEIR CAREGIVERS

Sanda Erdelez

Professor, The Simmons School of Library and Information Science, USA  
sanda.erdelez@simmons.edu

Sanjica Faletar Tanacković

Associate Professor, Department of Information Sciences, Faculty of Humanities and Social Sciences, University of Osijek, Croatia  
sfaletar@ffos.hr

Kornelija Petr Balog

Professor, Department of Information Sciences, Faculty of Humanities and Social Sciences, University of Osijek, Croatia  
kpetr@ffos.hr

Ana Ružolčić

Bachelor Student, Department of Information Sciences, Faculty of Humanities and Social Sciences, University of Osijek, Croatia  
aruzolcic@ffos.hr

Tomislava Žilić

Bachelor Student, Department of Information Sciences, Faculty of Humanities and Social Sciences, University of Osijek, Croatia  
tzilic@ffos.hr

### Abstract

*This paper presents findings from the study which investigated information needs of patients with Alzheimer's Disease (AD) and their caregivers in Croatia. The study was conducted with the help of quantitative analysis and content analysis of statements on the Croatian Internet*



*forum (Forum.hr) posted by the patients with Alzheimer's Disease (AD) and their caregivers. Alzheimer's Disease (AD) is a progressive disease connected with the loss of memory and other cognitive abilities which interferes with one's behavior, interaction with environment and the overall quality of life. It is believed that approximately 50 million people all around world suffer from this incurable disease or some other type of dementia. Although each person experiences dementia in their own way, eventually they are unable to care for themselves and need help with all aspects of daily life. In the paper only a portion of obtained results is presented, specifically the quantitative findings on the frequency of the posts, their characteristics and the demographic characteristics of the people contributing the posts.*

**Keywords:** Alzheimer's disease (AD), patients, caregivers, information needs, Internet, online forum, Croatia

## Introduction

Alzheimer's Disease (AD), the most common cause of dementia, is a neurological disease with an unknown cause. The start of the disease is usually gradual and the person's decline is often slow. A person diagnosed with AD or other form of dementia exhibits symptoms of impaired memory and increasing difficulties related to emotion and other cognitive abilities such as speaking, thinking and making decisions. AD and other types of dementia have immense negative impact on persons' behavior, interaction with environment and ultimately the quality of life. AD is a progressive disease and currently available treatments cannot stop it but only temporarily slow down the symptoms. Although people experience dementia in their own way, eventually they are unable to care for themselves and need help with all aspects of daily life. AD affects all groups in society and it is not related to social class, gender, ethnic group or geographical location. Although AD is more common among elderly persons, younger persons can also be affected (World Health Organization, 2016).

According to the Alzheimer's Disease International (2015) someone in the world develops dementia every 3 seconds. The same source reported that there were an estimated 46.8 million people worldwide living with dementia in 2015. One in 10 Americans (10 %) age 65 and older has Alzheimer's dementia (Alzheimer's Association, 2018), and the latest numbers for Croatia indicate that there are around 80.000 persons diagnosed with AD (Mimica et al., 2015). However, as the size of the world population aged 65 and older increases, the number of persons with AD and other types of dementia is expected to grow. According to Alzheimer's Disease International (2015) this number will reach 131.5 million in 2050. Alzheimer's disease is currently ranked as the sixth leading cause of death



in the United States, but recent estimates indicate that the disorder may rank third, just behind heart disease and cancer, as a cause of death for older people (US Department of Health and Humans Services, 2016).

Patients with AD in late and end stages ultimately become fully dependent on their caregivers and require around-the-clock supervision and assistance with daily activities and personal care. This complex situation leads eventually to a number of larger issues, most importantly the question of human, legal and financial rights of AD patients and the legal status of their caregivers. These issue were investigated recently by Dološić (2016) who analysed relevant Croatian and international legislature and practice and provided recommendations on how to address the imposed challenges and improve the quality of life of people with AD and their caregivers.

The constant supervision of people diagnosed with AD usually becomes extremely stressful and burdensome, both physically and emotionally for the caregivers, who are most often the family members. For example, in US about 80% of the care of AD patients is provided in the community by family members (Office of Technology Assessment, 1987). Based on the statistics from *Alzheimer's Disease International (ADI)* and *Alzheimer Europe*, Dološić (2016) confirms that the situation is similar in Croatia as in and other countries. For example in Croatia there were 80.864 patients with dementia (1.89% of Croatia's population) in 2012 and at the same time 202.164 individuals, mainly family members, were taking care of them (Mimica, et. al, 2015).

The role of caregivers in caring for patients with AD and their information and support needs were addressed by a number of authors. Scholars most often focus on the information and service/support needs of caregivers because persons with AD (in particular those in late stages of disease) often can not themself reliably and consistently communicate their needs and preferences. For example, Haley (1997) acknowledged that caregivers represent a major and hidden part of US health care system, and that "unpaid care by family members represents a critically important but fragile part of long-term care in the United States." He emphasized that caregivers often experience negative mental and physical health effects related to caregiving stress. He also provided information on effective interventions for caregivers that can decrease depression and delay nursing home placement and demanded that physicians and other health care professionals address the concerns of AD family caregivers because they play a crucial role in the optimal care of these patients.



Wackerbarth and Johnson (2002) conducted a study whose purpose was to identify essential information and support needs of family caregivers for individuals with Alzheimer's disease or related dementias and to examine the relationship between caregiver characteristics and their needs. The study findings showed that caregivers' needs for information concerning health plan coverage, diagnosis, treatment, legal and financial issues were more important than general information about the disease. In this study, female caregivers also reported needs related to support as significantly more than male caregivers. They also emphasized that practitioners should realize that caregivers may have different information and support needs and these needs may change throughout the caregiving experience.

Kucmanski et al. (2016) identified gaps in Brazilian health policies and called for the need to develop and implement strategies for the empowerment and monitoring of family caregivers. This study analyzed the challenges faced by family members providing day to day care of patients with Alzheimer's disease in the city of Chapecó, Santa Catarina, Brazil. Their results showed that caregivers experience a range of situations such as the need to learn about the disease, dealing with guilt, and handling situations of pain, addiction and physical and psychological suffering. The study concluded that the importance of introducing and implementing tools and strategies that provide physical, emotional, psychological and financial support to family caregivers of patients with AD.

Edelman et al. (2006) conducted one of the rare studies aimed to identify the information and service needs of both persons with mild and moderate AD and their family caregivers. They also sought to assess differences and similarities in the needs and perspectives of AD patients and their caregivers. A checklist of interest in services and information included 22 topics and priorities in four domains: medical needs and interests, care needs and interests, coping needs and interests, and service needs and interests. Although more caregivers than persons with AD reported interest in each topic, 8 of the top 10 topics reported by each group of respondents were the same. For example, over 90% of all caregivers were somewhat or very interested in getting more information regarding stage and symptoms of AD, approved drug treatments, alternative medicine or treatments, and genetic aspects of AD, as well as topics related to day-to-day care of AD patients including coping with challenging, symptoms, meaningful activities, dealing with family and friends, and improving communication. Although fewer AD patients than caregivers expressed interest in each of the topic, the topics in which the largest proportion of caregivers expressed interest were remarkably similar to interests reported by AD patients. All of the topics



mentioned above for caregivers, except for dealing with family and friends, and genetic aspects of AD, were included in patients' top 10 areas of interests.

Research has increasingly shown that electronic resources, and in particular online discussion groups and internet forums, play a significant role in provision of support and advice to those looking for information related to health issues (Ruthven et al, 2018; Drentea and Moren-Cross, 2005). Although there are several websites providing information to AD patients and their caregivers in Croatia, there is a gap in interactive electronic resources such as online discussion groups. Currently, the only online discussion forum for this purpose is a general discussion forum Forum.hr.

The study presented in this paper aimed to contribute to the emerging information science interest in AD (Erdelez et al, 2015), especially the literature on information needs of AD patients and their caregivers through exploration how these needs are expressed via online discussion posts in Forum.hr. In this paper we present only a portion of obtained results, specifically the quantitative findings on the frequency of the posts, their characteristics and the characteristics of the people contributing the posts. The study was conducted to address the following research questions:

1. What is the frequency of the initial posts and answers to these posts on Forum.hr?
2. What are the demographic characteristics of the posters, in particular their gender and their relationship with the AD patients?

## Methodology

The data for this study came from Croatian largest online forum entitled Forum.hr. This is a general-type forum with discussions on various topics. We concentrated on the topic Alzheimer's disease (<http://www.forum.hr/showthread.php?t=143099>), which is available in the forum Health. The discussion dedicated to this topic was started in 2006 and is still active.

The dataset included all the posts over a span of 13 years (period between May 3rd, 2005 and November 19th, 2018). We analysed a total of 262 posts posted by 79 unique individuals.



## Results and discussion

According to our data, there were altogether 75 initial posts, defined as the posts that started a new discussion. This is an average of 5.8 posts per year. There was a total of 187 answers, defined as the posts that responded to the initial posts. This is an average of 14.3 answers per year. The initial post to answer ratio is 1:2.49. The total activity (initial posts and answers) in the the data set was 262 posts, with an average of 20.2 per year.

As shown in Table 1, the years 2007 (11 initial posts, 28 answers), 2014 (11 initial posts, 29 answers) and 2016 (12 initial posts, 32 answers) were the most active years when it came to posting. There were fewer initial posts compared to answers. In as many as 10 years (76.9%) there were fewer than ten posts per year. In five individual years (38.5%) there were fewer than ten answers per year, in additional five years (38.5%) there were 10-19 posts a year, and in three years (23.1%) the number of posts was higher than 20.

*Table 1.* Number of initial posts and answers per year

<b>Year</b>	<b>Initial posts</b>	<b>Answers</b>	<b>TOTAL</b>
2006	2	2	4
2007	11	28	39
2008	6	10	16
2009	4	19	23
2010	4	6	10
2011	2	9	11
2012	5	10	15
2013	5	15	20
2014	11	29	40
2015	5	17	22
2016	12	32	44
2017	2	4	6
2018	6	6	12
<b>TOTAL:</b>	<b>75</b>	<b>187</b>	<b>262</b>

Figure 1 below illustrates the ratio between the number of initial posts and the answers per year. It demonstrates that the number of answers is often more than twice as large as the number of initial posts. The figure also shows that there were three peaks regarding online forum activity (years 2007, 2014 and 2016). In 2017 there was a drastic drop (e.g., in relation to 2016 the activity was reduced by 86.4%) in the activity.



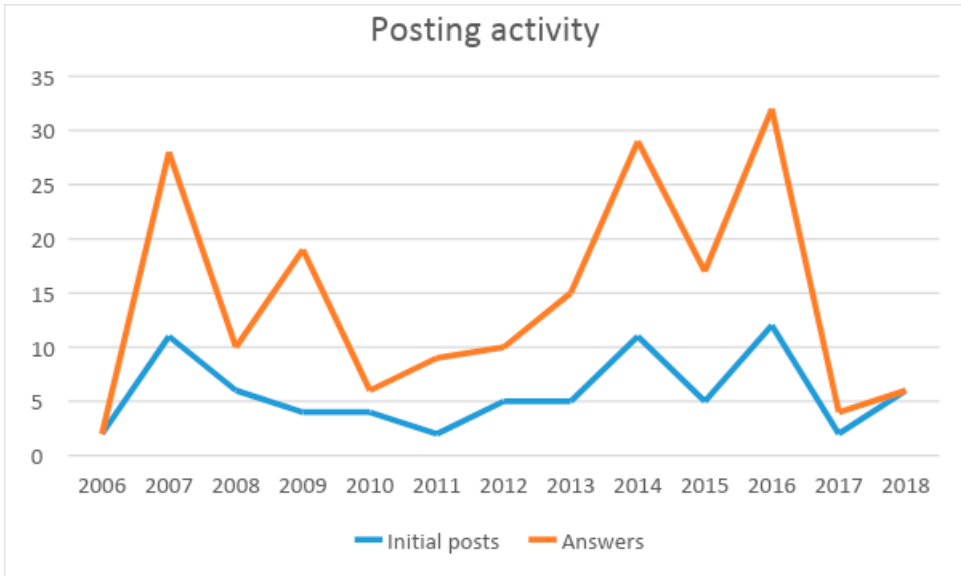


Figure 1. The ratio of initial posts and answers.

We also analysed the data for how often the initial posts received answers. Table 2 shows the years where initial posts prompted no answers and those where they prompted multiple answers. The ‘multiple answer’ is defined as an initial post receiving more than one answer on the forum. If the initial post received no answers on the forum, this may indicate that either the topic of the post was not interesting to the other forum posters or that they did not know the answer to the question posted. Our dataset had 37.3% unanswered initial posts. The years with the highest number of such posts were 2007 (6 posts), 2010 (4 posts), and 2018 (4 posts). On the other hand, 18.7% of initial posts received multiple answers. The years with the highest number of multiple answers were 2016 (6 multiple answers), 2014 (5 multiple answers) and 2007 (5 multiple answers).

Table 2. Initial posts without any answers and with multiple answers

Year	No answers	Multiple answers	TOTAL
2006	0	0	0
2007	6	5	11
2008	2	2	4
2009	2	3	5
2010	4	1	5
2011	0	1	1
2012	2	3	5
2013	0	3	3



2014	3	5	8
2015	1	4	5
2016	3	6	9
2017	1	1	2
2018	4	1	5
TOTAL:	28	35	63

The average length of an initial post was 187.7 words, with the shortest initial post of only 4, and the longest of 1088 words. The most frequent values were initial posts with either 9 or 14 words, whereas the central value among the initial posts was a post that had 94 words.

The average length of an answer was 125.9 words, with the shortest answer of only one word and the longest of 1273 words. The most frequent values were posts with either 30, 67 or 117 words, whereas the central value among the answers was a post that had 91 words.

Table 3 illustrates the relationship of posters to AD patients. The highest number of posts were posted by AD patients' daughters (23). They are followed by granddaughters (11) and sons (8). In the category 'Other' there are five female posters: a wife, two girlfriends whose boyfriends' parents are AD patients, a person who trains therapeutical dogs and a nurse working in a nursing home. Those posters discuss their relatives with AD who are their mothers (23), grandmothers (12), fathers (10), grandfathers (3), aunts (2), uncle (1), grand grandmother (1).

Interestingly, there was one young poster (female, in her twenties) who inquired about symptoms because she was afraid she might have developed early symptoms.

*Table 3. Posters and their relationship to AD patients*

<b>Posters</b>	<b>Frequency</b>	<b>Gender</b>
Daughter	23	F
Granddaughter	11	F
Son	8	M
Grandson	5	M
Other	5	F
Niece	4	F
Grand grandson	1	M
Undefined	22	F/M



Females were the most frequent posters (Figure 2) in our dataset, which indicates that they are the chief caregivers of AD patients in their families. The patients they care for are also predominantly female (38 females, 14 male).

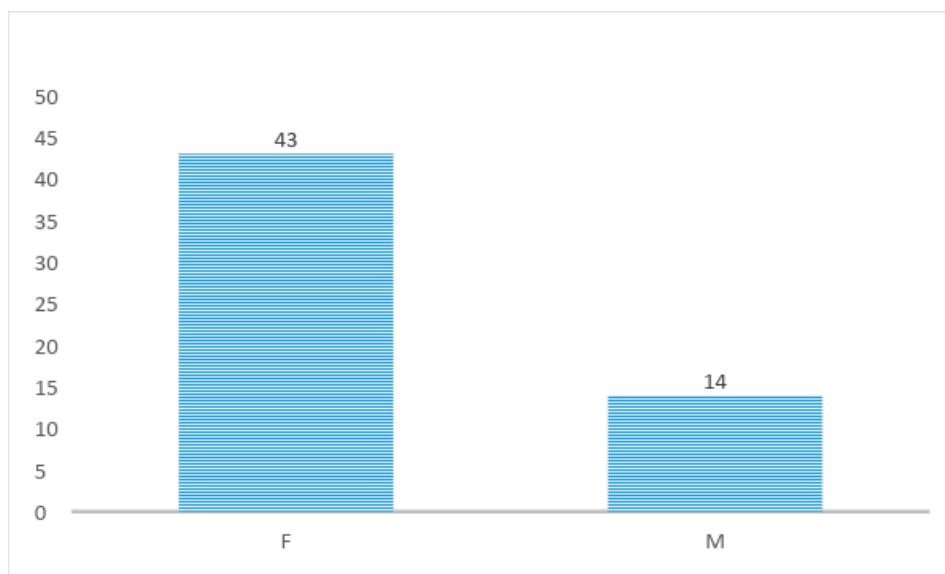


Figure 2. Gender distribution among posters

The highest number of initial posts were entered by two posters, each with 6 initial posts and both daughters whose mothers had AD. The other posters usually posted between 1-3 initial posts. The most frequent number of initial posts per a unique poster was one. The highest number of answers were posted by four participants (from 14 to 25 posts respectively). All answering posters were also daughters whose mothers were sick. Slightly more posters entered initial posts (57 out of 70 or 72.2%) than was the case with those supplying answering posts (48 posters out of 79 or 60.8%).

## Conclusion

The aim of the study reported in this paper was to explore the patterns of online forum posting activity related to Alzheimer disease on the largest Croatian online forum Forum.hr. The research has shown that online discussions and Internet forums provide a great degree of support and advice to those seeking information, support and social interaction with alike (e.g. Ruthven et al, 2018; Drentea and Moren-Cross, 2005). The data set included posts from 2006-2018.



During that time span the intensity of postings varied from year to year. There were several peak years but also years with very low frequency of posting. At this point there is no clear conclusion about the overall trend in posting frequency.

The number of initial posts (average 5.8) was more than two times lower than the number of answering posts (average 14.3), which indicates that initial posts were related to highly important topics for posters and triggered a lot of consequent posting activity. Our results show that close to 20% of initial posts resulted in multiple answers and were responsible for almost 80% of forum activity. We can conclude that our posters' behaviour is consistent with the Bradford law. Initial posts were, on average, slightly longer (187.7 words) than answers (125.9 words) but the central values (median) for both groups were very similar (94 words for initial posts and 91 words for answering posts). Also, our research showed that the posters are dominantly women – they are mostly daughters who are looking for support and answers in relation to care of their sick mothers.

Although the study reported here is an exploratory study, with its limitations, it is believed it provides a useful example of a methodological approach to collecting data from the online health discussion forums and produces an insight into AD discussion posts in a Croatian context. Hopefully, the study will pave way for future, much more comprehensive investigations of this topic, which will identify information and service needs of AD patients and their caregivers, in particular as they change over time.

## References

- Alzheimer's Association (2018). *2018 Alzheimer's Disease Facts and Figures*. *Alzheimers Dement*, 14(3), 367-429. Retrieved from <https://www.alz.org/media/Documents/facts-and-figures-2018-r.pdf>
- Alzheimer's Disease International. Dementia statistics* (2015). Retrieved from <https://www.alz.co.uk/research/statistics>
- Dološić, S. (2016). *Ljudska prava oboljelih od Alzheimerove bolesti : završni specijalistički rad*. Osijek: Silvija Dološić. Retrieved from : <https://urn.nsk.hr/urn:nbn:hr:132:025098>
- Drentea, P. & Moren-Cross J. L. (2005). Social capital and social support on the web. The case on an internet mother site. *Sociology of Health and Illness* 27(7), 920-943.



- Edelman, P., et al. (2006). Information and service needs of persons with Alzheimer's disease and their family caregivers living in rural communities. *American journal of Alzheimer's disease & other dementias*, 21(4), 226-233. doi: 10.1177/1533317506290664
- Erdelez, S., Howarth, L., & Gibson, T. (2015). How Can Information Science Contribute to Alzheimer's Disease Research? *Proceedings of the Association for Information Science and Technology* 52(1), 1-4. doi:10.1002/pra2.2015.14505201006
- Haley, W. E. (1997). The family caregiver's role in Alzheimer's disease. *Neurology* 48(6), 25-29. doi:10.1212/WNL.48.5\_Suppl\_6.25S
- Kucmanski, L. S., et al. (2016). Alzheimer's disease: challenges faced by family caregivers. *Rev. Bras. Geriatr. Gerontol.* 19(6), 1022-1029.
- Mimica, N. & Presečki, P. (2010). How do we treat people with dementia in Croatia. *Psychiatria Danubina* 22(2), 363-366. Retrieved from <https://hrcak.srce.hr/55870>
- Mimica, N., et al. (2015). Hrvatska strategija borbe protiv Alzheimerove bolesti i drugih demencija – prijedlog nacrtu uz nadopune. // *Medix* 21(117), 111. Retrieved from [https://bib.irb.hr/datoteka/775700.Pages\\_from\\_Medix\\_117\\_Strategija.pdf](https://bib.irb.hr/datoteka/775700.Pages_from_Medix_117_Strategija.pdf)
- Office of Technology Assessment (1987). *Losing a million minds: confronting the tragedy of Alzheimer's disease and other dementias*. Washington, D.C.: U.S. Government Printing Office.
- Ruthven, I., Buchanan, S. & Jardine, C. (2018). Relationships, Environment, Health and Development: The Information Needs Expressed Online by Young First-Time Mothers. *Journal of the Association for Information Science and Technology* 69(8), 985-995.
- US Department of health and human services: national Institute on aging: Alzheimer's disease fact sheet (2016). Retrieved from <https://www.nia.nih.gov/health/alzheimers-disease-fact-sheet>
- Wackerbarth, S. B. & Johnson, M. M. (2002). Essential information and support needs of family caregivers. *Patient Education and Counseling* 47(2), 95-100.
- WHO: *Help for caregivers*, 2016: <https://www.alz.co.uk/adi/pdf/helpforcarepartners.pdf>



## NEW ROLES AND EVALUATION OF PUBLIC LIBRARIES: EXPERIENCE, INVOLVEMENT, EMPOWERMENT, AND INNOVATION

Tomoya Igarashi

Master Student, Graduate School of Library, Information and Media  
Studies, University of Tsukuba, Tsukuba, Japan  
s1411492@klis.tsukuba.ac.jp

Masanori Koizumi

Assistant Professor, Faculty of Library, Information and Media Science,  
University of Tsukuba, Tsukuba, Japan  
koizumi@slis.tsukuba.ac.jp

Miki Kozakura

Independent Scientist, Japan  
s1411525@klis.tsukuba.ac.jp

### Abstract

*Public libraries are beginning to take on new roles beyond traditional services because the environment surrounding public libraries is changing drastically. Library evaluation is indispensable for library activities. However, Traditional methods for library evaluation can evaluate only a part of the library's new role. It is necessary to consider how to evaluate public libraries that have begun to play new roles. Hence, the purpose of this research is to discuss new roles and evaluation indicators of public libraries based on advanced concrete libraries. Jochumsen, Skot-Hansen and Rasmussen (2012) proposed that an overall objective of libraries is to support the four goals in their model, which are (1) experience, (2) involvement, (3) empowerment and (4) innovation. KopGroep Bibliotheken in Dutch, Dokk1 in Denmark and Kista Public Library in Sweden, which are won "Public Library of the Year" and Musashino Place and Setouchi City Library, which are said to be advanced libraries in Japan, are targeted. We examined the relationship between the four goals from the case of the five libraries. In conclusion, we determined that five advanced public libraries perform outstanding activities in terms of the four goals. When evaluating public libraries, it is essential and effective to evaluate from these four viewpoints. When considering how to evaluate, it is significantly important to define the concept of*



*various library activities and clarify what to evaluate firstly. The discussion in this research is the first step to develop new indicators for measuring new public library services and spaces based on these four viewpoints.*

**Keywords:** library evaluation, new role of libraries, library management, social change, public library

## Introduction

The environment surrounding public libraries has been rapidly changing. In particular, the development of the Internet and the spread of information terminals such as smartphones and tablet computers have a great influence on public libraries. Amount of the time to read has been reduced due to entertainment such as online games and online videos. Further, people have become able to search information online by using Google. As a result, citizens gradually have less use of public libraries. In order to support communities and give enlightenment to citizens even under such circumstances, public libraries have recently created new services based on traditional competencies (e.g. collection and reference services) by utilizing new technologies and applying a social inclusion theory. For instance, Chicago Public Library has rooms called You Media to provide and be experienced digital equipment for teens (Chicago Public Library, n.d.), and in Idea Store in London, a variety of programs are offered (Igarashi, 2001). Public libraries are beginning to take on new roles beyond traditional services.

## Library Evaluation

Library evaluation is indispensable for library activities. It is important for a library director, managers and librarians to review activities objectively and improve services for establishing a better local community. At the same time, it is also critical for stakeholders outside a library to evaluate outcomes of library activities and increase their accountability for citizens.

Discussions on library evaluation to improve library services have done for a long time. For instance, Frederick Wilfrid Lancaster (1991) makes mention of “cost-effectiveness” and “cost-benefit”. Meanwhile, because of the financial difficulties of local governments, the evaluation to explain the library activities to the library establishing organization and citizens become more important. It can be said that library evaluation has become more important both internally and externally.



There is ISO 11620 “Library performance indicators” (2014) as an indicator of present global evaluation of public libraries. However, most of indicators referred in it are based on the use of collection and the number of users, which are representative indicators that have been used to evaluate libraries. As mentioned above, the role of public libraries is drastically expanding. With the indicators used yet, only a part of the library’s new role can be evaluated. It is necessary to consider how to evaluate public libraries that have begun to play new roles. Traditional evaluation indicators, such as the number of borrowing and the number of users, are also meaningful and important. However, these indicators are fixed, and librarians do not have to collect data for the indicators. Actually, in the United States or Europe, many libraries have automatically created statistical data and uploaded them online for the public. In addition to traditional indicators, it is important to consider and use new evaluation indicators.

New library evaluation indicators have been attempted. For instance, Pung, Clarke and Patten (2004) measured the economic impact of the British Library by Contingent Valuation. However, it is difficult to utilize evaluation methods for libraries other than large libraries, since they require a large amount of resources and efforts. Although Itoga, Emoto and Kwak (2013) determined the usefulness feasibility of measuring the in-library material use, the scope of the measure is limited and emerging perspectives related to spaces are included neither.

As we have seen above, a complete public library evaluation indicator has not been created yet, and it is clear that we need to expand discussions regarding new roles and new evaluation indicators following the change of societies.

## Purpose

Core elements of public libraries are *collection*, *librarian*, and *space*. The function of the space has drastically evolved in accordance with a development of information technologies and changes of users’ behavior. The purpose of this research is to discuss new roles and new evaluation indicators of public libraries. When considering how to evaluate, it is necessary firstly to define the concept of various library activities and clarify what to evaluate. This paper discusses the validity and importance of evaluating based on the elements of the public libraries’ new role. This paper will become the first step to develop new indicators for public library evaluation. It can contribute to devising new and contemporary public library evaluation.



## Methodology

Jochumsen, Skot-Hansen and Rasmussen (2012) proposed that an overall objective of public libraries is to support the four goals in their model, that are (1) experience, (2) involvement, (3) empowerment and (4) innovation. These goals also represent new roles of public libraries. However, these goals cannot be evaluated by conventional frameworks, and therefore must be considered in a new way. The study by Jochumsen et al. is meaningful for the point of showing a new model for public libraries. Nevertheless, when we develop a new method of evaluating libraries, it is necessary to discuss based on concrete examples.

In order to examine roles of public libraries and its evaluation from concrete examples, we selected advanced public libraries for case analysis. We chose the public libraries that won the “Public Library of the Year” at 2015, 2016 and 2018. “Public Library of the Year” is administered by IFLA (International Federation of Library Associations) to celebrate new public libraries. “The award is presented to a library anywhere in the world that best combines open, functional architecture with creative IT solutions and also takes into account both digital developments and local culture. To qualify, the library must be newly built or housed in buildings not previously used as a library.” (Systematic, n.d., para.2). The award-winning libraries are internationally appreciated.

KopGroep Bibliotheken (School 7) in Dutch won in 2018, Dokk1 in Denmark won in 2016, and Kista Public Library in Sweden won in 2015. In addition to these three libraries, we targeted Japanese public libraries “Musashino Place” and “Setouchi City Library” which are said to be advanced libraries in Japan. We analyzed the relation between the four goals and services from the case of five libraries.

## Finding and Discussion

### KopGroep Bibliotheken

KopGroep Bibliotheken is being used like a living room in the community, and architecture reflecting it are appreciated (Systematic, 2018). Various citizens, regardless of age or language, can participate in lectures and workshops in addition to reading. KopGroep Bibliotheken offer experience to citizens by opening courses and workshops. Furthermore, participation by diverse citizens expresses involvement.



Volunteers are teaching children about programming. Learning new something is both experience and empowerment. It is also involvement to communicate between children and volunteers

Library users can get married in its atmosphere-laden theatre or hold a birthday event in the cafe. It is relevant to experience and innovation that you can have such an exciting experience in a public library.

### **Dokk1**

Dokk1 was awarded for being an open library for all ages and social classes. Architectural accessibility is also prioritized not only at the location of the library but also in many outdoor areas (Systematic, 2016a). To make it easy for everyone to visit physically is important.

Remarkable service of Dokk1 is Maker Space which is a creating and building area for children aged 8-12 years old. Creative activities are related to innovation. Sometimes users have interactions with the same age children through creative activities. There is also the latest game machine here, they may be exchange through play. In these cases, it becomes involvement and empowerment. Furthermore, users can also use the latest digital equipment such as 3D printers (not only for children). Providing all the citizens with the latest technology show experience.

At Dokk1, users can participate in activities made in collaboration with citizens. Users can learn, be inspired, meet others, create something together and immerse yourself (Dokk1, n.d.). This activity is related to innovation and empowerment. It is also related to involvement from both creative activity and communicate with participates.

It is said that Dokk1 emphasizes experience in a philosophical sense because one of their Value and Vision is to support learning and experience.

### **Kista Public Library**

Kista Public Library was appreciated for interior in the library, various digital program, quality of staff speaking multiple languages etc. (Systematic, 2016b).

They call themselves a program library. It means an extra investment in broad and comprehensive program activities for children, young people and adults (Kista Public Library, n.d.). For instance, they hold a program to teach IT skills,



a cafe to practice Swedish while drinking coffee. They are to provide learning opportunities for citizens. It is related to experience and empowerment.

They make Book Club for children aged 9-12 years old who likes to read books and talk about books. Communicating with friends through club activities represent to involvement. For children interested in creating, Creator's Workshop is being held. The experience of creation in this Workshop is related to experience and innovation.

### **Musashino Place**

Musashino Place is a facility Musashino City, Tokyo, which has functions of lifelong learning support, youth activity support, citizen activity support, and libraries as a core function.

The greatest feature of Musashino Place is that it has space only for teenagers. Only teenagers can use this space on weekends and long vacation. There are lounges where users can work freely, rooms where users can practice music with musical instruments, rooms where users can practice dance and theater, rooms for arts, crafts and cooking, rooms for light exercise with table tennis and bouldering. Teenagers can experience various activities in these rooms. It is related to experience and empowerment. Creating music, theater, and art is represent innovation. Furthermore, communicating with many friends through activities is involvement.

Musashino Place supports citizen activity. It is the voluntarily activity by citizens toward solving social problems. For instance, holding a course to play with children with traditional play that has been done in Japan for a long time ago, a prevention course of dementia, and a simple English course to support foreigners. In order to support activities, they provide a room for discussion and make it possible to publicize their activities through the library. Citizen activities lead to innovation. Learning for activities also lead empowerment and participating in activities lead involvement. It can be said that the library fulfills these roles by supporting activities.

One of the philosophy of Musashino Place is people meet through books and activities, sharing and exchanging the information (knowledge and experience) each has, creating intellectual creation and exchange, revitalizing the local community (Musashino Place, n.d.). This shows that Musashino Place emphasizes innovation and involvement.



## Setouchi City Library

Setouchi City Library is a public library located in Setouchi City, Okayama Prefecture. This library is famous for holding a workshop called the “Library Future Meeting” when they formulate the maintenance plan of the library and the opinions and requests of citizens have been strongly reflected in the formulation of the plan.

One of the services undertaken at Setouchi City Library is called “problem-solving service” (Setouchi City, 2011; Setouchi City Library, 2018). This service has been done in many Japanese public libraries. It is a service aimed at solving social problems and issues in the local community. For instance, exhibiting health-related materials and experts give lectures about health/medical information, and summarizing information useful for business and wishing to work. Providing materials reflecting the information needs of citizens leads to learning of users, and it can be said that it represents experience and empowerment.

Setouchi City Library has the philosophy that library materials, information, encounters of citizens gathered there are resources enriching the lives of citizens (Shimada, 2013). This represents they think involvement is meaningful.

## Conclusion

We determined that five advanced public libraries perform outstanding activities in terms of the four goals, which are (1) experience, (2) involvement, (3) empowerment and (4) innovation. When evaluating public libraries, it is necessary and effective to evaluate from these four viewpoints. We need to define the concept of various library activities firstly to consider new library evaluation indicators. This paper discusses the new role of public libraries from advanced libraries’ activities. The discussion in this research is the first step to develop new indicators for measuring new public library services and spaces based on these four viewpoints.

Finally, analyzing the cases based on Jochumsen’s four goals, it also appears that collection developments have shifted from a traditional way to a new direction in the 21st century in accordance with the evolving services. Although collection evaluation methods have already established, it may need to be reviewed based on new functions and roles of public libraries. Competencies required of librarians have changed as well. Due to this, it is also critical to reconsider evaluation methods of librarians and their competencies.



## References

- Chicago Public Library. (n.d.). *You Media*. Retrieved from <https://www.chipublib.org/programs-and-partnerships/youmedia/>
- Dokk1. (n.d.). *Biblioteket*. Retrieved from <https://dokk1.dk/biblioteket>
- Igarashi, mariyo. (2001). "Idea Store" at U.K. Retrieved from <http://current.ndl.go.jp/ca1441>
- International Organization for Standardization. (2014). *Library performance indicators (3rd ed.)*. Switzerland : ISO.
- Itoga, M., Emoto, Y., & Kwak, H. (2013). Feasibility of Measuring the In-Library Material Use and Its Applicability to Public Library Management. *Library and Information Science*, (69), 1-17.
- Jochumsen, H., Skot-Hansen, D., & Rasmussen, C.H. (2012). The four spaces – a new model for the public library. *New Library World*, 113(11/12), 586-597. doi: 10.1108/03074801211282948
- Kista Public Library. (n.d.). *Om oss* Retrieved from <https://biblioteket.stockholm.se/bibliotek/kista-bibliotek>
- Lancaster, F.W. (1991). *If you want to evaluate your library* (Nakamura, Michiko & Miwa, Makiko, Trans.). Tokyo: Maruzen.
- Musashino Place. (n.d.). *About Musashino Place*. Retrieved from [http://www.musashino.or.jp/place/\\_1187.html](http://www.musashino.or.jp/place/_1187.html)
- Pung, C., Clarke, A., & Patten, L. (2004). Measuring the economic impact of the British library. *New Review of Academic Librarianship*, 10(1), 79-102. doi: 10.1080/13614530412331296826
- Setouchi City. (2011). *New Setouchi City Library Maintenance Basic Concept*. Retrieved from <https://lib.city.setouchi.lg.jp/kihonkousou.pdf>
- Setouchi City Library. (2018). *Setouchi City Library Service Plan*. Retrieved from <https://lib.city.setouchi.lg.jp/c1/bib/pdf10188.pdf>
- Shimada, manabu. (2013). Towards an open space to each bring it, and to find it, and to share. *The library world*, 64(6), 424-429. doi: 10.20628/toshokankai.64.6\_424
- Systematic. (n.d.). *Public Library of the Year*. Retrieved from <https://systematic.com/library-learning/awards/public-library-of-the-year/>
- Systematic. (2018). *DUTCH LIBRARY NAMED THE WORLD'S BEST NEW PUBLIC LIBRARY IN 2018*. Retrieved from <https://systematic.com/library-learning/nyheder/2018/public-library-of-the-year-2018-vinderen-er-fundet!/>
- Systematic. (2016a). *Public Library of the Year 2016*. Retrieved from <https://modelprogrammer.slks.dk/en/news-events/public-library-of-the-year-2016/>



Systematic. (2016b). *Systematic – Public Library of the Year Award 2015* Retrieved from <https://modelprogrammer.slks.dk/en/news-events/public-library-of-the-year-previous-years/public-library-of-the-year-2015/#c123450>



## DIMENSIONS OF LIBRARY AS A PLACE: A QUALITATIVE CONTENT ANALYSIS

Marika Kawamoto

Doctoral Student, Graduate School of Library, Information and Media Studies, University of Tsukuba, Tsukuba, Japan  
marika@slis.tsukuba.ac.jp

Masanori Koizumi

Assistant Professor, Faculty of Library, Information and Media Science, University of Tsukuba, Tsukuba, Japan  
koizumi@slis.tsukuba.ac.jp

### Abstract

*In recent years, we can access materials without going to a library since we can find various information online. Thus, people have questioned the meaning of the existence of libraries. In response, many studies that re-confirm the library as an important place have emerged in various countries. However, few qualitative studies have systematically and objectively organized the past literature. It was difficult for us to understand the nature of libraries and how libraries function. This paper aims to organize the dimensions of the library systematically. To achieve this purpose, we conducted a qualitative content analysis of the literature concerning the purpose of libraries. Specifically, first, we collected English literature that has the theme of the library as an essential place that was available on ProQuest Central. Next, we comprehensively collected literature from their references. We collected total 252 works of literature. This paper reports the results of the analysis of 100 completed works of literature. With MAXQDA software, we conducted coding in the literature such as the type of library, the roles and functions, and its social background. Finally, we constructed an abstract conceptual model by categorizing the individual coding and summarizing it in dimensions using a bottom-up. As a result, we categorized this coding and found three symbols (Wisdom, Heritage, and Community), eight dimensions (Intelligence, Creativity, Culture and History, Empowerment, Neutrality, Publicness, Sociability, and Friendliness) and its associated 25 sub-dimensions. In the library as an essential place model, we positioned three symbols as the basis as symbolic infrastructure, divided the dimensions that play roles of these symbols into eight dimensions and made it a superordinate concept. Suggestions for this research will be useful as a foundation for future research.*

**Keywords:** academic libraries, library as place, library as space, public libraries, qualitative content analysis



## Introduction

In recent years, we can access materials without going to a library since we can find various information online. Whereas, the significance of the physical existence of libraries has become the subject of discussion since the opinion that physical libraries are outdated, or which would be unnecessary appeared (Carlson, 2001; Garrett, 2004). Therefore, many studies that re-confirm the library as an important place have emerged in various countries. Since “place/space” is a topic covered by researchers in various fields such as philosophy, architecture, geography, and sociology, “the library as place” theory has developed interdisciplinary and becomes increasingly complex, it has not been organized so far. The purpose of this study is to organize the roles and functions of “the library as place” as dimensions and to propose the conceptual model. We also investigate how each dimension has changed as time goes by. This study is basic research concerning the library as a critical place, contributes to developing future discussions.

## Literature Review

Responding to rapid social changes, the roles of libraries have been often reviewed. For instances, in Scandinavia, Skot-Hansen constructed a model of the local library’s profile that includes four Centres: Cultural Centre; Knowledge Centre; Information Centre; Social Centre (Skot-Hansen, 1996). However, following social changes, Jochumsen et al. were evolved from the model proposed by Skot-Hansen into a new framework. Specifically, they showed that public libraries were constructed four spaces: Inspiration Space; Learning Space; Meeting Space; Performative Space (Jochumsen et al., 2012).

In academic libraries, for example, Cunningham and Tabur created a schema borrowed the word by Kent and Myrick to use when considering the needs of users in ideal library space and learning space design (Cunningham and Tabur, 2012; Block, 2003). This schema consists of the four characteristics; Access and Linkages; Usages and Activities; Sociability; Comfort and Image in order from the bottom layer. Choy and Goh created a framework based on Nanyang Technological University Libraries and presented four spaces; Collaboration Space; Sanctuary Space; Interaction Space; Community Space (Choy and Goh, 2016).

Most of the frameworks constructed so far aimed to consider modern library designs and had relatively architectural characteristics since most of the components were visible spaces and user behaviors. However, in a major work “The



library as place: History, Community and Culture” compiled by Buschman and Leckie, “the library as place” were discussed from various perspectives such as geography, philosophy, and sociology, we found that it was the interdisciplinary concept (Bushuman and Leckie, 2007). In this study, we aim to construct a comprehensive model from the role of the library as an essential place proposed by multiple fields.

## Method

In this study, we conducted a qualitative content analysis (Elo and Kyngäs, 2008; White and Marsh, 2006). First, we collected English literature that has the theme of the library as an essential place that was available on ProQuest Central. ProQuest Central is an overall database including theses, academic papers, and newspapers. Search terms we used included “library\_as\_place” and “library\_as\_space.” Next, we comprehensively collected literature from the reference lists of the main doctoral theses among the documents. We collected total 267 works of literature. From there, we excluded seven works of literature not directly related to libraries, four duplicate works of literature, two Italian works of literature, and two works of literature difficult to obtain, we examined 252 English works of literature. In this paper, we report the analysis results of finished 100 works of literature. These 100 works of literature were selected by random sampling so that the proportion of the number of documents by year of publication did not change for each of the 252 works of literature.

The first author scanned the literature using MAXQDA software. MAXQDA is a qualitative content analysis software tool. The first author gave coding to the literature with this tool. The coding elements are (a) type of library, (b) social background, (c) theory or concept, (d) library’s roles or functions, (e) librarian’s roles or characteristics, and (f) a word meaning “place.” In addition, the first author also coded (g) research question and purpose, (h) method, and (i) results for research papers. During the coding process, the first author created a coding manual through in-depth discussions with the second author. Finally, we constructed an abstract conceptual model by categorizing the individual coding and summarizing it in dimensions using a bottom-up.

We also analyzed how each dimension has changed as time goes by. Specifically, these dimensions were classified according to age, and change in each number of codes was investigated.



## Results

The number of documents depends on the type of library is Public libraries: 36, Academic libraries: 37, School libraries: five, Special libraries: two, Regardless of the type: 14, Multiple types (i.e., Public + Academic): six, respectively. The duration of literature was 1949-2018. The total number of extracted coding was 2,358. Due to limitations of space, we will focus on the results of (d) library's roles or functions among the coding elements shown in the method section. The number of coding of the library's roles or functions was 1,494. We categorized these codes and found three symbols, eight dimensions, and its associated 25 sub-dimensions. The relationship between the symbols and the dimensions is shown in Fig. 1. As we can see from the figure, we positioned three symbols of Wisdom, Heritage, and Community as the basis as symbolic infrastructure, divided the dimensions that play the roles of these symbols into eight dimensions and made it a superordinate concept.

### Symbolic Infrastructure

The library as an essential place can be explained on the basis of symbolic infrastructure and this infrastructure contains three symbols: Wisdom, Heritage, and Community. Symbolic infrastructure implies that libraries have the roles as a place to symbolize the ideals of society and library users.

We categorized eight dimensions that play the roles as three symbols of the library. In the following, dimensions will be explained for each symbol.

### Dimensions playing the roles of [Wisdom] symbol

As dimensions that play the roles of wisdom symbol, the dimensions of <Intelligence> and <Creativity> were positioned. <Intelligence> contains three sub-dimensions: Intellectual atmosphere, Learning, and Education. Intellectual atmosphere implies that the environment or atmosphere created in libraries is appropriate for intellectual activities. We coded for an intellectual atmosphere in any instance where sanctuary, silence, and safety. <Creativity> contains four sub-dimensions: Working environment, Creative activity, Improving creativity, and Serendipity.



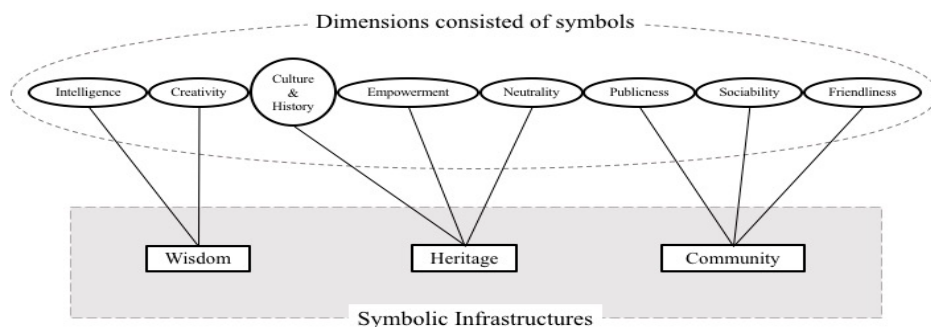


Figure 1. Model of "library as place"

### Dimensions playing the roles of [Heritage] symbol

As dimensions that play the roles of heritage symbol, the dimensions of <Culture and History>, <Empowerment>, and <Neutrality> were positioned. <Culture and History> contains three sub-dimensions: Preservation of materials, Supporting cultural activities, and Trustworthiness. Trustworthiness implies that libraries have traditionally trustworthy environment because it has a history and provides high quality information. <Empowerment> contains two sub-dimensions: Access and Assistance. Empowerment implies that it is to improve the autonomy of users by arranging an environment where users can use information and supporting their use. <Neutrality> includes four sub-dimensions: The place for all people, Equal environment, Including various opinions, and Accessibility.

### Dimensions playing the roles of [Community] symbol

As dimensions that play the roles of community symbol, the dimensions of <Publicness>, <Sociability>, and <Friendliness> were positioned. <Publicness> includes three sub-dimensions: Sharing materials, Public environment, and Resting. <Sociability> includes four sub-dimensions: Supporting social activities, Public sphere, Generating social capital, and Meeting place. Supporting social activities are, for instances, providing information on elections and polling place. <Friendliness> contains two sub-dimensions: Familiarity and Openness.



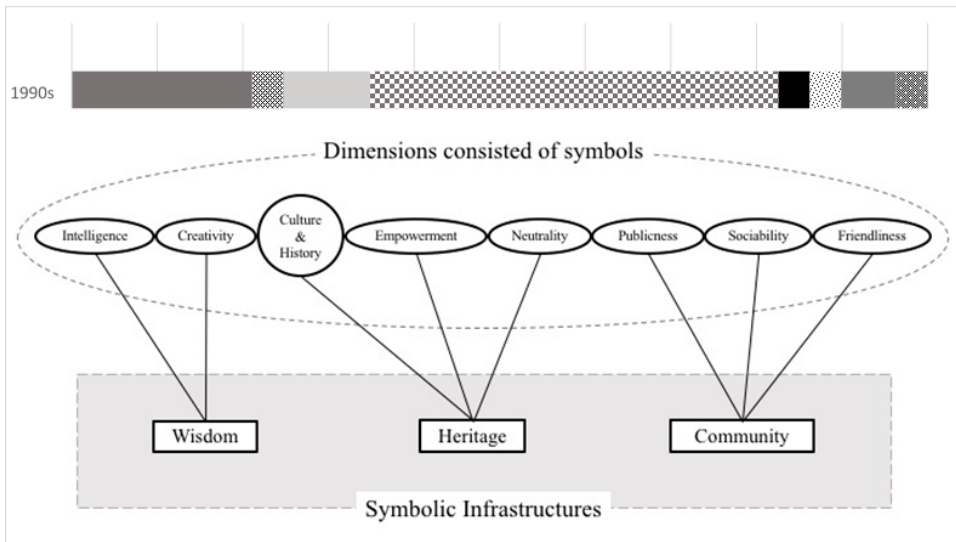


Figure 2. Model of “library as place”

### Dimension’s change according to age

In order to investigate the change of eight dimensions according to age, we compared the number of codes of each dimension separately in the 1990s (1994-99), the 2000s (2000-2009), the 2010s (2010-2018) did. As shown in Fig. 2., as a result, there was no dimension which began to appear suddenly after the 2000s, all the dimensions were found to exist already in the 1990s. Also, compared with the 1990s, we found that the proportion of <Empowerment> codes for [Heritage] decreased, the proportion of <Creativity> codes for [Wisdom] and the proportion of <Publicness> and <Sociability> codes for [Community] tended to increase in the 2010s.

### Discussion

All eight dimensions playing the role of <Symbolic Infrastructure> contain codes on space in physical buildings and atmospheres. For instances, sub-dimensions of <Intelligence> contained an intellectual atmosphere, and preservation of materials of <Culture and History> contained preservation of materials that implies a physical warehouse for materials. Therefore, the library as an essential place was defined as a concept that built on the basis of physical space and atmosphere. On the other hand, physical space is tended to compare with virtual space, and



discussion on a replacement from physical to virtual space often occurs due to the development of technology. However, in this study, as a result of the coding, virtual libraries could be positioned in Access of <Empowerment>. Therefore, providing virtual libraries seem to be one of the roles of the library as a critical place.

In this study, we investigated the change of the number of codes according to age and found that the portion of <Creativity>, <Publicness>, and <Sociability> is relatively large in recent years. As for these social backgrounds of increasing the number of codes of <Creativity>, for example, may be a change in learning or working style. In particular, ways of collaborative work diverse, and many academic libraries began to establish learning commons in the 2000s. As for these social backgrounds of increasing the number of codes of <Publicness> and <Sociability> is considered to be a reduction of opportunities for people's direct interaction due to the technology development. Some of the literature cited quoting the theories and concepts such as the public sphere of Habermas, the third place of Oldenburg, and the social capital of Putnam (Habermas, 1992; Oldenburg, 1999; Putnam, 2004). However, since 62 of 100 works of literature in this study were from the United States, there is a high possibility that the social background in the United States is strongly reflected. Analysis of the remaining literature collected is a subject for the future.

## Conclusion

In this research, a qualitative content analysis of 100 works of literature was conducted with the purpose of organizing the roles and the functions of the library as an essential place and creating a conceptual model. As a result, we were able to find and construct three symbols, eight dimensions, and 25 sub-dimensions. The library as an important place symbolized the ideals of Wisdom, Heritage, and Community, and the dimensions playing these roles could be divided into eight. In addition, the library as a significant place was built on the basis of physical space and atmosphere as well as virtual space in this model. Since the provision of virtual libraries is regarded as part of the role of the library as a critical place, it seems that there is a mission that must be functioned more extensively far from losing the building as a library. It has also been found that there is no dimension that began to appear newly in recent years by analysis according to age. As the codes of <Publicness> and <Sociability> have been increasing trend, the roles of the libraries on community creation have attracted attention in recent years, however, it has long been one of the roles of the library. Therefore, in the library as an essential place, the role as indicated by the model is inherently



provided, and it is considered that the degree of attention of these is changing according to the age. In future research, we will analyze the remaining literature, improve the accuracy of the model and compare by country or year.

## References

- Block, M. (2003). How to become a great public space. *American Libraries*, 34(4): 72-76.
- Buschman, J. E. and Leckie, G. J. (2006). *The library as place: History, community, and culture*. Westport, CT: Libraries Unlimited.
- Carlson, S. (2001). The deserted library. *The chronicle of higher education*, 16 November, Retrieved from <https://www.chronicle.com/article/The-Deserted-Library/32747>
- Choy, F. C. and Goh, S. N. (2016). A Framework for Planning Academic Library Spaces. *Library Management*, 37(1): 13-28.
- Cunningham, H. V. and Tabur, S. (2012). Learning Space Attributes: Reflections on Academic Library Design and its Use. *Journal of Learning Spaces*, 1(2), Retrieved from <https://files.eric.ed.gov/fulltext/EJ1152699.pdf#search='Learning+space+attributes%3A+reflections+on+academic+library+design+and+its+use'>
- Elo, S. and Kyngäs, H. (2008). The qualitative content analysis process. *Journal of advanced nursing*, 62(1): 107-115.
- Garrett, J. (2004). The Legacy of the Baroque in Virtual Representations of Library Space. *Library Quarterly*, 74(1): 42-62.
- Habermas, J. (1992). *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*. Cambridge, UK: Polity.
- Jochumsen, H., Rasmussen, C. H., and Skot-Hansen, D. (2012). The Four Spaces: A New Model For The Public Library. *New Library World*, 113(11): 586-597.
- Oldenburg, R. (1999). *The Great Good Place: cafés, coffee shops, bookstores, bars, hair salons, and other hangouts at the heart of a community*. New York: Marlowe.
- Putnam, R. D. (2004). Health by association? Social capital, social theory, and the political economy of public health: Commentary: 'Health by association': some comments. *International Journal of Epidemiology*, 33(4): 667-671.
- Skot-Hansen, D. (1996). The local library: Its Profile and Anchorage. *Scandinavian Public Library Quarterly*, 29(1): 4-7.
- White, M. D. and Marsh, E. E. (2006). Content Analysis: A Flexible Methodology. *Library Trends*, 55(1): 22-23, 27-34, 36-45.



## PUBLIC LIBRARIES AND DEMOCRACY IN THE NORDIC MODEL

Masanori Koizumi

Assistant Professor, Faculty of Library, Information and Media Science,  
University of Tsukuba, Tsukuba, Japan  
koizumi@slis.tsukuba.ac.jp

Håkon Larsen

Professor, Department of social and educational sciences, Inland Norway  
University of Applied Sciences, Hamar, Norway  
hakon.larsen@inn.no

### Abstract

*The purpose of this research is to examine the evolving librarianship and the democratic space of public libraries in a Nordic context. We utilised collaborative ethnography (Lassiter 2005; Howe 2009) and theoretical analysis of the public sphere (Audunson, 2005; Engelstad et al., 2017; Habermas, 1962, 1989; Widdersheim and Koizumi, 2016) while conducting this research. A team consisting of a Norwegian and a Japanese researcher investigated several Nordic libraries in order to better understand the democratic role of public libraries in the Nordic countries. Through the different specialties and cultural lenses of the researchers, an in-depth analysis of the social ecosystem of Nordic librarianship and democracy from various angles was completed. The cases analysed for this paper were the Deichman (Oslo) and Tromsø Public Library in Norway, the Stockholm City Library in Sweden and the Helsinki Public Library in Finland. These libraries have had or planned events for cultivating democracy, such as public debates, discussions and exhibitions. We analysed the social ecosystem of democracy and Nordic public libraries through four essential factors: 1) citizen involvement, 2) library managerial decisions, 3) activities of political parties, and 4) library policy. For instance, the Deichman Stovner branch library managed their library space for political discussions and events regarding common concerns in the local society. Political parties have chosen public libraries as venues for hosting political debates prior to upcoming elections, and citizens have gathered and debated about common concerns in the open sphere. In addition, the New Norwegian Library Act prioritised “meeting places” in its first paragraph, and the New Finnish Library Act has also required public libraries to “promote social and cultural dialogue.” Most importantly, libraries*



*act as democratic spaces for all as they are free of charge and welcome all people regardless of nationality, socioeconomic status, age, and race.*

**Keywords:** democracy, public library, public sphere theory, Nordic countries, collaborative ethnography, case analysis

## Background and research purpose

In the past, public libraries were known only as book lending and knowledge institutions, but as Audunson and Aabø explained, in the 21st century libraries have been shifting into important meeting spaces for public discussions and social integration (Aabø, Audunson and Vårheim, 2010; Audunson, 2005; Audunson, Esmat and Aabø, 2011). Recently, this shift has become more visible in the Nordic countries, due to Norwegian and Finnish library law requiring public libraries to emphasise culture and communities. Due to the rapidly increasing number of immigrants, the role of the library as an institution open to all has been increasingly prioritised. By allowing the needs and opinions of immigrant populations to be heard, libraries are contributing to the enhancement of democracy. Public libraries in the Nordic countries have been especially skilled at managing their library services and operations to serve this purpose, as documented by library and information scholars studying multicultural integration (Audunson, 2005; Audunson et al., 2011; Fagerlid, 2016; Johnston and Audunson, 2017).

Additionally, the relationship between libraries and democracy has begun to be described through a habermasian notion of a public sphere (Habermas, 1989). As reflected in the latest revision of the Norwegian library law, the libraries function as democratic meeting places, in terms of physical arenas for the exercise of democratic discourse. Library scholars have been inspired by Habermas' (1962, 1989) theory in developing their research on this subject, as well as in influencing the development of actual library policies.

There is a long tradition for social scientists influencing policy developments in the Nordic countries, sometimes referred to as an input democracy (Goodin, 2004; See also Engelstad et al., 2017). Regarding the work of Habermas, his theories have been particularly influential, with his early work on the public sphere being translated into Norwegian already in 1971, as the first translation of the book (which was originally published in German in 1962, and not translated to English until 1989). Habermas' theories on the public sphere and deliberative democracy have later had impact on the revision of the paragraph on freedom of speech in the Norwegian constitution, with central members of the independent



committee delivering a report on the subject to the government (NOU 1999: 27, 1999) being scholars heavily influenced by the work of Habermas (Kalleberg, 2015). After the revision of the paragraph, the state is now obliged to provide positive freedom (Berlin, 1969) to the citizens, through developing and maintaining the infrastructure of the public sphere. Public libraries make up an important part of such an infrastructure (Larsen, 2018).

The purpose of our research is to further examine the evolving librarianship and the democratic space of public libraries in Nordic societies. By conducting such a research project, we will engage with social science literature on the Nordic societal model, and view public libraries as an integrated part of democratic cultural policies.

## Research Methodology

In the research, we utilised collaborative ethnography (Howe, 2009; Lassiter, 2005) and theoretical analysis of the public sphere (Audunson, 2005; Engelstad et al., 2017; Habermas, 1989; Widdersheim and Koizumi, 2016). A team consisting of a Norwegian and a Japanese researcher investigated cases of Nordic libraries in order to better understand the democratic role of public libraries in the Nordic countries. The Norwegian researcher is a specialist in social theory and Nordic cultural policies, while the Japanese researcher is a specialist in public management, community, and library studies. Through the different specialities and cultural lenses of the researchers, an in-depth analysis of the social ecosystem of Nordic librarianship and democracy from various angles was completed. We utilised the conceptual framework developed by Larsen (2018) when theorising the role of archives, libraries, and museums within the Nordic societal model, and developed it into a more concrete model of Nordic democratic librarianship.

The cases were intentionally selected for this analysis based on our knowledge about this field. These include the Deichman Library and Tromsø Library in Norway, the Stockholm City Library in Sweden, and the Helsinki Public Library in Finland. These libraries have had or planned political events, such as public debates and discussions.

## Research Results

A strong example of democratic discussion was found in public library reading clubs. In the reading clubs, members select their own topics and books, usu-



ally revolving around social issues, and come together to discuss the topics after reading the books on their own. These clubs are open to the public. Members of the reading clubs are encouraged to first think about the contents of the book by themselves, and then discuss it with the rest of the group. These reading clubs encourage citizens to cultivate their critical thinking skills, deepen their understanding of social issues, and actively participate in this democratic forum.

Next, political parties rely on public libraries to communicate with citizens and listen to their opinions. For instance, various political parties held discussion events regarding Norway's relationship with Pakistan in the Deichman Stovner Library in Norway. These events are created by collaborating with stakeholders in the community. Even young adults from the neighbouring high schools and universities enthusiastically gather at the library to discuss local community issues. Their discussions are self-lead with minimal input from adults. The only rule governing these discussion groups is that anyone is allowed to participate, in accordance with a habermasian ideal of a public sphere (Habermas, 1989). A member of the political party is present to observe the proceedings, but he/she will only involve himself/herself when there is a lull in the discussion or if the students require more specific information.

Furthermore, political parties have chosen public libraries as venues for hosting political debates prior to upcoming elections, and citizens have gathered and debated about common concerns in this open space. The Deichman Public Library manager in Norway and the Stockholm Public Library director also explained that when they have an event for political parties, they are always required to have more than two parties in attendance and cannot prohibit specific citizens from participating. The Helsinki Public Library director also expressed a similar desire to avoid inviting particular guests or decide event topics in order to remain neutral and avoid political bias. She shared that these policies would be put into practice in the Helsinki Central Library, also known as Oodi, which opened on December 5, 2018. As an additional example of the neutrality of public libraries, the Tromsø Public Library (2007) held an exhibition called *Døde pener* (Dead Pens), which showcased articles and photographs from criticized or killed Russian journalists in an effort to open a dialogue about the freedom of speech. Despite criticism from the community, the library defended the exhibition, stating that it would allow any event as long as it was not illegal.

As can be seen from the above cases, rather than intervening in events proposed by various organizations and activists, these libraries chose to focus on management of the library space for all. Neutrality is also reflected in the book



collection of each library. These decisions demonstrate the prioritization of neutrality and physical spaces in Nordic public libraries.

Finally, Nordic librarianship enjoys political support through national library laws. Norwegian library law, especially the first paragraph, supports libraries as meeting places and spaces intended for the cultivation of culture. Similar paragraphs are found in the Finnish library law, such as under Section 2, "Objectives" and Section 6, "Duties of Public Libraries." The New Finnish Library Act (Ministry of Education and Culture, 2016) has also required public libraries to "promote active citizenship, democracy and freedom of expression" and "promote social and cultural dialogue." Most importantly, library services in the Nordic countries are free of charge. Public libraries must be open and free to all peoples, regardless of nationality, socioeconomic status, age, race, and so on.

## Discussion and Conclusion

We illustrated the social ecosystem of democracy and Nordic public libraries through four essential factors: 1) citizen involvement, 2) library managerial decisions, 3) activities of political parties, and 4) library policy. Through the management of neutral public spaces, libraries play an important role in protecting freedom of speech and creating a "training arena," (Larsen, 2018) for citizens interested in critical thinking and democratic discourse. Compared to other countries, the social ecosystem in the Nordic model help decrease the distance between the citizens, the larger community, and the government.

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## References

- Aabø, S., Audunson, R., & Vårheim, A. (2010). How do public libraries function as meeting places? *Library & Information Science Research*, 32(1), 16–26.
- Audunson, R. (2005). The public library as a meeting-place in a multicultural and digital context: The necessity of low-intensive meeting-places. *Journal of Documentation*, 61(3), 429–441.



- Audunson, R., Essmat, S., & Aabø, S. (2011). Public Libraries: A Meeting Place for Immigrant Women? *Library & Information Science Research*, 33(3), 220–227.
- Berlin, I. (1969). *Four Essays on Liberty*. Oxford, UK: Oxford University Press.
- Engelstad, F., Larsen, H., & Rogstad, J. (2017). The Public Sphere in the Nordic Model. In F. Engelstad, H. Larsen, J. Rogstad, K. Steen-Johnsen (Eds.), *Institutional Change in the Public Sphere: Views on the Nordic Model* (pp. 46–70). Warzaw/Berlin,: De Gruyter Open Ltd.
- Fagerlid, C. (2016). Skjermet sammen – sameksistens på folkebiblioteket. *Norsk Antropologisk Tidsskrift*, 26(2), 108–120.
- Goodin, R. E. (2004). Input Democracy. In F. Engelstad & Ø. Østerud (Eds.), *Power and Democracy: Critical Interventions*. Aldershot, England : Ashgate Publishing Ltd.
- Habermas, J. (1962). *Strukturwandel der Öffentlichkeit: Untersuchungen zu einer Kategorie der bürgerlichen Gesellschaft*. Darmstadt, Germany: Luchterhand.
- Habermas, J. (1971). *Borgerlig offentlighet - dens fremvekst og forfall: Henimot en teori om det borgerlige samfunn*. Oslo, Norway: Gyldendal.
- Habermas, J. (1989). *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*. Cambridge, M.A., US: The MIT Press.
- Hanssen, H. I. (2007). *Rystende utstilling*. Retrieved from <https://www.nordlys.no/kultur/rystende-utstilling/s/1-79-3025466>
- Howe, J. (2009). Collaborative Ethnography. In J. Howe (Ed.), *Chiefs, Scribes, and Ethnographers: Kuna Culture from Inside and Out* (pp. 140–163). Austin, TX: University of Texas Press.
- Johnston, J., & Audunson, R. (2017). Supporting immigrants' political integration through discussion and debate in public libraries. *Journal of Librarianship and Information Science*, 1–15.
- Kalleberg, R. (2015). Ytringsfrihet, demokratiteori og demokratiet som uferdig prosjekt. *Sosiologi I Dag*, 45(4), 11–37.
- Larsen, H. (2018). Archives, libraries and museums in the Nordic model of the public sphere. *Journal of Documentation*, 74(1), 187–194.
- Lassiter, L. E. (2005). *The Chicago Guide to Collaborative Ethnography*. Chicago, U.S.: University of Chicago Press.
- Ministry of Education and Culture. (2016). *Public Libraries Act* (1492/2016). Finland. Retrieved from <http://www.finlex.fi/fi/laki/kaannokset/2016/en20161492.pdf>
- NOU 1999: 27. (1999, March 12). "Ytringsfrihet bør finde sted". Forslag til ny § 100. Oslo: Justis- og politidepartementet. regjeringen.no. Retrieved from <https://www.regjeringen.no/no/dokumenter/nou-1999-27/id142119/>
- Widdersheim, M. M., & Koizumi, M. (2016). Conceptual Modelling of the Public Sphere in Public Libraries. *Journal of Documentation*, 72(3), 591–610.



## INCREASING VISIBILITY OF CULTURE THROUGH ONLINE INFORMATION SERVICES: THE CASE OF SMÅLAND

Koraljka Golub

Associate Professor, Department of Cultural Sciences, Faculty of Arts  
and Humanities Linnaeus University, Växjö, Sweden

koraljka.golub@lnu.se

Marcelo Milrad

Professor, Department of Computer Science and Media Technology,  
Faculty of Technology

Linnaeus University, Växjö, Sweden

marcelo.milrad@lnu.se

Madeleine Lundman

Lecturer, Department of Cultural Sciences, Faculty of Arts and  
Humanities

Linnaeus University, Växjö, Sweden

madeleine.lundman@lnu.se

Romain Herault

Lecturer, Department of Computer Science and Media Technology,  
Faculty of Technology, Linnaeus University, Växjö, Sweden

romain.hearult@lnu.se

### Abstract

*Cultural events are of increasing importance as value creators in our society. They can serve to promote the attractiveness of a region, to increase social interactions and the quality of life and, not the least, to boost local economies. The ultimate purpose of our research is to significantly increase awareness of cultural attractiveness in Småland using innovative web technologies, both for its inhabitants as well as tourists. Reporting on the first stage of the project, this paper focuses on the exploration of requirements to design a mobile application and a website*



*of cultural events in the region with contemporary art as a use case. Our methodological approach involved three major steps. First, interviews with cultural event providers, with focus on contemporary art, were conducted to identify initial needs and requirements for building the two types of interfaces. The interviews were conducted with two representatives of a governmental institution promoting contemporary art in the region, called Nya Småland (in English New Småland, <http://www.nyasmaland.se/9/>). After the first round of interviews, initial mock-ups of the interfaces were built, followed by another round of interviews to gain insights and feedback on those designs. Themes in the interviews addressed requirements and functionalities, both from perspectives of cultural event providers as well as those of user groups. The interviewees agreed that it is generally important to make contemporary art galleries and their activities visible to a wider audience through a good-quality app and a web site. It is often hard to reach the public with cultural events; one reason could be lack of money for advertising. In conclusion, the interviewees consider a quality app and a website for cultural events on contemporary art an important way in which to increase visibility of cultural events in the region and beyond. In addition, preserving information about past events for future uses is considered important, especially for journalists and politicians. Future research efforts will focus on developing an interactive prototype and acquiring feedback from content providers and a range of potential end user groups.*

**Keywords:** cultural events, requirement gathering, web design, app design, usability

## Introduction

Cultural events are of increasing importance as value creators in our society. They can serve to promote the attractiveness of a region, to increase social interactions and the quality of life and, not the least, to boost local economies. Today, a comprehensive and up-to-date overview of cultural events in Småland, a region in southeastern Sweden (population of over 750,000, area just under 30,000 square kilometers) is missing mainly due the fact that information is distributed across different actors, communication channels and different media (e.g., individual organizers, commercial vendors, community calendars, newspapers calendars). Moreover, information across different municipalities in the region is vastly scattered. Not the least, existing calendars of events usually do not match the functionality expected by end-users, which leads to other types of difficulties in accessing and sharing information. All these result in the fact that it is rather hard to get a quality overview of what the region can offer to individuals and groups.

The purpose of the project is to significantly increase awareness of cultural attractiveness in Småland using web technologies, both for its inhabitants as



well as tourists. The aim of the first phase of the project reported in this paper is to validate the ideas above using contemporary art in the region as a testbed. In particular, our objectives are to:

- a) Conduct a feasibility study about the different actors who serve as providers of cultural events and those that serve as information providers with focus on contemporary art in order to identify possible new mobile and web services.
- b) Create a list of metadata and browse/search functionalities for such services, based on input from content providers.
- c) Define the initial functional requirements for the first conceptual design of a semi-automated demonstrator (crawling data from different providers, basic browse/search functions, interactive content creation like tagging and reviews).

The paper continues with a presentation of related research, then the methodology used is described, followed by the results divided in four parts: initial requirements, demonstrator, semi-automatic import of events and requirements re-visited. Lastly, the paper ends with some concluding remarks.

## **Related research**

First guidelines for the design of web and mobile interfaces have been in existence since the early 2000s (Weiss, 2003) and have been updated accordingly to reflect the evolution of technology and the evolution of web and mobile applications. A recent survey carried out by Ionic (2017) points out to an increase in using hybrid solutions rather than native or direct web mobile applications, which allows more flexibility when developing a mobile app since it brings access to device's functionalities without limiting the application to a specific operating system (iOS, Android...). In order to attract users to use the application or website, the interfaces need to be simple, easy to understand, and present meaningful information to the user (Rubino et al., 2014).

Mobile application development has been explored significantly for the purpose of supporting education (e.g., Zbick et al., 2014), of which some are linked to learning about cultural heritage like in (Nordmark & Milrad, 2012), where students are invited to use mobile devices to create stories about cultural heritage. A number of research projects have explored the use of mobile applications to promote cultural events and locations such as in (Boiano et al., 2012) where



an application for iOS was developed to promote the island of Malta. The application allowed guiding people towards specific locations and it provided information about cultural sites. Other places use application based on traditional means of communication and explanation (e.g. audio guides) or exploit in new ways representation or visualization (Rocetti et al., 2014) to attract tourists to specific places or develop their online community and presence to spread the word about their place and events (Beler et al., 2004). Today's web and mobile technologies can serve the public to teach them about cultural heritage and cultural events that often can be hard to promote due to the huge amount of information that people receive in the information society of today.

Functionalities of a cultural event app and/or website include those that should be available in every user-friendly web page/app and as well as those specific to cultural events information. Relevant functionalities for any user-friendly web page/app identified in the literature include the following:

- Display of content in a clear and concise way with few controls, e.g. few clicks on the mouse buttons or taps on a phone or tablet. (Boiano et al., 2012; Gena et al., 2013).
- Interactive and quick responding interfaces (Boiano et al., 2012).
- Visually appealing interfaces (Rubino et al., 2014).
- The ability to share information, write reviews and connect, which in turn will make the application more visible for the general public (Gena et al., 2013).
- When developing the application, taking into consideration the limitations of a mobile device, both for artworks, text and audio/video (Rocetti et al., 2014).
- Encouraging user-generated content (ratings, tags, comments, and so on) which can be used as a source of information about a user and can be useful for adaptation and recommendation purposes (Gena et al., 2013).

When it comes to metadata, relevant seems to be Cultural-ON ontology (Orsini et al., 2016) used for modelling cultural institutions' data, sites, agents, contact points, files as well as events that can take place in specific cultural institutes or sites. Buonazi (2007) reports on a cultural events app called *CulturaItalia* developed to promote various aspects of Italian culture as well as to contribute to Europeana. The app uses PICO application profile of the Dublin Core.

Other related standards seem to be schemas for cultural objects of cultural heritage institutions, such as CDWA (Categories for the Description of Words of Art), a framework of 31 broad categories with 540 (sub)categories, used for



describing works of art, architecture and related. One its major advantages is its interoperability; it provides detailed mappings to a number of other metadata schemas. Several schemas are derived from CDWA. One relevant example is CDWA Lite, which is today replaced by LIDO (Lightweight Information Describing Objects) that is enriched with the concept of events taken from CIDOC CRM (Conceptual Reference Model). This means that for example, the creation, collection and use of an object are defined as events that have associated entities such as dates, places, and actors (Zeng and Qin, 2016). CIDOC CRM itself being based on the concept of events, could be good for recording previous events in order to preserve events. CDWA is also a basis on which VRA Core (Visual Resources Association) was derived, used for the description of art, architecture and artifacts from material, popular and folk culture. Standards for data values in the cultural heritage community (controlled vocabularies and authorities) include the Arts and Architecture Thesaurus, Thesaurus for Graphic Materials, Iconclass – a classification system for objects of an image, CONA (Cultural Objects Name Authority) for individual works of art that an image may depict.

In the commercial world, Schema.org, made available in 2011, is created by major search engines like Google and “aims to provide many schemas under one namespace so that webmasters can describe and expose web sites of any kind to search engines”. “Any kind” here includes creative works, job postings, medical tests, people and organizations, places, as well as events like cultural or sports (Zeng and Qin 2016, p. 17). It allows exposure of data kept in a local database to search engines and is much used and growing in popularity. Therefore, in order to make our database searchable by search engines like Google, we should use Schema.org. In addition, in order to cater for end users coming to the web site/app, as well as for preservation, some other scheme mentioned above could be used in parallel. Appropriate schemas and their implementation need to be explored in future research.

## Methodology

The methodology we have used involved three major steps. Firstly, an interview with cultural events providers was conducted, in order to identify initial needs and requirements for building the two types of interfaces. Then mock-ups of the interfaces were built, followed by another round of interviews to gain feedback on the mock-ups. The interviews were conducted with two representatives of Nya Småland (in English “New Småland”). New Småland is an inter-regional and international contemporary art project (<http://www.nyasmaland.se/9/>).



The first pair of interviews lasted between 35-60 minutes and was conducted via Skype. The second round of interviews lasted about 30 minutes, where one was conducted via Skype and the other one via e-mail.

In the first round of interviews, major topics addressed were the following ones:

- Identifying major cultural events providers and organizers;
- Establishing most important functionalities of the website and app; and,
- Digital preservation of the cultural events information and possible uses thereof.

In the second round of interviews, major topics addressed were the following ones:

- Feedback on both mockups (website and app) in terms of design and functionalities (as much as the mockups allowed);
- Revisiting most important functionalities of the website and app (if anything had changed); and,
- Different target user groups and how to cater for those.

The interviews were then partially transcribed by one of the authors and categorized into relevant categories: cultural events providers, functionalities, and digital preservation. Major focus was on the different functionalities of the app and website. These functionalities were then compared against functionalities from related literature and a list of resulting guidelines was created.

The list of guidelines created from the interviews and the literature review was then used to inform the process of the mock-up creation. It was decided to create a semi-interactive mock-up where users could navigate and see the possible interactions that the final product could offer.

The creation went through four different iterations, which were presented to and analyzed by the research team. The first iteration was used to validate the main structure of the application and the website, to agree on where the elements would be placed. The second iteration was a work on colors and typefaces, the third was about different style of information placement in order to decide how many events should be displayed at the same time on the screen without disturbing the viewer and giving enough information about the event on the screen, as well as what type of information should be displayed. Finally, the last iteration was about the workflow of the interactive mock-up.



## Results

### Initial requirements

The interviewees thought that it is generally important to make contemporary art galleries and their activities visible to a wider audience through a good-quality app and a web site. As mentioned in the literature review, it is often hard to reach the public with cultural events; one reason could be lack of money for advertising. Therefore, a quality app/website could help with outreach, and offer a way for free advertisement for the different cultural event providers. The following general aspects of the interfaces are desirable:

1. The content should be accessible in an interactive manner with quick response time. Within three click/press actions on the screen, the user should be able to access the searched information. This information should also be loaded quickly to keep the user active on the application.
2. The interface should be visually appealing. It should also support the provided content such as photos and videos of the cultural event promoted (i.e. the eye of the viewer should not be disturbed by the interface and solely focus on the content. Some applications will place advertisements and other banners that will promote other parts of the app, which can hinder the visibility of the content itself).
3. The content should be displayed concisely. As Nielsen claims (2012), it is necessary to provide short paragraphs. Users usually scan articles instead of reading them. The focus should be placed on short and informative titles and subtitles rather than long explanation on the event.

The content should be displayed in an easy-to-understand manner. This is linked to the previous point in that well-structured content will encourage people to read and explore the application. A logical and similar structure should be followed across the web site/app to allow the user not to have to make the extra effort to look for specific information (i.e. the time of an event should always be placed at a similar position in all event sections).

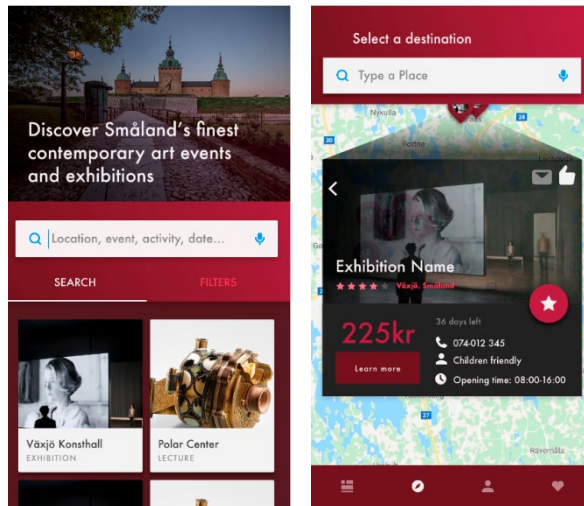
The information service should in both of its forms, web site and mobile app, be open to any end user. This includes accessibility features that can be provided by smartphones, independently from the operating system. Culture is for everyone, so everyone should be able to access information about it. When it comes to providing information about the content, both the app and website should be open to any content provider through an easy option to contribute and provide



information. This leads us to the analysis of content and information providers described in the following section (Demonstrator).

## Demonstrator

Based on the requirements above, a demonstrator in the form of an application (mockup available at <https://goo.gl/zQ6bLm>, see Figure 1), and a website (mockup available at <https://goo.gl/se9qBU>) were created.



*Figure 1.* Two different screens of the mock-up of the application Nya Småland (left: main screen; right: event map with information about a specific event)

To support browsing, the events in the region are presented in the form of a tile list, providing information (event type, location, image representing the event...) and encouraging the viewer to look for more by not revealing everything (such as the price and the time of the event). Also, a map of events is provided. Depending on the position of the user, the application offers to visit other events close to the user's position (this feature requires the users to share their location).

The website will offer the same possibilities. Additionally, its main function will be to display past events, primarily because of the limited space there is in a mobile application for it to run smoothly. The current mock up for the website focuses on this aspect only (see Figure 2).



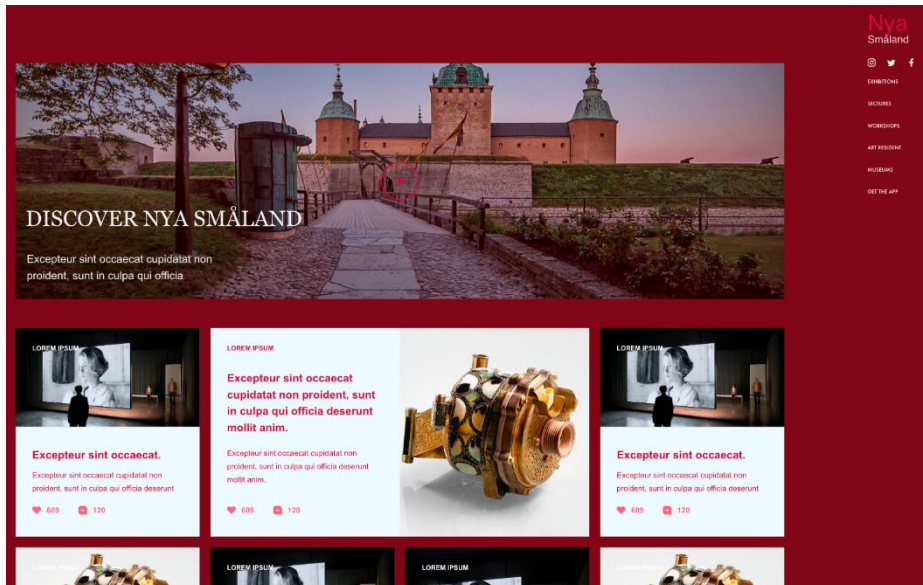


Figure 2: Website mockup for Nya Småland

The requirements listed above are implemented in the mock-ups in the following ways:

- *The content should be interactive and responding fast:* Users are able to navigate through content and control what they want to see using parameters. The fast response is something that will be addressed in the development phase of the project and cannot be addressed in the mock-up phase.
- *The interface should be visually appealing:* Using the colors of Smålands crest, links are made between the app / website with the region's culture. In this case, visually appealing is also linked to visually not disturbing to the user.
- *The content should be displayed concisely:* The content is arranged in a way that only the main information would be displayed at first. This allows a larger number of events to be presented to the viewer.
- *The content should be displayed in an easy-to-understand manner:* The tile system is a very common way of displaying information and should not disturb the user while navigating and force them to learn a new way of navigation.



## Semi-automatic import of events

An example of identified content providers in Småland are best illustrated in Figure 3 below. The organizations below are partners of New Småland and are mainly art galleries and museums, such as municipal art galleries in Nässjö, Gislaveds, Västervik, Österängen and other towns, and museums holding art exhibitions (Kulturparken Småland, Eksjö museum, Jönköpings municipal museum, Kalmar art museum etc.).

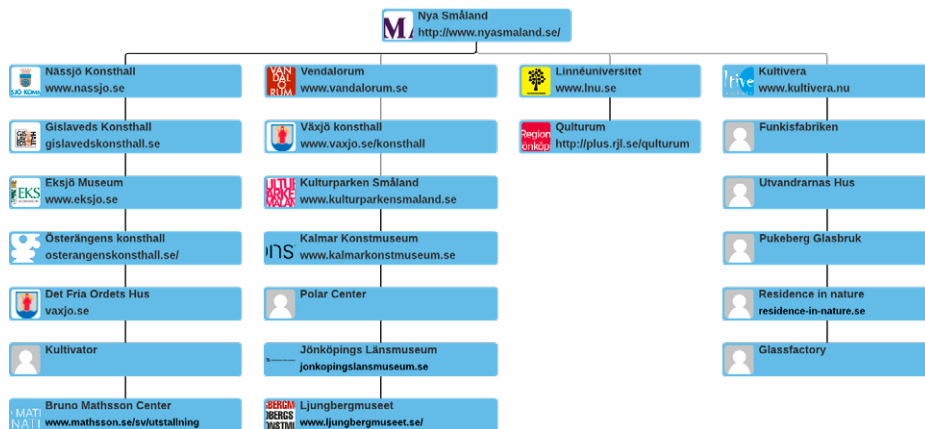


Figure 3. An excerpt from a list of cultural events providers in Småland

Using a semi-automatic function to import events from partners might be, for now, a difficult task. This is due to the lack of APIs from the providers of events (an API is a set of functions and procedures that allow the creation of applications, which access the features or data of an operating system, application, or other service). Our analysis, which was to visit their website, if any, shows that the venues do not offer an API and not advertise all their events on events websites (including Facebook events).

One solution could be to offer a tool with our website and app, which would allow event providers to enter information about their events in the system. Another solution could be the use of websites such as TripAdvisor (<https://www.tripadvisor.com>), or Eventful (<https://en.wikipedia.org/wiki/Eventful>) which offer an API that could also be used in our system by importing them in our app, where event providers could put their events and thus possibly reach even more potential end users in the process. TripAdvisor is already a well-known website and many people visit it to see what can be done in a city or region before going.



In addition, they are using Schema.org recommendation as well, which would relate to our own metadata.

### Requirements re-visited

The second round of interviews focused on getting feedback on the initial design of the mockups. Based on the topics discussed in the second round of interviews, the interviewees made the following suggestions:

The main feedback that was received in the interviews was positive and in line with what was said in the initial requirements (see section 4.1). Although interviewees from New Småland wanted to be clear that our app does not collide with their identity, the main opposition from their side was that our app does not have the same name as their project, just to avoid confusing the users that are used to New Småland's identity. Otherwise, they thought that the mock-up was well made, easy to use, and the information was presented clear and concise. They thought that the use of colors was done in a nice and cohesive way, and that the app and the website had the same style and design (cohesive).

They did not feel like they were missing something on the app or the website, but they stressed the fact that semi-automatic or automatic import from other websites is necessary to provide up-to-date and relevant information to the users. The interviewees were asked about the use of metadata but did not have much input or knowledge to add, as it is not their expertise, therefore the metadata portion of this study is taken from the literature review to complement the interviews. The interviewees were content and happy with the looks of the application.

### Concluding remarks

The interviewees consider a quality app and a website for cultural events on contemporary art an important way in which to increase visibility of cultural events in the region and beyond. In addition, preserving information about past events for future uses is considered important, especially for journalists, politicians and journalists. The immediate next phase is to develop an interactive demonstrator within which the following is planned:

- a) Evaluate the metadata and browse/search functionalities in the interactive demonstrator, based on scanning of needs of different groups of end users and define requirements for improvement.



- b) Define functional requirements for the design of a semi-automated demonstrator for crawling data from different providers, basic browse/search functions, interactive content creation like tagging and reviews.
- c) Conduct a feasibility study about the different actors who serve as providers of cultural events and those that serve as information providers.
- d) Investigate and plan for best ways of data structuring for preservation and easy data analysis.

## References

- Belser, A., Borda, A., Bowen, J. P., & Filippini-Fantoni, S. (2004). *The Building of Online Communities: An approach for learning organizations, with a particular focus on the museum sector*. Retrieved from, <https://arxiv.org/abs/1207.3422>.
- Boiano, S., Bowen, J. P., & Gaia, G. (2012). *Usability, design and content issues of mobile apps for cultural heritage promotion: The Malta culture guide experience*. arXiv preprint arXiv:1207.3422.
- Buonazi, I. (2007). *The Project of the Italian Culture Portal and its Development - A Case Study: Designing a Dublin Core Application Profile for Interoperability and Open Distribution of Cultural Contents*. Proceedings ELPUB2007 Conference on Electronic Publishing – Vienna, Austria. Retrieved September 2018.
- Charland, A., & Leroux, B. (2011). Mobile application development: web vs. native. *Queue*, 9(4), 20.
- Gena, C., Cena, F., Vernerio, F., & Grillo, P. (2013). The evaluation of a social adaptive website for cultural events. *User Modeling and User-Adapted Interaction*, 23(2), 89-137.
- Ionic (2017). 2017 Developer Survey. Retrieved August 2, 2018, from <https://ionic-framework.com/survey/2017#trends>
- Nielsen, J. (2012). *Mobile sites vs. apps: The coming strategy shift*. Fremont, CA: Nielsen Norman Group: UX Training, Consulting, & Research. Retrieved November 2016, 27, 2012.
- Nordmark, S., & Milrad, M. (2012). *Using mobile digital storytelling to support learning about cultural heritage*. In 20th International Conference on Computers in Education ICCE 2012, November 26, 2012-November 30, 2012, Singapore (pp. 408-412). Asia-Pacific Society for Computers in Education.
- Orsini, A. et al. (2016). *Cultural-ON (Cultural ONtology): Cultural Institute/Site and Cultural Event Ontology*. (from <http://dati.beniculturali.it/cultural-ON/ENG.html>).



- Roccetti M., Bertuccioli C., Marcomini A., Varni A., Marfia G., & Zanichelli M. (2014). *Museo Multiverso: Bridging the gap between museums and mobile platforms*. Consumer Communications and Networking Conference (CCNC). ISSN 2331-9852.
- Rubino, I., Barberis, C., Di Chio, L., Xhembulla, J., & Malnati, G. (2014). Enhancing a museum mobile application through user experience design: a comparative analysis. (from <http://www.wseas.us/e-library/conferences/2014/Florence/CSCCA/CSCCA 39.pdf>).
- Weiss, S. (2003). *Handheld usability*. John Wiley & Sons.
- Zbick, J., Nake, I., Jansen, M., & Milrad, M. (2014, November). *mLearn4web: a web-based framework to design and deploy cross-platform mobile applications*. In Proceedings of the 13th International Conference on Mobile and Ubiquitous Multimedia (pp. 252-255). ACM.
- Zeng, M., & Qin, J. (2016). *Metadata* (Second ed.). ALA Neal-Schuman, an imprint of the American Library Association.
- Özdemir, G., & Çelebi, D. (2017). A Social Media Framework of Cultural Museums. *Advances in Hospitality and Tourism Research*, 5(2), 101-119.



## WEB ARCHIVES AS A RESEARCH SUBJECT

Márton Németh

Web Librarian National Széchényi Library, Budapest, Hungary; Doctoral Student, University of Debrecen, Doctoral School of Informatics, Debrecen, Hungary

nemeth.marton@oszk.hu

nmarton@mailbox.unideb.hu

László Drótos

National Széchényi Library, H-1014, Budapest, Hungary

drotos.laszlo@oszk.hu

### Abstract

*Initial discussions about web archiving are mainly focusing on the archiving workflow, the technical details of the archiving process and several curatorial tasks that are appearing in this context. A good overview is being offered about these basic topics in the preface of (Brügger and Schroeder, 2017) Even an overview was offered also on this perspective in the 2018 Bobcatsss Conference (Drótos and Németh, 2018). In this paper we would like to highlight another major perspective of web archiving. The web archived material can be defined as a major research subject itself. Our aim by this article is to offer an overview about several new research disciplinary frameworks, perspectives based on the studying of web archives. Librarians, archivists, information scientists, professionals in Digital Humanities, data scientists and IT-developers can work together on analysing large archived web corpora focusing on several structural and content-based features. New scientific disciplines have emerged through these research activities in the past ten years such as web history (Brügger, 2009). The major focus in this sense to find out new perspectives, outcomes from a historical perspective by analysing selected segments of the archived web content. Focusing on the history of the web itself is also a relevant research topic (Brügger, 2016; Brügger et al., 2017). A new type of collaboration is appearing among historians and data scientists by combining quantitative data science analysis, data visualization, and other data research methods and tools with qualitative historical research activities. (Ben-David, Amram and Bekkerman, 2018; Brügger, 2013; Brügger and Schroeder, 2017; Ogden, Halford and Carr, 2017) Furthermore web archive is appearing itself as a large dataset and as a whole a major research target of research projects in big data analysis field. (Lnenicka, Hovad and Komarkova, 2015; Maemura, Becker and Milligan, 2016). In a close relationship*



*with data science-based research activities a major challenge in information retrieval field the ways of application of semantic web tools in order to ensure effective retrieval of the archived materials based on the meaning of information can be found in a web corpus (Demidova et al., 2014; Fafalios et al., 2018; Fafalios, Kasturia and Nejd, 2018; Gossen, Demidova and Risse, 2016; Souza et al., 2015).*

**Keywords:** data science, big data, digital humanities, research, semantic web, web archiving, web history

## Introduction

Highlighting the importance of web archives from a research perspective is really important in a general discourse about the social benefit of web archiving activities. The creation and management of a web archive collection in this perspective can offer a major help to public collections to be involved in major new research activities, build-up new partnerships with external actors. The social and scientific prestige of public collections can be emerged by including these new kinds of activities to their portfolio. From a higher education perspective including web archive as research subject by all of its consideration can be lead to further institutional collaboration in exciting new fields by forming curricula of education programs in Library and Information Science, Digital Humanities and Informatics. In this article we will highlight some aspects of using web archived materials as a subject of research. At first we are offering a short introduction to the newly emerging field of web history and web historiography. At second a short overview will be offered by some examples how web archives by large datasets are appearing as a research target of data mining and big data analysis fields. At third web archives will be presented as a target of information retrieval research field by using semantic web tools to find new ways of effective information retrieval on a large web corpus based on the meaning of information.

## Web History and Web Historiography

Web history and web historiography can be determined as the historical aspect of Internet Studies. A quick summary of first 25 year of the Internet in a historical context can be found in (Brügger, 2016). Niels Brügger points out that better understanding of the web of the past appears as a major prerequisite to analyse the web of today, regardless whether our focus is on political economy, language and culture, social interaction or everyday use (Brügger, 2013). The



lack of theoretical assumptions and discussions is a major obstacle to constitute web history as a major sub-field of Internet Studies (Brügger, 2013). However, the institutionalization of this sub-discipline is ongoing. A scientific journal has formed (Brügger et al., 2017) a comprehensive book is describing the sub-discipline with a set of case-studies (Brügger and Schroeder, 2017) and the number of publications is significantly emerging. Even in Hungary an article of a new open-access scientific journal 'Digital Humanities' (Kokas and Drótos, 2018) is focusing on current efforts and technologies to capture the present digital universe and reflects on the limitations of current web archives. The second part of the article offers examples how web archived content could be harnessed for historical research, and it may become the principal source of our recent past. The authors point out that web archives, and the resulting scale of data, will require new strategies and methodologies to deal with born digital sources effectively. They also show that born digital sources will also make it possible to pursue new types of inquiries that yield new results.

A major challenge is to determine the object of web history. We can focus on web element like an image on a webpage, a webpage that we can see on a browser window, a website as a set of coherent web pages, web sphere is a web activity related to a certain topic, event etc. and the web as a whole by its total technical infrastructure or the content by its totality. (A more detailed set of definitions can be found by Brügger, 2009). As a web historian we can write down the history of one specific website, or a web sphere related to a certain event. An archived version of website(s) can be used for this purpose to delimit the object of study that can certainly incorporate other sources (Brügger, 2009). Historiography mainly based on incomplete source materials, the historian has to work with the material that he found and must handle the challenge of missing elements. It is certainly true for a web historiographer (Brügger, 2009). The imitation of the past by archiving a webpage, website or set of websites can never be 100% complete, it is just a segment of the totality of the web, the whole of the living context cannot be recorded to the future. It is also important to determine that what kind of archived materials we are working in. A small set of materials can be archived even by non-professionals with specific software tools with special focus (like a research project). Brügger, (2009) calls it micro archiving. While the collections based on macro archiving can be done by professional archivists in order to archive a set of cultural heritage. The third type of collection a web historiographer can work with is a series of snapshots of a large national web domain (like .uk, .de web domains). The main purpose in this sense to offer a representative overview about the status of the domain within a certain set of period. (Brügger, 2009). This kind of archived dataset can be a subject of several



kind of general domain analysis. An example can be found in (Ben-David et al., 2018) about the historical Yugoslav web domain. The different kind of archive sets have different characteristics determined by the way of archiving and it has a major affect to set a research plan with a certain research design by a web historian. Several kinds of specific challenges and features are described with specific types of collections by (Brügger, 2009; Brügger and Schroeder, 2017). The Wayback Machine software tool that can be used to retrieve the archived materials makes a specific set of challenges to web historians by determining the historical authenticity of displayed resources. For example, the potential interplay of different chronological versions of a certain website can cause potential difficulties to determine an authentic content and outlook set to a certain historical moment or period. Checking the duplicates of certain websites by different URL addresses, or describe the history of a website that appeared by different URL-addresses can be also challenging (Brügger, 2009; Locatelli, 2017). In a summary we can determine that a web historian should use the general methods of historical research in parallel with specific knowledge of the nature of web archiving documents, the nature of process of archiving and the specific software features that can be used to retrieve the materials.

## Web archives and big data

The web archives as large corpora can be a research subject of several projects in data science field. The concept of linked and open data have led the necessity of processing large amounts of data in web archives quickly, and retrieve valuable information. Types of data can be web data (like web log data) specific transaction data (such as geolocation) or different types of data related to the text of an archived collection (Lnenicka et al., 2015). Web archives can be a target of distributed data processing with Apache Hadoop together with a framework of specific web data applications on certain platforms. Lnenicka et al., (2015) are proposing a complete workflow to create a web content mining application and a plan of big data archive which uses modern applications (like Python, PHP, Javascript, MYSQL and cloud services). It offers an overview about architecture, methods, and data structures can be used in the context of web mining, distributed processing and big data analytics. A new way of collaboration can be formed among public collections, web archivists and data scientists in this context.

As (Lnenicka et al., 2015) point out, big data applications can change the way of mining, storing, processing, and analysing of websites content. They also note that these application are complementing traditional applications and not replacing them! Some insights can be done into the world of a large set of semi-structured and unstructured data to various research purposes. It is im-



portant to note that there are three types of mining: web content mining, web usage mining and web structure mining. Web content mining extracts useful information from the content of a webpage or website or a set of websites. The main goal is to set structured data form these web content resources. These can be integrated with semantically similar data, with a kind of concept hierarchy or knowledge integration (Lnenicka et al., 2015).

Some kind of historical analysis, investigations can be done on a quantitative focus with the help of structured and semi-structured data that can be retrieved from web archives by data scientists. Some concrete research project examples are being described by (Brügger and Schroeder, 2017). For example, a short overview can be found in a chapter of this book about the findings and insights of the 'Big .uk Domain Data for the Arts and Humanities (BUDDAH)' project that was running in 2014-15. The primary aim was to facilitate the use of a 65TB dataset containing crawls of the .uk domain from 1996 to 2013. The collection does not hold every webpage of the .uk domain and the collected webpages are time-stamped by the date of crawling instead of the date of original creation.

The Arts and Humanities resources with little or no expertise with web archives had a rare opportunity this exciting but challenging source of data. The development of the archive could proceed iteratively in response to the researchers' feedback. Regular meetings were organized among researchers and developers. As a result, an interface called 'Shine' had developed to conduct full-text searches on the archive. The search interface also served as a platform of conceptual navigation on the archive. Each researcher provided useful feedbacks on the potentials and pitfalls of conducting research with web archive datasets. The book chapter discussing three topics of reflections in a greater depth: the conceptualisation ways of the web archives, research strategies, and the use of searching and navigation tool. Some question still remains unresolved by the researchers: How to handle messy and incomplete data, how web archive research can be assimilated into the range of different disciplines and how the results of research queries can be meaningfully presented. The prototype of the historical search engine has become publicly available (WEB Archive UK & JICS, 2015).

As this example demonstrates there is a long way to go to apply big data techniques in collaboration with arts and humanities research community towards the practical and meaningful use of web archives. Collaboration among researchers and developers makes a strategic importance to build up tools and solutions for web archiving research support.



## Web Archives and the semantic web

As we mentioned above a possible output of big-data processing of web archive collections that structured data from web content can be integrated with semantically similar data. It highlights a major problem of web archiving in a research context. As (Fafalios et al., 2018) point out, the absence of efficient and meaningful exploration methods of the archived content is a really major hurdle in the way to turn web archives to a usable and useful information resource. A major challenge in information science can be the adaptation of semantic web tools and methods to web archive environments. The web archives must be a part of the linked data universe with advanced query and integration capabilities, must be able to directly exploitable by other systems and tools.

In the National Széchenyi Library as a part of the Public Collection Digitization project from 2019 we would like to start develop new tools that can help semantic information retrieval and the use of several segments of our web archive collection for research and education purposes by external partners (e.g. schools).

Fafalios et al., (2018) propose an RDF/S model together with a distributed framework in order to build-up semantic profiles (layers) that can describe semantic information from the content of web archives. Semantic layers are enabling to describe metadata information about the archived documents, annotating them with useful semantic information (as entities, concepts, events) then publish these semantic enrichments on the web as linked data. The other major goal is that the semantically structured web archive collections (repositories) can provide advanced query and integration capabilities, and can be directly exploitable by external systems and tools. Web collections can be queried by the SPARQL language. This allows running advanced queries by combining metadata of documents and content-based semantic based informations (like entities in a document). (Fafalios et al., 2018) moreover are working on three ranking models for structured queries focusing on web archives. The first one describes the relativeness of documents to entities, second one focusing on the timeliness of documents, the third one would like to define temporal relations among the entities. Currently experimental results are available from a proposed dataset that can show the effectiveness of the proposed modles and understand their limitations.

Another interesting project is focusing on the URL addresses and the challenge of annotation. A semantic URL analytics aims to support efficient annotation of large scale web archives by using Named Entity Extraction (NER) in the context of URL-s. A URL address can provide accurate estimates of the doc-



ument language, location relevance and topic classification. Most state of the art NER tools such as Stanford NER can achieve high precision (85%) and high coverage in URL categories of a sample dataset. (Souza et al., 2015)

To follow these kind of semantic projects and implement their results and to provide own research capabilities of web archives in semantic web field is a key question to broaden and widen the usability of these collections.

## References

- Ben-David, A., Amram, A., & Bekkerman, R. (2018). The colors of the national Web: visual data analysis of the historical Yugoslav Web domain. *International Journal on Digital Libraries*, 19(1), 95–106. doi: 10.1007/s00799-016-0202-6
- Brügger, N. (2009). Website history and the website as an object of study. *New Media & Society*, 11(1–2), 115–132. doi: 10.1177/1461444808099574
- Brügger, N. (2013). Web historiography and Internet Studies: Challenges and perspectives. *New Media & Society*, 15(5), 752–764. doi: 10.1177/1461444812462852
- Brügger, N. (2016). Introduction: The Web's first 25 years. *New Media & Society*, 18(7), 1059–1065. doi: 10.1177/1461444816643787
- Brügger, N., Goggin, G., Milligan, I., & Schafer, V. (2017). Introduction: Internet histories. *Internet Histories*, 1(1–2), 1–7. doi: 10.1080/24701475.2017.1317128
- Brügger, N., & Schroeder, R. (Eds.). (2017). *The Web as History: Using Web Archives to Understand the Past and the Present* (1st ed.). United States, North America: UCL Press. Retrieved from <http://search.ebscohost.com/login.aspx?authtype=ip,cookie,cpid&custid=s6213251&groupid=main&profile=eds>
- Demidova, E., Barbieri, N., Dietze, S., Funk, A., Holzmann, H., Maynard, D., Papailiou N., Peters, W., Risse, T. & Spiliotopoulos, D. (2014). Analysing and Enriching Focused Semantic Web Archives for Parliament Applications. *Future Internet*, 6(3), 433–456. doi: 10.3390/fi6030433
- Drótos, L., & Németh, M. (2018). Web museum, web library, web archive The responsibility of public collections to preserve digital culture. In L. Petrovska, B. Īvāne-Kronberga, & Z. Meldere (Eds.), *The Power of Reading: Proceedings of the XXVI Bobcatsss Symposium, Riga, Latvia, January 2018* (pp. 124–126). Riga: The University of Latvia Press. Retrieved from [http://bobcatsss2018.lu.lv/files/2018/08/BOBCATSSS\\_2018\\_TheProceedings.pdf](http://bobcatsss2018.lu.lv/files/2018/08/BOBCATSSS_2018_TheProceedings.pdf)
- Fafalios, P., Holzmann, H., Kasturia, V., & Nejd, W. (2018). Building and querying semantic layers for web archives (extended version). *International Journal on Digital Libraries*, 19(1), 1–19. doi: 10.1007/s00799-018-0251-0



- Fafalios, P., Kasturia, V., & Nejd, W. (2018). Ranking Archived Documents for Structured Queries on Semantic Layers. In *Proceedings of the 18th ACM/IEEE on Joint Conference on Digital Libraries* (pp. 155–164). New York, NY, USA: ACM. doi: 10.1145/3197026.3197049
- Gossen, G., Demidova, E., & Risse, T. (2016). Analyzing web archives through topic and event focused sub-collections. In *Proceedings of the 8th ACM Conference on Web Science – WebSci '16* (pp. 291–295). New York, New York, USA: ACM Press. doi: 10.1145/2908131.2908175
- Kokas, K., & Drótos, L. (2018). Webarchiválás és a történeti kutatások. *Digitális Bölcsésznet*, 1(1), 35–55. doi: 10.31400/dh-hun.2018.1.129
- Lnenicka, M., Hovad, J., & Komarkova, J. (2015). A Proposal of a Big Web Data Application and Archive for the Distributed Data Processing with Apache Hadoop. In M. Núñez, N. T. Nguyen, D. Camacho, & B. Trawiński (Eds.), *Computational Collective Intelligence. Lecture Notes in Computer Science*, 9330 (pp. 285–294). Cham: Springer International Publishing. doi: 10.1007/978-3-319-24306-1\_28
- Locatelli, E. (2017). The role of Internet Wayback Machine in a multi-method research project. In “*Researchers, practitioners and their use of the archived web*”, London, School of Advanced Study, University of London. London. Retrieved from <https://archivedweb.blogs.sas.ac.uk/files/2017/06/RESAW2017-BruggerLocatelliWeberNanni-Web25.pdf>
- Maemura, E., Becker, C., & Milligan, I. (2016). Understanding computational web archives research methods using research objects. In *2016 IEEE International Conference on Big Data (Big Data)* (pp. 3250–3259). IEEE. doi: 10.1109/BigData.2016.7840982
- Ogden, J., Halford, S., & Carr, L. (2017). Observing Web Archives: The Case for an Ethnographic Study of Web Archiving. In *Proceedings of the 2017 ACM on Web Science Conference* (pp. 299–308). New York, NY, USA: ACM. doi: 10.1145/3091478.3091506
- Souza, T., Demidova, E., Risse, T., Holzmann, H., Gossen, G., & Szymanski, J. (2015). Semantic URL Analytics to Support Efficient Annotation of Large Scale Web Archives. In J. Cardoso, F. Guerra, G.-J. Houben, A. M. Pinto, & Y. Velegrakis (Eds.), *IKC 2015: Semantic Keyword-based Search on Structured Data Sources* (pp. 153–166). Cham: Springer International Publishing. doi: 10.1007/978-3-319-27932-9\_14
- WEB Archive UK, & JICS. (2015). *Shine Project Historical Research Prototype*. Retrieved from <https://www.webarchive.org.uk/shine>



# P O S T E R S



## WISH AND REALITY - THE CONSISTENCY BETWEEN STUDENTS' EMPLOYMENT ASPIRATIONS AND THEIR SUBSEQUENT EMPLOYMENT ACTIVITIES IN THE FIELDS OF INFORMATION MANAGEMENT

Amelie Andresen

Bachelor Student, Hanover University of Applied Sciences and Arts,  
Hanover, Germany

Amelie.Andresen@stud.hs-hannover.de

Alina Balandis

Bachelor Student, Hanover University of Applied Sciences and Arts,  
Hanover, Germany

Alina.Balandis@stud.hs-hannover.de

Aline Brun

Bachelor Student, Hanover University of Applied Sciences and Arts,  
Hanover, Germany

Aline.Brun@stud.hs-hannover.de

Céline Schmelzer

Bachelor Student, Hanover University of Applied Sciences and Arts,  
Hanover, Germany

Celine.Schmelzer@stud.hs-hannover.de

Charlotte Schröer

Bachelor Student, Hanover University of Applied Sciences and Arts,  
Hanover, Germany

Charlotte.Schroerer@stud.hs-hannover.de

Leonie Weber

Bachelor Student, Hanover University of Applied Sciences and Arts,  
Hanover, Germany

Leonie.Weber@stud.hs-hannover.de



Silke Clausing

Academic Teacher, Hanover University of Applied Sciences and Arts,  
Hanover, Germany

Silke.Clausing@hs-hannover.de

Christian Wartena

Professor. Doctor, Hanover University of Applied Sciences and Arts,  
Hanover, Germany

Christian.Wartena@hs-hannover.de

## Abstract

*The profession of information manager is often confronted with new developments and challenges. When students complete their studies, they usually have concrete target areas in which they aim for employment. But do these aspirations correspond to the reality of the information management profession? Do graduates later find themselves employed in the fields of activity they strive towards? And do they acquire the necessary skills during their studies in order to flexibly and successfully operate in other sectors, if necessary? This poster describes the aims and aspirations of students in the fields of information management, but also of the graduates. In 2015, a representative survey of students previously enrolled in the Information Management degree program at Hanover University of Applied Sciences and Arts revealed the students' employment activities upon completing their studies. Another survey in 2018 collected information about students' aims and aspirations at the beginning of their studies. The poster compares the results of the two surveys and investigates the consistency between students' employment aspirations and their subsequent employment activities.*

**Keywords:** career choice, higher education, information profession, information student

## Motivation

The profession of information manager is often confronted with new developments and challenges. When students complete their studies, they usually have concrete target areas in which they aim for employment. But do these aspirations correspond to the reality of the information management profession? Do graduates later find themselves employed in the fields of activity they strive towards? And do they acquire the necessary skills during their studies in order to flexibly and successfully operate in other sectors, if necessary?



This poster describes the aims and aspirations of students in the fields of information management, but also of the graduates. In 2016, a representative survey of students previously enrolled in the Information Management degree program at Hanover University of Applied Sciences and Arts revealed the students' employment activities upon completing their studies (Bertram, 2017). Another survey in 2018 collected information about students' aims and aspirations at the beginning of their studies. The aim of the comparison is to find out whether the wishes about their future career that beginning students have, are consistent with the actual employment situation of graduates from the same bachelor program. The comparison should give answers for example to the questions in which area students wish to work in, after finishing their studies. If they want to stay in Hanover, in Germany or if they would like to work in a foreign country. Also, the comparison should give answers to the question if the students could imagine starting a master's degree after finishing their bachelor's degree.

## Survey

To compare the wish and reality of students working situation after finishing their studies, a questionnaire has been developed to compare the ideas about the professional career of first term students with the outcomes of a survey among 200 alumni of the information management bachelor program. The questions therefore reflected the questions from the 2016 survey. The newest survey was carried out using the online survey tool called *umfrageonline*. The link of the survey has been sent to the students having started their studies in September of 2018. They had a period of four days to answer the survey. After finishing the survey, the results have been evaluated and compared with the results of the survey made in 2016. Finally, the conclusion has been drawn from the comparison if the wishes and expectations of the students at the beginning of their studies can be fulfilled or not. The newest survey was completed by 29 students.

## Results

Comparing the results of both surveys some points are standing out. For example, only 10,3% of the beginners could imagine working in an academic library. In the survey of the graduates it has been 20,5%. Another result is that 55,2% of the beginners wish to work in an advertising agency or in the marketing sector. The survey of 2016 shows that only 17,9% have an employment in this area. On the question which activities they want to do in their jobs 55,2% of the beginners answered they would like to do project management. That corresponds with the results of the survey of the graduates: 47,5% of them are doing project management in their jobs. Another result of the survey of 2018 is that 75,9% would like to work in Hanover and 17,2% in a foreign country. In 2015 51,6% quoted they work in Hanover and 3,2% are working in a foreign country. The results and the comparison show that there are some differences between wish and reality of students' employments. A reason for the discrepancy might be that students do not have a concrete idea where they would like to work in or their opinion changes while they pass their studies. Another reason could be the situation at the labor market. After finishing their studies maybe there was no job offer in the field graduates wished to work in and so they chose a different offer of employment. Finally, the motivation to study information management might have changed over the last decade.



## Reference

Bertram, J. (2017): Informationsmanager auf dem Arbeitsmarkt. Ergebnisse einer Absolventenbefragung der Hochschule Hannover. *Information, Wissenschaft & Praxis*, 68(1), 47–57. doi: 10.1515/iwp-2017-0021

## Wish and Reality -

The consistency between students' employment aspirations and their subsequent employment activities in the fields of information management



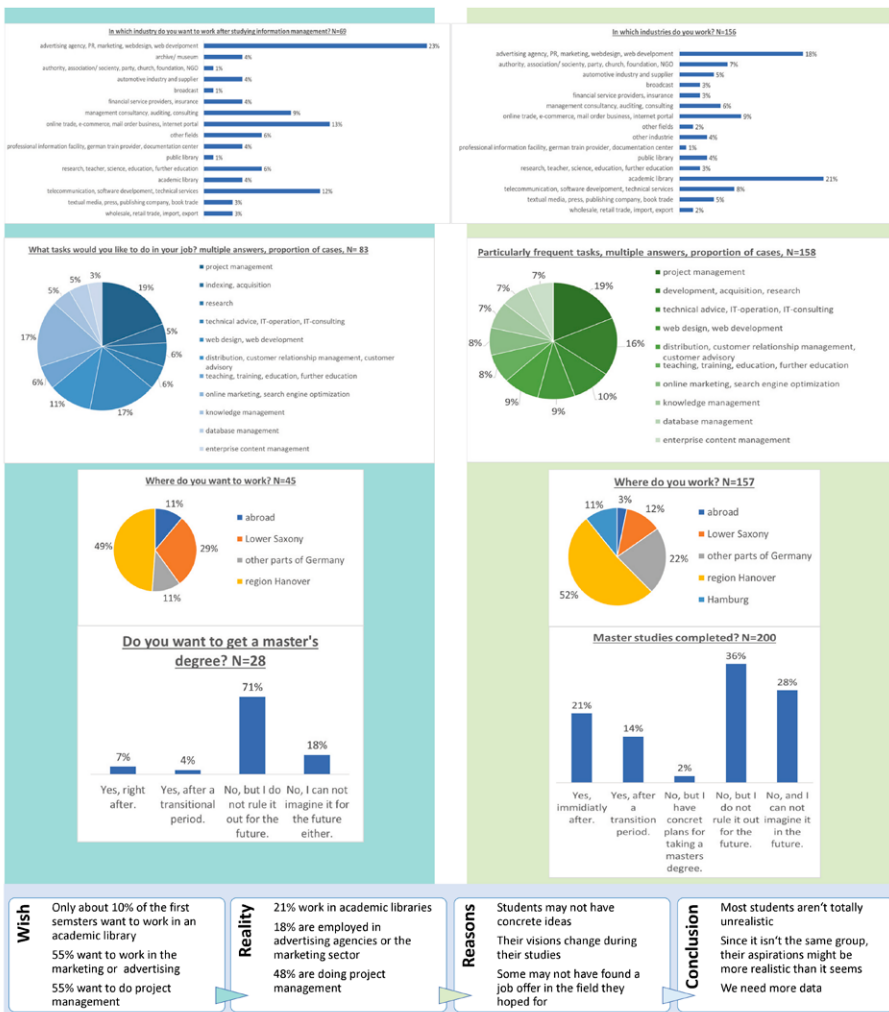
The Information Management degree program at Hanover University of Applied Sciences and Arts offers different specialisations and the opportunity to be employed in different fields of work.

One survey in 2016 explored alumni after their studies while another survey in 2018 focused on first semester students and their career aims. It is important to note that both groups are very different in size and that the first-semester students are not the people who were interviewed after graduation.

**RESULTS OF THE FIRST SEMESTER STUDENTS SURVEY (2018)**  
In 2018, a survey with 29 first semester students investigated their aspirations and plans for the future.

**RESULTS OF THE ALUMNI SURVEY (2016)**

In 2016, a representative survey revealed former students' employment activities after completing their studies. 200 alumni from the Information Management Bachelor's degree program participated.





## THE NORDIC LIBRARY – WHAT IS IT AND WHOM IS IT FOR?

Malin Barkelind

Master's Student in LIS, Department of ALM, Uppsala University,  
Uppsala, Sweden  
malin.barkelind.3570@student.uu.se

### Abstract

*The Nordic Culture Point library in Helsinki is part of the Nordic cultural co-operation managed by the Nordic Council of Ministers. The library is open to the public and one of its main purposes is to promote interest in Nordic culture locally. The purpose of this study has been to characterize the library at the Nordic Culture Point (NCP), focusing on its context, library type and social role, through semi-structured interviews with the library staff as well as observation of activities hosted. In NCP documents, the library is described as a special library. It is true that the resources are of a limited subject scope and that the library is sponsored by a parent institution, which are some of the attributes that Shumaker (2017) connects to the special library type. On the other hand, it is an unusual special library since it is open to the public and not centered on research. A type of library that is similar to the Nordic one is the foreign culture centre library. Gutierrez Prieto & Segado Boj (2016) have described the common traits of libraries in foreign culture centres like the Alliance Française, Goethe-Institut and Instituto Cervantes. They found that these libraries are mostly used by foreign language or culture students, immigrants or expats as well as the general public. An obvious difference is that the NCP library represents Nordic literature and culture, but is also located in a Nordic country. It promotes certain languages and cultures, as do the foreign culture centres, and it is used by students, immigrants and the public. An important visitor group in the NCP library that is not mentioned by Gutierrez Prieto & Segado Boj (2016) is children and youth.*

**Keywords:** community building, cultural centres, Nordic co-operation, special libraries

The purpose of this study has been to characterize the library at the Nordic Culture Point (NCP) in Helsinki, especially its context and library type. The library was studied through semi-structured interviews with the library staff, observation of activities hosted—open to the public and invite-only—and analysis of print and online marketing materials.



The NCP is a Nordic culture house and an administrator of Nordic grant programmes and is run by the Nordic Council of Ministers. Two of the culture houses in the Nordic cultural co-operation house libraries: the Nordic House in Reykjavík and the NCP in Helsinki. These libraries are open to the public and one of their main purposes is to promote interest in Nordic culture locally.

The study showed that the NCP organizes film screenings, art exhibitions, seminars and open lectures, Nordic language cafés, author meet-and-greets and other literary activities. Some of these activities are organized by event staff, some by librarians, but they often collaborate when it comes to events and the two teams consist of only a handful of people in total. The library also invites preschool and school groups to visit the library and through play learn about the Nordic countries and languages.

In NCP documents, the library is described as a special library. It is true that the resources are of a limited subject scope and that the library is sponsored by a parent institution, which are some of the attributes that Shumaker (2017) connects to the special library type. On the other hand, it is an unusual special library since it is open to the public and not centered on research.

A type of library that is similar to the Nordic one is the foreign culture centre library. Gutierrez Prieto & Segado Boj (2016) have described the common traits of libraries in foreign culture centres like the Alliance Française, Goethe-Institut and Instituto Cervantes. They found that these libraries are mostly used by foreign language or culture students, immigrants or expats as well as the general public. An obvious difference is that the NCP library represents Nordic literature and culture, but is also located in a Nordic country. It promotes certain languages and cultures, as do the foreign culture centres, and it is used by students, immigrants and the public. An important visitor group in the NCP library that is not mentioned by Gutierrez Prieto & Segado Boj (2016) is children and youth.

Finally, it can be concluded that the library's context is a sort of culture house, with forms of culture other than literature regularly present in and around the library. It is similar to a foreign culture centre library, but is located in the region it represents and a large part of the collections and activities are directed towards children and youth. The NCP library is a special library, but not a typical example of one.

## References

- Prieto Gutierrez, J. J., & Segado Boj, F. (2016). The Role of Libraries in Cultural Centres Abroad: An Insight. *New Library World*, 117(7/8): 475-484.
- Shumaker, D. (2017). Special Libraries. In M. J. Bates & M. N. Maack (Eds.) *Encyclopedia of Library and Information Sciences* (pp. 4361-4369). CRC Press.



# The Nordic Library – What Is It and Whom Is It For?

Malin Barkelind, [malin.barkelind.3570@student.uu.se](mailto:malin.barkelind.3570@student.uu.se)  
Master's student, Department of ALM, Uppsala University, Sweden

The **Nordic Culture Point (NCP)** is a Nordic culture house and an administrator of Nordic grant programmes, run by the Nordic Council of Ministers. An important part of the culture house is the library. It is open to the public and one of its main purposes is to promote interest in Nordic culture locally. I studied the library through semi-structured interviews, observation of activities hosted and analysis of print and online marketing materials, during my internship there in autumn 2018. The library does not fit neatly into any of the most common library types, but through my study I try to pinpoint what it actually is and whom it is for.



The Nordic Culture Point library in Helsinki, Finland. Photo by Malin Barkelind

## Specialized, but Not Just for Specialists

The library is described as a special library by the NCP themselves, and it fits some of the descriptions listed by Shumaker (2017) in the Encyclopedia of LIS as attributes to the special library type:

- ➡ The information resources are specialized and of a limited subject scope
- ✗ The library focuses on a limited and specialized clientele
- ✗ The library delivers specialized services to that clientele
- ➡ A parent institution sponsors the library

The NCP library is an unusual special library since it is open to the public and not centered on research.

## Part of a Culture House

The NCP organizes film screenings, art exhibitions, seminars and open lectures, Nordic language cafés, author meet-and-greets and other literary activities. Some of these activities are organized by event staff, some by librarians, but they often collaborate. The library also invites preschool and school groups to visit the library and through play learn about the Nordic countries and languages. The library's context is a sort of culture house, with forms of culture other than literature regularly present in and around the library.



Advent calendar made of Christmas-themed children's books, at the Nordic Culture Point library, Helsinki, Finland. Photo by Malin Barkelind

## Promoting Interest in Nordic Culture

The library is not a public library, not a typical special library, and has a mission to promote interest in Nordic culture. Is this a type of library unique to the NCP and its sister institution in Iceland? The foreign culture centre library might be one of its closest relatives. Gutierrez Prieto & Segado Boj (2016) have described the common traits of libraries in foreign culture centres (like the Alliance Française, Goethe-Institut and Instituto Cervantes) and found that they are mostly used by foreign language or culture students, immigrants or expats and the general public. An obvious difference is that the NCP library represents Nordic literature and culture, but is also located *in* a Nordic country. It promotes certain languages and cultures, as do the foreign culture centres, and it is used by students, immigrants and the public. An important visitor group in the NCP library that is not mentioned by Gutierrez Prieto & Segado Boj (2016) is children and youth.

### References:

- Prieto Gutierrez, J. J., & Segado Boj, F. (2016). The role of libraries in cultural centres abroad: An insight. *New Library World*, 117(7/8): 475-484.  
Shumaker, D. (2017). Special Libraries. In M. J. Bates & M. N. Maack (Eds.) *Encyclopedia of Library and Information Sciences* (pp. 4361-4369). CRC Press.



## MOREPRESS - STUDENTS' EXPERIENCE WITH DIGITIZATION OF ACADEMIC JOURNALS

Dario Belcar

Bachelor Student, Department of Information Sciences, University of  
Zadar, Zadar, Croatia  
dbelcar@student.unizd.hr

Marin Đaković

Bachelor Student, Department of Information Sciences, University of  
Zadar, Zadar, Croatia  
mdakovic@student.unizd.hr

Valentina Pjanić

Bachelor Student, Department of Information Sciences, University of  
Zadar, Zadar, Croatia  
vpjanic@student.unizd.hr

Josip Šprljjan

Bachelor Student, Department of Information Sciences, University of  
Zadar, Zadar, Croatia  
jsprljjan@student.unizd.hr

Tina Čošić

Bachelor Student, Department of Information Sciences, University of  
Zadar, Zadar, Croatia  
tcosic@student.unizd.hr

Ella Crnić

Master Student, Department of Information Sciences, University of  
Zadar, Zadar, Croatia  
ecrnic@student.unizd.hr



Nikolina Peša Pavlović

Assistant, Department of Information Sciences, University of Zadar,  
Zadar, Croatia  
npesa@unizd.hr

## Abstract

*Morepress is an online publishing platform created by University of Zadar Publishing office and Department of Information Sciences. The journal platform is based on Open Journal Systems (OJS). The main purpose of Morepress is to enhance the University's publishing activities by using advanced digital technologies in the process of gathering, creation, editing, and transfer of open content. The goal of the project is digital curation and preservation systems for all publications at the University of Zadar (Morepress). The poster will present students' work tasks in the Morepress project. Students' engagement in the project Morepress started in 2015., as a part of the mandatory course Practical work. Until now, 22 students participated in preparing papers for digitization, and further editing for the goal of publishing academic journals on the digital platform Morepress. During this project, six academic journals were digitized and published on the platform. The procedures of the students' engagement in the project consisted of several phases. First phase of the students' tasks in this project was digitization of journals. After digitization process, the next phase was processing texts through Optical Character Recognition (OCR) software, Abbyy Fine Reader 14. OCR is a process of converting handwritten, typed or printed text into machine-encoded text. The purpose of this assignment was to prepare documents so the text can be searchable for users. Students' experiences with this project had many challenges, such as not being able to scan journals properly. This project represents a scientific value for academic community, but also has an important educational value for students. Students learned the process of digitization and using OCR software. As a result of students' engagement in the Morepress project, digitized journals are now part of a digital collection that is available online in open access, which is important for the overall scientific community.*

**Keywords:** Morepress, digital publishing, digitization, open journal system (OJS), optical character recognition (OCR)

## Purpose

The purpose of this poster is to present students' experiences with the process of digitization and digital publishing in Morepress project. Students worked on the project within course Practical work. During this project, students were able to learn about optical character recognition (OCR) technology and its usefulness



in digitization and digital publishing. This poster presents students' work task in several phases, from the earliest stages of digitization to the final part of project - putting files on server.

## Background

Morepress is an online publishing platform created by University of Zadar Publishing office and Department of Information Sciences. Morepress gathers academic publishing content at the University of a Zadar, including journals and monographs. The journals platform is based on Open Journal Systems (OJS). The main purpose of Morepress is to enhance the University's publishing activities by using advanced digital technologies intended for the process of gathering, creation, editing, and transfer of open content as well as to actively contribute to the representation of Croatian science and culture in the web environment.

## Methods and procedures

The procedures of the students' engagement in the project consisted of several phases (2015 - 2018). During this period, 22 students participated in preparing papers for digitization, and further editing for the goal of publishing academic journals on the digital platform Morepress. Students' engagement in the project was a part of mandatory course Practical work. During this project, six academic journals were digitized and published on the platform. Students tasks consisted of preparing journals (scanning, OCR) for the main phase of uploading files on server.

First phase of the students' tasks in this project was digitization of journals. The most important part during scanning was to keep the quality of the scanned papers as high as possible, and to maintain the quality of the original papers as intact as possible. Major problem in this phase was not being able to scan all journals at once because of paper jams.

Second phase of the students' tasks in this project was processing texts through OCR (Optical Character Recognition) software Abbyy Fine Reader to turn the typed and printed works into searchable PDF documents. FineReader is an all-in-one OCR and PDF software application for increasing business productivity when working with documents. It provides powerful, yet easy-to-use tools to access and modify information locked in paper-based documents and PDF files. Although being useful, the program had difficulties finding certain characters which led to students having to check each journal for errors manually.



Third phase was to split the journals into individual articles, export them as searchable PDF documents and save them to appropriate folders.

Last phase of the project was uploading PDF documents, JPEG images and metadata on Morepress test server.

## Importance

The aim of Morepress is to develop new or adjust current technological solutions, intended for merging and transfer of large amount of digitized data and born-digital data, in a unique website called Morepress

This project represents a scientific value for academic community, but also has an important educational value for students. Students learned the process of digitization and using OCR software. As a result of students' engagement in the Morepress project, digitized journals are now part of a digital collection that is available online in open access, which is important for the overall scientific community.

## Conclusion

The primary goal of the project was to finish the process of digitization of university journals. In this project, students learned the whole process of digitization, optical character recognition, preparing journals for dissemination on Morepress platform, but also were able to experience team work and time management. Furthermore, the importance of this project can be also seen in the advancement of the university as a whole. Every journal is now part of a digital collection that is available online in open access. It also serves as a backup for the physical embodiment of aforementioned journals which is very important for their preservation. Having those journals in digital form greatly simplifies the task of conservation because those journals can then be easily multiplied for further dissemination.

## References

- Morepress. Retrieved from URL: [https://morepress.unizd.hr/index\\_hr.php](https://morepress.unizd.hr/index_hr.php)
- ABBYY FineReader 14 OCR - PDF Software with Text Recognition. Retrieved from URL: <https://www.abbyy.com/en-au/finereader/>





## Students' experience with digitization of academic journals

Morepress is an OJS based online publishing platform created by University of Zadar and Department of Information Sciences. 22 students in total were involved in this project. The main purpose of Morepress is to enhance the University's publishing activity by using advanced digital technologies. The goal of the project is digital curation and preservation systems for all publications at the University of Zadar.



### PHASE ONE: Digitization

- Scanning
- Keeping the quality

### PHASE TWO: Optical Character Recognition

- Abbyy FineReader
- Searchable PDF documents

### PHASE THREE: Export

- Journal splitting
- Saving

### PHASE FOUR: Uploading

- PDF documents
- Images
- Metadata

IMPORTANCE  
OF TEAMWORK

PREPARING  
JOURNALS FOR  
DISSEMINATION

USING OCR  
SOFTWARE

WHAT  
WE  
LEARNED

TIME  
MANAGEMENT

### THE RESULT:



Nikolina Peša Pavlović, assistant  
(npesa@unizd.hr)  
Dario Belcar (dbelcar@student.unizd.hr)  
Ela Grnić (eegrn@student.unizd.hr)  
Tina Čosić (tcosic@student.unizd.hr)  
Marin Đaković (mdakovic@student.unizd.hr)  
Valentina Pjanic (vpjanic@student.unizd.hr)  
Josip Sprejan (jsprejan@student.unizd.hr)



## SOCIAL MEDIA: REALITY OR VIRTUAL WORLD

Marta Cota

Bachelor Student, Department of Information Sciences, University of  
Zadar, Zadar, Croatia  
mcota@student.unizd.hr

Nina Kvesić

Bachelor Student, Department of Information Sciences, University of  
Zadar, Zadar, Croatia  
nkvesic@student.unizd.hr

Drahomira Cupar

PhD (supervisor), Department of Information Sciences, University of  
Zadar, Zadar, Croatia  
dcupar@unizd.hr

### Abstract

*Thanks to technological development and the emergence of social media, today we live in the time when individuality and privacy is inevitably exposed and present online. Despite all advantages, daily usage of social media can lead to overly exposure of one's privacy. Purpose of this research is to find out how much is privacy important to younger Facebook and Instagram users, and to what extent they are willing to share part of their privacy with the rest of the world. To finding more specific details, research also focuses on how users change their privacy settings depending on what type of post they share, and explores connections between the real world they live in and maintaining the 'the image' in the virtual world, namely social media. Also, task of this research is to establish in which way 'the real world' affects creating and maintaining self-image in the virtual world. The aim is to find out to what extent these two align and harmonize, for example, does actions on social media match actions in reality. Also, this research will try to show potential harm and awareness about sharing too much privacy on social media with finding out the reasons why users decide to share one specific content with public and 'hide' other. This research is conducted in two phases. In the first phase, an online questionnaire is distributed to users of social media (Facebook and Instagram). In the second phase, participants who agree to continue participation in this research are asked to elaborate*



*further on their answers regarding privacy issues and self-imaging with in-depth semi-structured interviews.*

**Keywords:** privacy settings, real world vs virtual reality issues, social media, self-imaging on social networks

## Introduction

Due to technological development and the emergence of the social media, today we live in the time when individuality and privacy is inevitably exposed and present online. „Social networks have become an important part of everyday life, and are used as a tool for communication and content sharing in both private and professional spheres“ (Žilić et al., 2016). Despite all advantages, daily usage of social media can lead to overly exposure of one's privacy. The purpose of this research is to find out how much is privacy important to younger Facebook and Instagram users, and to what extent they are willing to share part of their privacy with the rest of the world. Shafiea, Nayan and Osman (2012) conducted a survey about online identity that showed that photos people mostly posts are pictures of themselves, pictures with their loved ones, their idols, their imagined self, cartoon characters or babies, scenery, pictures with a message, body parts, flowers, motorcycles, cars and Jersey. The goal of this research is to establish in which way 'the real world' affects creating and maintaining self-image in the virtual world and to find out to what extent these two align and harmonize.

## Previous research

Social media have enabled people to create a completely new self-image and present it to others by using different name, profile picture and so on. In their research, Shafiea, Nayanb and Osmanc (2012) while investigated usage of real names in creating an online identity, concluded that female users prefer variations of their real name. The results say that "creative variations of their real names are perceived to be more playful as they shift between online and offline identities" (Shafiea, Nayanb and Osmanc, 2012: 137). Also, it is interesting to explore the reasons why some people present themselves differently online then they are in reality. In her research about the experience about the online-surrounding from perspective of online-games players, Kardum (2016), statements such as „escape from reality“ and „possibility of presenting yourself in different



way” show possible insecurities and dissatisfaction in offline world while in on-line worlds players find safe shelter to be who they want to be.

## Research questions

This research will answer following research questions: 1. How users change their privacy settings depending on the type of post they share? 2. Why some people present themselves differently on social media? 3. Is there a potential harm and awareness about sharing too much privacy on social media and what are the reasons for decisions of sharing one specific content with public and ‘hide’ other? 4. Are users concerned about safety on social media they use? 5. How much users trust Facebook and Instagram with their personal data?

## Methods, procedures or instruments

The sample includes university students from Croatia. The survey was done with an online questionnaire made in Google Forms and consists of 20 questions closed and open-ended questions. It was distributed via Instagram and Facebook groups and profiles during December 2018.

## Findings and discussion

Hypotheses this research is trying to prove or disprove are as follows. Younger users of social networks don’t think much about their privacy. They often use variations of their names but not because they want to hide their identity but they wish to be more playful or more interesting to their ‘friends’ or followers. Sometimes they do change privacy settings on a personal photo they share, but not on the content they comment, repost or like/dislike on Facebook. Mostly social network users read or heard about problems people experienced while publishing inappropriate content on Facebook (e.g. person loses her/his job due to negative post about her/his boss or company). These stories are still ‘too far’ from students’ real life and they don’t pay much attention to it. Younger users of social networks think Facebook and Instagram still give them enough privacy they can ‘be whatever they like’ and don’t think much about endangering their personal life while publishing their personal data, or even act inappropriate while commenting or posting on social networks. All these statements are going to be elaborated further.



## Conclusions

While social networks give people platform to establish relationships with people they never met, to exchange ideas with those like them or to pick a fight with those they dislike, it is still uncertain if social media give mostly positive or negative effect on human life. There are people who are (still) strongly against it and there are people who cannot understand those who live without the presence on social media. Sometimes, social media overpower their users forcing them to deactivate their accounts and to 'go back to reality'. No matter what is the choice, it is always better to be conscious about 'online life' and virtual identity while one can never be sure where his or hers data ends up.

## References

- Kardum, T. (2017) Moj avatarija: doživljaj iskustava iz online-okruženja iz perspektive igrača/ica online-igara. *Acta iadertina*. 141-158. Retrieved from: <https://hrcak.srce.hr/190145>
- Shafiea, L.A., Nayan, S., Osman, N. (2012) Constructing identity through Facebook profiles: online identity and visual impression management of university students in Malaysia. *Procedia – Social and Behavioral Sciences*. 134 – 140. Retrieved from: <https://www.sciencedirect.com/science/article/pii/S1877042812050872>
- Žilić, L., Cupar, D., Ćirić, J., Zauder, K. (2016) Student-teacher Facebook friendship and privacy awareness. *Information, Libraries, Democracy. Proceedings & Abstracts*. 383-394. Retrieved from: <https://bib.irb.hr/datoteka/841744.Lyon2016.pdf>



# Social media: reality or virtual world?

Marta Cota (mcota@student.unizd.hr), Nina Kvesić (nkvesic@student.unizd.hr), Drahomira Cupar, PhD (supervisor), University of Zadar, Department of Information Sciences

## BACKGROUND

Despite all advantages, daily usage of social media can lead to overly exposure of one's privacy. Social media have enabled people to create a completely new self-image and present it to others by using different name, profile picture and so on.

Žižić, et al. (2016) → „Social networks have become an important part of everyday life, and are used as a tool for communication and content sharing in both private and professional spheres“.

Kardum (2016) → experience about the online-surrounding from perspective of online-games players; statements like „escape from reality“ and „possibility of presenting yourself in different way“ show possible insecurities and dissatisfaction in offline world while in online worlds players find safe shelter to be who they want to be.

Shafiea, Nayan and Osman (2012) → people mostly post pictures of themselves, pictures with their loved ones, their idols, their imagined self, cartoon characters or babies, scenery, pictures with a message, body parts, flowers, motorcycles, cars and Jersey.

Shafiea, Nayan and Osman (2012) → while creating online identity, female users prefer variations of their real name - „creative variations of their real names are perceived to be more playful as they shift between online and offline identities“.

□ The goal of this research is to establish in which way the real world affects creating and maintaining self-image in the virtual world and to find out to what extent these two align and harmonize.

□ The purpose of this research is to find out how much is privacy important to younger Facebook and Instagram users, and to what extent they are willing to share part of their privacy with the rest of the world.



## METHODOLOGY



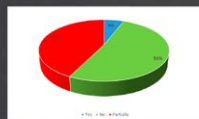
The survey was done with an online questionnaire made in Google Forms and consists of 24 closed and open-ended questions. It was distributed via Instagram and Facebook groups and profiles during December 2018. 204 people had participated in this questionnaire. The sample mostly includes university students from Croatia.

## RESEARCH QUESTIONS

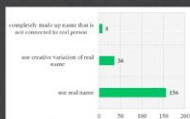
1. How users change their privacy settings depending on the type of post they share?
2. Why some people present themselves differently on social media?
3. Is there a potential harm and awareness about sharing too much privacy on social media and what are the reasons for decisions of sharing one specific content with public and hide other?
4. Are users concerned about safety on social media they use?
5. How much users trust Facebook and Instagram with their personal data?

## FININDGS AND DISCUSSION

Most of respondents are between 18 and 26 years old (97%, N=198), most of them are bachelor and master students (82%, N=167) and from Croatia (95%, N=194). Usage of social networks: Facebook & Instagram (+ at least one more) use 87.7%, N=179 of respondents; 7 use only Instagram (+ other) and 18 use only Facebook. Average duration of usage for Facebook is between 5 and 10 years (77.9%), and Instagram 3 and 5 years (46.6%).

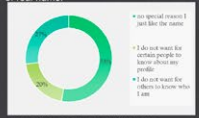


Graph 1. How many people read privacy instructions while creating account



Graph 2. Variation of names when creating account on FB and/or IG

Graph 2 shows variations when registering to FB or IG. Additional answers were: on FB use real name, on IG made up name; made up name, somehow connected with the person and short version of real name.



Graph 3. Reasons for using different name



Graph 4. Level of trust Facebook/Instagram regarding personal data



Graph 5. How often people change password



Graph 6. Reasons for changing the password

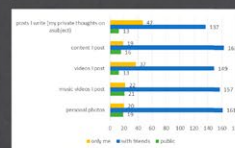
Graph 6 shows what are the main reasons for changing the password and several respondents gave their own reasons:

- ✓ I got bored with passwords after some time
- ✓ My stupid friends change it when I leave them my pc to play fifa and go out to hook up with a girl, or if I tell someone the password I use for something else but it's the same one I use for facebook
- ✓ I thought my brother saw it, (he didn't)
- ✓ I only change my password on any service if there was a breach in my privacy (e.g. an attempted hack)
- ✓ I don't change it because if someone can get my password once they can do it again, so I don't see the point

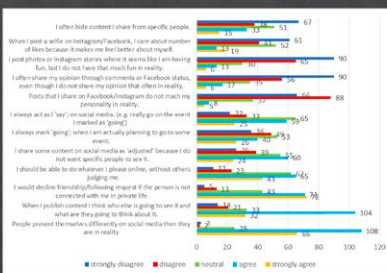


Graph 7. Control and deactivation of the account

On question how often they share content 11.8% said they never share content, 37.7% rarely share content, 42.6% sometimes, when they like the content, and only 7.9% often share content on FB/IG.



Graph 8. Privacy settings on the content shared on Facebook



Graph 9. Statements on self-presentation on social networks

## CONCLUSION

While social networks give people platform to establish relationships with people they never met, to exchange ideas with those like them or to pick a fight with those they dislike, it is still uncertain if social media give mostly positive or negative effect on human life. There are people who are (still) strongly against it and there are people who cannot understand those who live without the presence on social media. Sometimes, social media overpower their users forcing them to deactivate their accounts and to go back to reality. No matter what is the choice, it is always better to be conscious about online life and virtual identity while one can never be sure where his or hers data ends up.

## REFERENCES

- Kardum, T. (2017) Moj avatar i ja: odzvećanje iz online-identiteta iz perspektive igraćica online-igara. Acta Iadrina. 141-150. Retrieved from: <https://ojs.izv.hr/issue/141/141>
- Shafiea, L.A., Nayan, S., Osman, K. (2012) Constructing identity through Facebook profiles: online identity and visual impression management of university students in Malaysia. Procedia - Social and Behavioral Sciences, 134 - 140. Retrieved from: <https://www.sciencedirect.com/science/article/pii/S1877042812050572>
- Zižić, L., Čeranić, D., Čeranić, J., Zdravljica, R. (2018) Studenti i Facebook: branding i privatnost. Information, Literature, Democracy. Proceedings & Abstracts. 385-394. Retrieved from: <https://lib.izh.hr/izdatci/izdatci/14744/lyo2018.pdf>



## EVALUATION OF LIBRARY CATALOG USAGE AMONG STUDENTS OF THE FACULTY OF HUMANITIES AND SOCIAL SCIENCES IN OSIJEK

Sanja Čajkovac

MA Student, Department of Information Sciences, Faculty of Humanities and Social sciences

Osijek, Croatia

scajkovac@ffos.hr

Elizabeta Kotromanović

MA Student, Department of Information Sciences, Faculty of Humanities and Social sciences

Osijek, Croatia

ekotromanovic@ffos.hr

### Abstract

*Academic libraries play a very important role in student education. Also, they support the entire academic education, scientific research work and all the members of the wider community („Standardi za visokoškolske knjižnice u Republici Hrvatskoj“, 2008). One of the services of the library is the creation of a library catalog, which must be available to all users for the purpose of researching. This paper describes the research conducted in April 2018, among students from all departments of the Faculty of Humanities and Social sciences in Osijek, with the aim of examining the current situation regarding the frequency of use and satisfaction with the library catalog. The instrument used was an online survey. Using an online questionnaire allows for easier collection, entry, control and correction of data. In this way, the research costs are smaller and it is possible to collect a large number of responses in a short time (Dumičić & Žmuk, 2009). The research was conducted with the assumption that the students of Faculty of Humanities and Social sciences rarely use the library catalog, with the students of Information sciences being an exception, since they have had some form of education passed. Based on this assumption, the questionnaire was composed and it was sent to the administrator of the Facebook page of all faculty students, who then publicly published the survey.*

*Researching the frequency of use and satisfaction with the library catalog among students is important for the development of the library and services it provides. Customer feedback may lead to the decision to introduce certain services and/or improve the existing ones.*



**Keywords:** evaluation, Faculty of Humanities and Social Sciences in Osijek, library catalog

## The background and purpose

One of the most important services of the library is the creation of a library catalog, which must be available to all users. Researching the frequency of use and satisfaction with the library catalog is important for the development of the library and services it provides. The results of this research show how often students use a catalog, which of them consider they need additional education about the catalog and which are familiar with the possibilities offered by the catalog. The results can be used to improve one of the important library services and greatly facilitate the process of information searching for students.

## Details of the methods, procedures or instruments used

The instrument used was an online survey which allows for easier data collection and entry. The questions are divided into several groups: general demographic data, sources of information most used, library catalog use (how often, which institution's catalogs), library cataloging skills and student's opinions on the usefulness of the catalog. The questionnaire was sent to the administrator of the Facebook page of all faculty students. 84 students participated in the research and the response rate was 6.5%.

## Findings, discussion and conclusion

The results of the research have shown differences in the frequency and skills of using catalogs among students of different faculty departments. When asked about the frequency of use of the catalog, 88.1% of respondents claim they have used it at least once, most often it was the faculty library catalog, and the largest number of respondents - 39.5% - claims to use it several times a month. The results also showed that 72.3% of the respondents had some education about catalogs, and 36.1% of respondents claim they have very good skills in using the catalog. The most common search fields have been the keywords, author and title, and the most used search technique is limiting the results. Lastly, the results showed that most students have a positive attitude towards the catalog: they find it useful, easy to use and are satisfied with it, which brings us to a conclusion



that students understand the importance of a library catalog. Researching this topic further and adjusting the catalog to users needs can only better this service and improve the number of satisfied catalog users.

## References

- Dumičić, Ksenija, Žmuk, Berislav. (2009). Karakteristike korisnika Interneta u Hrvatskoj i reprezentativnost internetskih anketa. Zbornik Ekonomskog fakulteta u Zagrebu.
- Standardi za visokoškolske knjižnice u Republici Hrvatskoj (2008). Retrieved from [https://www.gksb.hr/images/dokumenti/Standardi\\_za\\_visokokolske\\_knjjinice.pdf](https://www.gksb.hr/images/dokumenti/Standardi_za_visokokolske_knjjinice.pdf)





# EVALUATION OF LIBRARY CATALOG USAGE AMONG STUDENTS OF THE FACULTY OF HUMANITIES AND SOCIAL SCIENCES IN OSIJEK



1

## GENERAL DEMOGRAPHIC DATA

- **84 students** of the Faculty of humanities and social sciences in Osijek participated in the research
- Most respondents from **Croatian language and literature Department** : 32%

2

## LIBRARY CATALOG USE

- **88.1%** of respondents claim they have used it **at least once**
- **36.1%** of respondents claim they have **very good skills** in using the catalog
- Students find it **useful, easy to use and are satisfied with it**



3

## SEARCH FIELDS

- **80%** author
- **77%** title
- **74%** key words
- **36%** words from the title and language



Search



4

## SEARCH TECHNIQUES

- **48%** limiting the results
- **34%** use no technique at all
- **13%** use truncating words



5

## EDUCATION

- **44%** had passed catalog use education in class
- **30%** attended a class in faculty library
- **27%** have no education on library catalog use
- **31%** thinks it's necessary to provide students with the education on library catalog use



Authors:  
Elizabeta Kotromanović and Sanja Čajkovac  
(University of Osijek, Croatia)



## INTELLECTUAL FREEDOM AND DIMENSIONS OF ONLINE CENSORSHIP

Svetoslava Dimitrova

Doctoral Student, Library Management and Archival Studies Department,  
Faculty of Librarianship and Cultural Heritage, University of Library  
Studies and Information Technologies, Sofia, Bulgaria  
s.dimitrova@unibit.bg

### Abstract

*Merriam-Webster Dictionary defines Intellectual freedom as freedom that allows people to think about or study what they want. If we try to extend that definition, we can bravely say that Intellectual freedom is the right of every human being, no matter where he or she is, to search for and receive information, without any restrictions. This freedom provides free access to all expressions of ideas and opinions. It is the foundation of the democratic system. On the other hand, censorship is when parts of books, movies, etc., are removed because are considered to be offensive, harmful to society, etc. The question is who defines whether something is offensive and if it really is – why it should be removed? Censorship happens every time when someone successes in imposing his or her political or moral values on others by suppressing words, images, etc.. The aim of the paper is to define the dimensions of censorship and how it affects people. To achieve the goal set are defined some scientific tasks: first of all, will be explored if and how the censorship is able to change any individual's opinion; how the society could stand up against it; and if there is any control over the Internet. Based on that it is described how intellectual freedom is built in the modern society and how we can extend it. The main question is how intellectual freedom is able to help people to fight with censorship; to understand how content takedown affects the lives and work of individuals in different parts of the world.*

**Keywords:** censorship, freedom of expression, intellectual freedom

The purpose of this poster is to present the intellectual freedom and how censorship affects people and who decides whether something needs to be censored or not. To achieve that goal are set out the following major research tasks, outlining the methodology of the study. First of all is presented a definition of intellectual freedom and one of censorship. Second of all the emphasis is placed on good practice – Banned books week. The methodology for achieving the objective of the study and solving the set research tasks include the following specific methods: content analysis, comparative analysis and synthesis of the obtained information.



Intellectual freedom is a basic right to every human being. It gives people the power to access and share information no matter where you are or what you are doing. And most importantly – to use that information for further action, for example – to expression or to debate. Intellectual freedom gives you the chance to participate in the production and distribution of knowledge. Emerson (1970) called it a system, a network of people interacting with each other, agreeing, disagreeing, supporting, and opposing. One of the main purposes of intellectual freedom is to promote a democratic culture in which individuals participate in meaning making that establishes them as individuals. This democratic culture is democratic in the sense that everyone, not just the political, economic, or cultural elite, has a chance to participate in the development of societal ideas and meanings. The key is that access to information should not be restricted. Any restriction to access to information is a violation to human rights and should not have any place in the modern society.

Intellectual freedom is the basis of the democratic system. And in this democratic system, people should be self-governors. In order to do so responsibly, people must be well-informed; to have choices how to get information and what information is relevant.

Censorship is the suppression of words, images, or ideas, that are defined as “offensive” or “harmful to society”. It happens every time when someone succeed in imposing his or her political or moral values on others; and when expressive materials (books, movies, works of art, etc.) are removed or kept away from public access. Censorship can also affect particular audiences, based on certain age or any other characteristics. Censorship can happen on every level – on governmental (national) or on private (small parts of society). Every time when censorship happen – it is unconstitutional.

In most cases, the censor is someone who believes that censorship can improve society and to restore what the censor believes is lost. The censor’s job is to examine literature, movies or other forms of intellectual expression and to remove or even ban anything that is considered to be unsuitable. Nowadays, censorship is not only referred to the suppression of public speech by government, but it also affects the Internet.

The fight with censorship is supported by the annual campaign by Office for Intellectual Freedom by the American Library Association – Banned Books Week (<http://www.ala.org/advocacy/bbooks/banned>). It happens at the end of September ever since the 1982 and the main goal is to celebrate the freedom to read. By this event the Office by Intellectual Freedom is trying to underline the



importance of free and open access to information. All books included in the Banned Books Week list have all been tried to be restricted or removed in libraries and schools but are still available to be found. This campaign brings together the whole society – librarians, booksellers, journalists, teachers, publishers, and most importantly – readers. It is supported by the American Booksellers Association, the American Library Association, the Association of University Presses, National Coalition Against Censorship, etc.

The best way for fighting censorship for any individual is to stay informed. This way, not only intellectual freedom is raising, but also, we, as part of modern society, become aware of what is happening in our country, school, city.

In conclusion, there is a connection between intellectual freedom and censorship. Only people that are informed and able to define if this information is correct or not, are able to be intellectual free. This way, they can see if the information is censored or not.

## References

- Imre, I., Pjesivac, I., Luther, C. A. (2016). Government control of the Internet and WikiLeaks: How does the press in four countries discuss freedom of expression? *The International Communication Gazette*, 78(5), 385-411.
- Emerson, T. (1970). *The system of Freedom of Expression*. New York, NY: Random House.
- Green, J., Karolides, N. J. (2005). *Encyclopedia of Censorship*. New York: Facts On Fire, Inc.
- Fitzsimmons, F. (1996). *Censorship, Intellectual Freedom, Librarianship and the Democratic State. Libraries, Books, Ideology During the Second World War (1939-1945)*. National Library of Latvia, Riga.

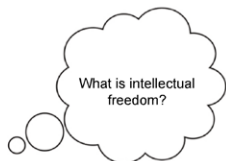


## UNIVERSITY OF LIBRARY STUDIES AND INFORMATION TECHNOLOGIES



## INTELLECTUAL FREEDOM AND DIMENSIONS OF ONLINE CENSORSHIP

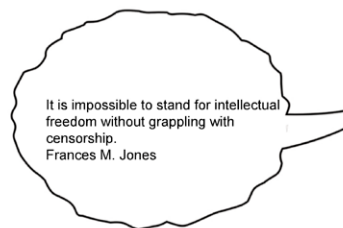
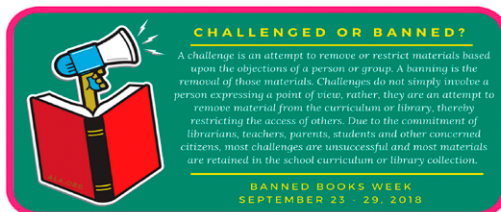
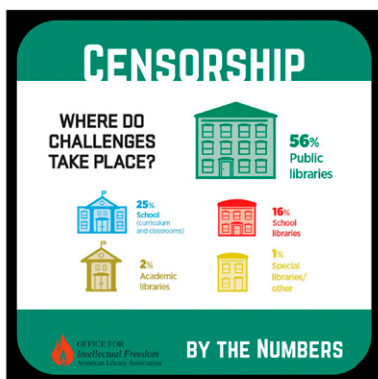
Svetoslava Dimitrova, PhD student  
s.dimitrova@unibit.bg



Intellectual freedom is a basic right to every human being and gives people the power to access and share information no matter where or what you are doing. And most importantly - to use that information for further action, for example - to share or to debate.



Censorship is the suppression of words, images, or ideas, that are defined as offensive or harmful to society.



The best way for fighting censorship for any individual is to stay informed. This way, not only intellectual freedom is raising, but also we, as part of modern society, become aware of what is happening in our country, school, city. Only people that are informed and able to define if this information is correct or not, are able to be intellectual free.

This way, they can see if this information is censored or not.



## LIBRARIES AND MULTICULTURALISM: STAKES AND LIMITS HOW CAN TODAY'S LIBRARIES MEET INTERNATIONAL USERS' NEED?

Camille Delaune  
Civic Service, Toronto, Canada  
mlledelaune@gmail.com

Mathilde Gaffet  
Librarian, Bordeaux, France  
gaffet.mathilde@gmail.com

Laure Papon-Vidal  
Librarian, Marseille, France  
laure.papon-vidal@univ-amu.fr

### Abstract

*For years - or even decades -, libraries have been working to improve their quality of service(s). To develop these services, library staff is endlessly evolving, and as said by M. Szczepanski, welcoming implies shifting the usual representation from a "collection system to a service system" (Couvidat, 2018). As users are getting more and more international and multicultural (IFLA, 2008), to what extent libraries can offer hospitality and welcome which meet people's expectations, even though expectations are as different as people themselves? Nowadays, libraries are equally working on services and collections: services can meet needs and expectations of international users. Are these services offered because librarians were willing to take international patrons into account or else because of pressure caused by several situations? As a matter of fact, different goals can be a motivation to propose services to international users: economic and marketing goals (to attract a new audience), political goals (to promote French language and culture) and social goals. All of it contributes to a global understanding of library professionals. Thus, we will be first starting our study focusing on the idea of hospitality to better understand professionals position towards international users. Hospitality has been a recurrent theme in literature, throughout the world history in every type of context, such as the Odyssey, the current globalisation, the spread of visiting scholars programmes or the Eu-*



*ropean migrant crisis. At every level in our society, meeting foreigners awakes paradoxical and extreme reactions: hospitality or hostility (Zarka, 2016). Librarians, as individuals as well as professionals, don't make an exception and face this situation on a daily basis through their specific, or regular, service proposals. On the strength of side demographic data, analysing these services is an opportunity to outline their adequacy to a given context and then develop a deep understanding of the involved goals and the way the professionals deal with it. Different aspects can demonstrate libraries' hospitality or hostility such as taking into account cultural diversity, offering collections in foreign languages or putting through international users with dedicated agents. The poster presented propose all at once context, method and results.*

**Keywords:** international, libraries, service, accessibility, multicultural

## Detail of methods, procedures or instruments used: qualitative survey

Different criteria were picked out to choose the studied libraries : first, as it meant to be a comparison between academic and public libraries we assumed that users who patronise libraries can (at least partially) be the same. The offered services could be either similar or complementary. We also chose cities that have academic and public libraries: from medium to large cities. These cities have similar sizes: from 90 000 to 850 000 inhabitants.

The selected libraries are from Lyon/Villeurbanne, Dunkerque, Caen, Aix/Marseille, Toulouse, Strasbourg and Lille (7 public libraries and 7 academic libraries)

At least, an evaluation grid had been created to analyse the different libraries with social, political, structural criteria and services.

## Findings

Academic and public libraries websites are always up to date: the information is reliable and fresh. They are often translated into English but not completely: is the information less reliable and fresh then? When the websites offer translations, most of the time it is in English, but in some regions, they also offer regional languages: Dutch in Lille and Occitan in Toulouse.

Collections are the core service, they are offered everywhere. Library web portals are regularly updated with new items from the collections. In public libraries as in university libraries, foreign language collections are mostly in English. In French public libraries, the collections are based on the already known usage



data and the observations of the library as no ethnic statistics are recorded. In French university libraries, the collections are linked to local geographic specificities (location near a border) and to the courses given at the university.

Neither university nor public libraries have a dedicated member of staff to welcome foreign users. Libraries don't have a clear published reception policy. If there is one, it would be found on the website of the supervising organisation.

## Discussion and conclusion

Generally it seems that there are no dedicated services offered by libraries to answer the specific needs of international users. Does that mean foreign patrons have similar needs to all other patrons? Is the only specific issue the need for translations in more international languages?

No matter the origin of the user, the service provided is the same, only the language changes.

From now on, the problem remains of highlighting services already provided by academic and public libraries. Library websites rarely offer an overview of the variety of services provided, when foreign patrons tend to prefer to visit the website before going into the physical library.

## Prospects

What could we do to improve these issues? Two main avenues :

- Libraries need to improve their communication and especially their communication in English, so they can become familiar to foreigners. They also need to advocate their services to the supervising institutions (university for academic libraries and city council for public libraries) to have their role understood and recognised.
- Importance of website accessible in different languages, accounting for regional needs.

## References

Anjeaux, E., & Association des directeurs et personnels de direction des bibliothèques universitaires et de la documentation. (2017). Étude des Indicateurs européens:



- La situation des bibliothèques universitaires françaises par rapport aux autres pays européens. Retrieved from <http://www.enssib.fr/bibliotheque-numerique/documents/68079-etude-des-indicateurs-europeens-la-situation-des-bibliotheques-universitaires-francaises-par-rapport-aux-autres-pays-europeens.pdf>
- Couvidat, A. (2018). Développer l'accueil en bibliothèque. *Bulletin des Bibliothèques de France*, (15), 146–147. Retrieved from <http://bbf.enssib.fr/consulter/bbf-2018-15-0146-002>
- IFLA. (2008). IFLA -- IFLA/UNESCO Multicultural Library Manifesto. Retrieved September 14, 2018, from <https://www.ifla.org/node/8976>
- Weber, R. (2011). L'accueil des étudiants étrangers dans les bibliothèques des établissements d'enseignement supérieur. Retrieved from <http://www.enssib.fr/bibliotheque-numerique/documents/49069-l-accueil-des-etudiants-etrangers-dans-les-bibliotheques-des-etablissements-d-enseignement-superieur.pdf>
- Zarka, Y. C. (2016). Penser l'hospitalité aujourd'hui. *Cités*, 68(4), 3. <https://doi.org/10.3917/cite.068.0003>







## LIS DOCTORAL STUDENTS AND THEIR SUPERVISORS: AN EXPLORATORY STUDY AT CROATIAN STATE UNIVERSITIES

Gordana Gašo

PhD Student, Senior librarian, Faculty of Humanities and Social Sciences  
in Osijek, Library, University in Osijek, Croatia  
ggaso@fos.hr

### Abstract

*The quality of supervision in doctoral education can have great influence on the learning and research experience of doctoral students. Since this topic is somewhat neglected in scholarly literature, this paper aims to raise awareness of its importance. The poster presents findings of the quantitative study whose aim was to understand how are relationships between doctoral students and their supervisors regulated and understood at Croatian universities, and in particular at LIS departments.*

**Keywords:** Croatia, doctoral students, mentorship, supervisors

### Introduction

Since supervising involves, first and foremost, individual meetings of students with their supervisors, to prevent misunderstandings in communication, it is necessary to clearly define expectations, obligations, rights and responsibilities at the outset (Löfström and Pyhältö, 2015) because the relationship between supervisors and doctoral students “can only succeed if the requirements that this process puts on both sides are equally transparent and understandable, if both parties define, formulate and document their expectations, and the doctoral study is understood as a process of developing the joint project and finalizing it” (Zajedno do doktorata : preporuke za mentore i doktorande, 2011).

### Purpose

The poster will present the results of the preliminary study whose aim was to understand how are relationships between doctoral students and their super-



visors at Croatian universities, and in particular at LIS departments, regulated and understood. Author set off to identify if there are any documents which regulate the relationship between doctoral students and their supervisors, and to understand how these documents regulate their relationship (what aspects of their work, in what way etc.).

## Methodology

Study was conducted via online survey (which included multiple-choice questions, open questions and Lickert-type questions) which was sent to 31 supervisors of doctoral students at Croatian LIS departments at three state universities. A total of 12 respondents participated in this study (38.7 % response rate). Also, content analysis of available websites and relevant documents (guidelines, formal agreements etc.) which regulate the rights and responsibilities of doctoral students and their supervisors at relevant state university in Croatia was conducted.

## Results

The content analysis of websites confirmed that there are quite a few documents (guidelines, brochures, etc.) which regulate to some extent the relationship between doctoral students and their supervisors at Croatian LIS departments. However, it seems that there are no formal documents or legally binding agreements which define or regulate their relationship.

Also, results of an online survey showed that none of the respondents participated in any kind of supervision training in the last five years which would prepare them for supervision of their doctoral students. Although 50% respondents said that they do not know if there are any documents at their departments and doctoral study programs that regulate this relationship, 7 respondents are satisfied with the way in which these relationships are regulated. A third of respondents were neither satisfied nor dissatisfied. However, slightly more than half of respondents (7, 55.6%) agreed that the relationship between supervisors and doctoral students would be clearer and easier if there were some formal and written documents and agreements.

## Discussion and conclusion

Novak (2014) indicated that being a mentor is a privilege but it is also a challenge because the final goal, of doctoral education is to create an independent



researcher. So, it is very important, at the beginning of this process, to describe and regulate relationships between doctoral students and their supervisors. On the other hand, supervision training can help academics in preparing them when supervising the doctoral students (Löfström and Pyhältö, 2012).

This is one of rare studies into the perceptions of supervision in doctoral education by supervisors, and it offers valuable, preliminary insights into their attitudes and opinions.

Although the study was conducted only at Croatian LIS departments and its conclusions are not valid for Croatia's academic community in general, the tested methodology can be useful in designing future, larger research into this phenomenon.

## References

- Löfström, E., & Pyhältö, K. (2012). The Supervisory Relationship as an Arena for Ethical Problem Solving. *Education Research International*, 1–12. doi: 10.1155/2012/961505
- Löfström, E. & Pyhältö, K. (2015). 'I Don't Even Have Time to be Their Friend!' Ethical Dilemmas in Ph.D. Supervision in the Hard Sciences. *International Journal of Science Education*, 37(16), 2721–2739. doi:10.1080/09500693.2015.1104424
- Novak, D. (2014). Profesionalizacija doktorske izobrazbe : vodič za mentore i doktorande = Professionalization of doctoral education : guide for supervisors and doctoral students. Zagreb: Fakultet prometnih znanosti Sveučilišta u Zagrebu. Retrieved from <http://static.fpz.hr/datoteke/Profesionalizacija-doktorske-izobrazbe.pdf>
- Zajedno do doktorata: preporuke za mentore i doktorande. (2011). Zagreb: Sveučilište u Zagrebu. Retrieved from [http://www.ttf.unizg.hr/doktorski/Zajedno\\_do\\_doktorata-Preporuke\\_za\\_mentore\\_\\_doktorande.pdf](http://www.ttf.unizg.hr/doktorski/Zajedno_do_doktorata-Preporuke_za_mentore__doktorande.pdf)



## LIS DOCTORAL STUDENTS AND THEIR SUPERVISORS: AN EXPLOATORY STUDY AT CROATIAN STATE UNIVERSITIES

Gordana Gašo, PhD student, Senior librarian  
Faculty of Humanities and Social Sciences, Library  
University of Osijek, Croatia  
ggaso@ffos.hr

### INTRODUCTION

The quality of supervision in doctoral education can have great influence on the learning and research experience of doctoral students. A preliminary study was designed in order to understand how are relationships between doctoral students and their supervisors at Croatian universities, and in particular at LIS departments, regulated and understood.

### METHODOLOGY

- content analysis of available websites and relevant documents which regulate the relationship between doctoral students and their supervisors
- online survey was conducted among 31 supervisors of doctoral students (N=12, 38,7% response rate) at Croatian LIS departments at three state universities

### RESEARCH QUESTIONS:

1. How is relationship between LIS doctoral students and their supervisors regulated at Croatian universities?
2. How well are supervisors prepared for their role (awareness, training)?
3. How do supervisors perceive their role and responsibilities in this relationship?
4. What challenges do supervisors face when mentoring PhD students?

## RESULTS



.....  
No formal documents or legally binding agreements which define or regulate the relationship between doctoral students and their supervisors at Croatian LIS departments.



.....  
None of the respondents participated in any kind of supervision training in the last five years.

### Perceived challenges when mentoring PhD students

"very poor knowledge of the formal mentoring framework" : "doctoral candidates unprepared for scientific work" : "insufficient motivation of candidates" : "lack of minimal training for supervisors"



## WHAT'S ON TOP?: COMPARING THE LISTS OF MOST LOANED BOOKS FROM SWEDISH PUBLIC LIBRARIES

Beate Granström

Bachelor Student, Faculty of Librarianship, Information, Education and IT. University of Borås. Borås, Sweden  
s172398@student.hb.se

### Abstract

*The purpose is to investigate the most popular books loaned from public libraries across Sweden, and compare results with book market figures. Top ten lists make it possible to discern popular genres and see if patrons of one library favor one genre, and if this correlates with the book market. The public libraries of Borås, Karlshamn, Kungsbacka, Växjö and Sundsvall were chosen for this study since they represent municipalities of about equal size, providing top ten lists of books for adults 2016-2017. Non-fiction, audio books, e-books and magazines were excluded. Genres were identified and compared with statistics from Swedish book sellers, proposing trends. The genres detected included general fiction (mainly literary fiction that focus on characters and themes), crime, thriller, biography, historical fiction, horror, romance, science-fiction and poetry. Crime and general fiction were predominant in libraries; thrillers were rated higher with the book sellers. Studies similar to this seem to not have been conducted in Sweden. However, Yucesoy, Wang, Huang and Barabási (2018) concludes that general fiction most often make bestseller lists, and Berglund (2012) writes about the Swedish "crime boom" and its effect on book market and libraries.*

*By learning about local and nationwide reading habits libraries can choose to cater specifically to their patrons' tastes or decide to steer readers in a different direction. It is desirable for librarians to know what is popular so they can meet the needs and wants of their users, thus reinforcing the library's vital social role in the community.*

*The results show that there is a connection between library and book seller top lists. Titles from book sellers appear in the library lists with delay, and crime is popular in both. However, further research needs to be conducted to be able to establish the correlation.*

**Keywords:** book market, fiction, printed books, public library, reading habits, Sweden



## Background & Purpose

Top ten lists are a recognized way of presenting trends, with ten items being big enough to be both inclusive and provide an adequate overview (Posner, 2014, p. 1061). Readers seek out books for many different reasons, e.g. entertainment, personal development or emotional comfort (Ooi and Li Liew, 2011, p. 749), hence it is relevant to examine Swedish reading habits to see what kinds of books fill these needs, using top lists as a tool.

The purpose of this study is to overview book loans from public libraries across Sweden and compare the results with book market figures. By using top ten lists it is possible to discern different genres and their popularity to see if this correlates with book selling statistics.

## Method

The lists were collected through requests to the public libraries of Borås, Karlshamn, Kungälv, Växjö and Sundsvall. Libraries were selected from municipalities of similar population sizes (Kommun- och landstingsdatabasen, 2018). The closure of a common Swedish library system in 2015 meant that data only could be extracted from 2016 and 2017. Book market lists from 2007 to 2017 were acquired from a Swedish library trade magazine (Svensk Bokhandel, 2018). All of the books were categorized in genres using the National Library of Sweden's database.

## Result

In the libraries' lists crime (2016: 52%, 2017: 40%) and general fiction (2016: 40%, 2017: 46%) were the biggest genres. In the book sellers' lists the most popular genres in general were crime and thrillers. The book sellers had two genres that only appeared once (poetry and science-fiction) and never appeared in the libraries' lists.

## Discussion

Reading can be a private matter, but book recommendations from trusted people such as family and friends, are often welcome (Ross et al., 2006; Ooi and Li Liew, 2011). A book that has been read and liked therefore has a greater



chance of being checked out from the library by the original reader's acquaintances, making a snow ball effect on demand. Anderson (2008, pp. 15-17) further illustrates how books can be connected; if book sellers display books side by side they could possibly trigger each other's sales.

The popularity of crime in this study is in line with the Swedish "crime boom" ("Scandicrime", "Schwedenkrimi", "Nordic Noir") which refers to the success that crime literature has been having on the book market for about 15 years, and on libraries with a few years delay (Berglund, 2012, p. 9, 98). Yucesoy et al. (2018) investigates bestsellers in a big data perspective and concludes that general fiction from an already bestselling author has a higher chance of making the lists. Furthermore, they argue that thrillers and detective novels are popular with US readers, which seems to be in line with this study since crime was popular both according to book sellers and libraries in Sweden.

Availability in libraries is problematic when it comes to popular books – the higher the popularity, the less chance for immediate availability (Buckland, 1975, pp. 55-57). If the reader becomes impatient they can go to the book shop and buy the book without waiting. The book market then becomes saturated when cheap paper backs are released, which decreases the number of library loans (Berglund, 2012, p. 102).

The genre classification can be discussed – "general fiction" might be considered wider than "horror", the distinction between "thriller" and "crime" can be discussed and furthermore the libraries and book sellers might define the genres differently.

## Conclusion

There is a connection between which books are being checked out at libraries and which are being bought (e.g. crime). Titles from book sellers' lists appear in the library lists with delay (Berglund, 2012), and since readers tend to prefer the familiar (Yucesoy et al., 2018) it might be expected that Swedish crime literature (that often are serialized) dominate the lists. This study is a starting point in investigating the differences between libraries' top lists and book sellers' top lists. Further research needs to be conducted, collecting and analyzing more data to be able to make significant claims of the correlation between them and to predict trends.



## Acknowledgements

This study was based partly on data collected in collaboration with fellow student Olivia Bäck at the University of Borås.

## References

- Anderson, C. (2008). *The long tail : Why the future of business is selling less of more* (1. pbk. ed.). New York: Hyperion.
- Berglund, K. (2012). *Deckarboomen under lupp*. Uppsala: Avd. för litteratursociologi.
- Buckland, M.K. (1975). *Book Availability and the Library User*. New York: Pergamon Press Inc.
- Kommun- och landstingsdatabasen. (2018). Avstånd från Borås, 2017. Antal invånare, totalt antal 100.0%. Retrieved 2018-11-12 [https://www.kolada.se/?\\_p=workspace/similarity](https://www.kolada.se/?_p=workspace/similarity)
- Ooi, K., & Li Liew, C. (2011). Selecting fiction as part of everyday life information seeking. *Journal of Documentation*, 57(5), 748-772. doi:10.1108/00220411111164655
- Posner, B. (2014). The impact of global trends on ILDS. *Interlending & Document Supply*, 42(4), 147-152. doi:10.1108/ILDS-10-2014-0048
- Ross, C., McKechnie, L., & Rothbauer, P. (2006). *Reading matters: What the research reveals about reading, libraries and community*. Westport, CT: Libraries Unlimited.
- Svensk Bokhandel. (2018). Retrieved 2018-11-09 <http://www.svb.se/toplists>
- The National Library of Sweden. (2018). Retrieved 2018-11-12 <http://libris.kb.se/>
- Yucesoy, B., Wang, X., Huang, J., & Barabási, A. (2018). Success in books: A big data approach to bestsellers. *EPJ Data Science*, 7(1), 1-25. doi:10.1140/epjds/s13688-018-0135-y





# WHAT'S ON TOP?

Comparing the lists of most loaned books  
from Swedish public libraries

Beate Granström  
University of Borås  
s172398@student.hb.se

## PURPOSE

The purpose of this study is to overview book loans from public libraries across Sweden and compare the results with book market figures. By using top ten lists it is possible to discern different genres and their popularity to see if this correlates with book selling statistics.

## METHOD

The lists were collected through requests to the public libraries. Libraries were selected from municipalities of similar population sizes. Book market lists were acquired from a Swedish library trade magazine. All of the books were categorized in genres using the National Library of Sweden's database.

## DISCUSSION

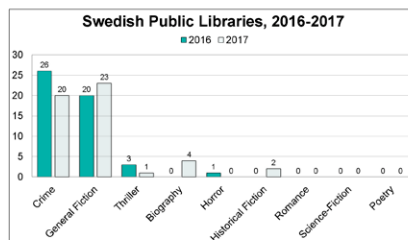
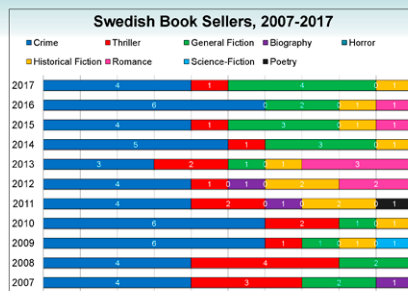
Yucesoy et al. (2018) investigates bestsellers in a big data perspective and concludes that general fiction from an already bestselling author has a higher chance of making the lists. The popularity of crime in this study is in line with the Swedish "crime boom" ("Scandicrime", "Schwedenkrimi", "Nordic Noir") which refers to the success that crime literature has been having on the book market for about 15 years, and on libraries with a few years delay (Berglund, 2012).

Availability in libraries is problematic – the higher the popularity, the less chance for immediate availability (Buckland, 1975). A book that has been read and liked has a greater chance of being checked out from the library by the original reader's acquaintances, making a snow ball effect on demand. If a reader becomes impatient they can go to the book shop and buy the book without waiting. The book market becomes saturated when cheap paper backs are released, which decreases the number of library loans (Berglund, 2012).

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This study is a starting point in investigating the differences between libraries' top lists and book sellers' top lists. Further research needs to be conducted, collecting and analyzing more data to be able to make significant claims of the correlation between them and to predict trends.



## Swedish Book Sellers, 2016

No.	Author	Title	Published	Genre
1	Kepler, Lars	The Rabbit Hunter	2016	Crime
2	Ferrante, Elena	My Brilliant Friend	2016	General Fiction
3	Persson, Leif G.W.	Kan man dö två gånger? (Sw.)	2016	Crime
5	Guillou, Jan	Åtta amerikanska jeans (Sw.)	2016	Historical Fiction
6	Ferrante, Elena	The Story of a New Name	2016	General Fiction



## Borås Public Library, 2017

No.	Author	Title	Published	Genre
1	Persson, Leif G.W.	Kan man dö två gånger? (Sw.)	2016	Crime
2	Ferrante, Elena	The Story of a New Name	2016	General Fiction
4	Ferrante, Elena	My Brilliant Friend	2016	General Fiction
5	Guillou, Jan	Åtta amerikanska jeans (Sw.)	2016	Historical Fiction
9	Kepler, Lars	The Rabbit Hunter	2016	Crime

## RESULT



## References

- Berglund, K. (2012). *Deckarboomen under lupp*. Uppsala: Avd. för litteratursociologi.  
 Buckland, M.K. (1975). *Book Availability and the Library User*. New York: Pergamon Press inc.  
 Yucsey, B., Wang, X., Huang, J., & Barabási, A. (2018). Success in books: A big data approach to bestsellers. *EPL Data Science*, 7(1), 1-25.  
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THE SWEDISH SCHOOL OF LIBRARY  
AND INFORMATION SCIENCE  
UNIVERSITY OF BORÅS



## ANIMALS IN THE LIBRARY: THE BENEFITS OF BRING THEM AT THE LIBRARY

Laura Garcia Piqué

Student of Library and Information Science, Universitat de Barcelona,  
Barcelona, Spain

lauragp95@gmail.com

Sònia Camarasa Sola

Student of Library and Information Science, Universitat de Barcelona,  
Barcelona, Spain

soncamarasola@gmail.com

Robert Mokhtari Marmol

Student of Library and Information Science, Universitat de Barcelona,  
Barcelona, Spain

dareon1988@gmail.com

### Abstract

*A lot of people live with a pet. It's difficult to estimate how many pets are in the world, but some statistics have said that the number could be more than 103 million only in Europe (The European Pet Food Industry, 2017). Animals like dogs or cats create a bond with their owners and that is one thing that can improve the quality of life of the library and their users for several reasons. For example, the use of therapy dogs on libraries in order to provide children a comfortable environment to practice their reading skills. The benefits of this type of reading include greater comfort in reading aloud, a sense of pride and an increase in self-esteem. In this poster we want to show the benefits that animals can provide to the community through the library. To do so, we made a literature review, searching activities around the world about these topics and then, we analysed them and abstract some ideas in order to know how to create a pet-friendly library. The importance of this poster lies in getting the role of the Library in the development and support of therapies, specifically those related to dogs, and be able to know the basics to create spaces where pets and users can coexist.*

**Keywords:** Animals, children, dogs, leisure and quality of life, libraries, therapy animals.



## Introduction

As is known, libraries are always changing, looking to be an inclusive place and adapted to the community, finding new ways to support their users, researchers and students. Some of these changes are caused because libraries are not anymore, the only way that users could access to all kinds of information. For that reason, librarians must create new methods to support library users. The aim of this poster is to talk about one of these methods, the inclusion of animals, through the articles that talks about it.

## Methodology

With the goal to elaborate the poster, we have done a literature review. The criteria we choose to pick the articles was: Articles in English or Spanish about reports that include animals in libraries, therapy with animals, therapy dogs and cats in libraries. With the purpose of providing a comprehensive review of the current relevant literature we put our focus in the last 10 years. Although, we have also used publications that are outside this period if they bring important ideas. Literature searches were conducted in the databases: Dialnet, e-LiS, ERIC, LISA, LISTA, Social Sciences Full Text, SocIndex with Full Text, TEMARIA and Google Scholar. In order to increase coverage, we searched grey literature too. The search terms were identified through analysis of commonly referred to key terms and titles in articles pertaining to animals in libraries. Full text articles were sourced for all references electronically.

## Animals on library context and their benefits

Cottrell (2017), in her article, differentiate between three categories of animals that we can see in a library. The first one, the service animal, prepared to complete disability-related responsibilities for a person; The second one, the therapy animal passed a test that shows it is well-behaved and calm around a variety of people in different situations, it does not have a legal status, and the guidelines for training are not regulated; And finally, the emotional support animal, with the aim to support the emotional wellness of a person. With this in mind, we must talk about the benefits that could brought animals to libraries, and why it is important to expand our basis. On most of the articles, the animals bring benefits on the library context. We can divide these benefits between general and specific depending on whether they are cats or dogs. In accordance with



most of the authors, and ample evidence was found in the source material which suggests that library pets have a certain influence on their surroundings, interacting with them provides comfort and facilitates social interaction between users and between the staff. They also bring an educational value to children when they interact with them. From our literature review, we have observed that many cases are divided into two types of pets, dogs and cats. In this way, we will discuss the benefits about them:

First, we will talk about the advantages of dogs in libraries, authors like Strand (2012), Francis (2009), Jalongo & McDevitt (2015), Inklebarger (2014) and finally Claiborne & Brundige (2010); agrees on the benefits of dogs: It reduces overall stress and increases the feeling of wellbeing; give the dogs a sense of training and this type of actions helps the dogs to stay calm and create a good environment for them. When it has been working with children, it shows that they help them improve reading skills, trusting to read aloud, being able to reduce reading stress and make the action of reading into something fun and entertaining.

On the other hand, we have the benefits cats bring into the libraries, authors like Lotz (2017), Marrall (2016) and Witter (2009); coincide on the advantages of cats: can reduce the stress in the users, create an atmosphere of joy and fun and invite people to play with them; they favour the interaction between users and also among the members of the staff, as well as encouraging comments on the social networks; his physical contact and companion provide to users a user-friendly site. In addition to that, they also have educational purposes for children, such as the therapies mentioned in the paragraph above. Finally, they also have the plague control function, as they are experts in hunting mice and insects harmful to the collections.

## The discussion of bringing animals at the library

Although the animals in the library bring a lot of benefits, which we have mentioned previously, also must consider the obstacles and problems they can generate. The conflicting debate and implementation of policy or practices about support animals can be challenging in several ways. Rust & Wise (2017) expose that is important for libraries to develop clear policies regarding animals in the Library. Also, it is correct that creating a strategy or practice requires expertise, staff time, preparation (which requires both human and economic resources), legal checking, and—lastly—persistence. Not having such a practice or guiding



principle may end in unreliable, hostile, or confusing experiences for users with assistance animals, even if the identical service aim inside the same library.

Nowadays, any dog owner who wants to bring their pet on library, must buy a vast online, next to a certificate that says is either a service or an emotional support animal. So where do we draw the line? Rust & Wise (2017) and Albrecht (2017) recommend that is relevant to check local and state rules. Another recommendation is a simple statement that could try with those who bring in animals: "Welcome to our library. Can you fully control your service animal or emotional comfort animal so that it doesn't bite anyone or get away from you? If so, fine. If not, you'll have to live with it."

## Conclusion

At the present time, libraries must evolve and find new ways to attract users. In order that, we can observe that animals, particularly dogs and cats, are a good way to improve the quality of life at the library community. Across different activities, or basically being there at the right moment can help to create a nice environment, earning users to feel less stress being a good distraction or making them comfortable.

However, there are some considerations to keep in mind if any library thinks about accepting animals: The library must be an open and ventilated place, even so professionals need to inspect to reckon if the library is a space prepared to bring animals and make them to stay. Other recommendations are: check the existing legislation, know the needs of the community and finally get the approval of the all the concerned parts. It's a reality that animals are very common in our lives, for this reason we believe that is important to reconsider a place for pets in the library, we expect that our work contribute to put thought in the minds of librarians. Also, we see that in many cases the libraries begin to enter animals into the library, but we not see that all the libraries have followed a specific rule, we think it would be important to create guidelines for the future.

## References

Albrecht, S. (2017). *New Trends in Library Security*. American Libraries. Retrieved from: <https://americanlibrariesmagazine.org/2017/03/01/library-waggin-train-service-dogs/>



- Claiborne, R. & Brundige, W. (2010). Study: Reading to Dogs Helps Children Learn to Read. ABC News. Retrieved from: <http://abcnews.go.com/WN/study-dogs-children-learn-read/story?id=11428770>
- Cottrell, M. (2017). Library waggin' train. American Libraries. Retrieved from: <https://americanlibrariesmagazine.org/2017/03/01/library-waggin-train-service-dogs/>
- East Norwalk Library (2010). D2R2\ Dogs to read to - An East Norwalk Library Encouragement Program., 50. Retrieved from: <http://www.eastnorwalklibrary.org/D2R2BOOK.pdf>
- Escobar Vallarta, Claudia. "Animales en la biblioteca". Infotecarios. Retrieved from: [http://www.infotecarios.com/animales-en-la-biblioteca/#.W\\_xAJORfio](http://www.infotecarios.com/animales-en-la-biblioteca/#.W_xAJORfio)
- Francis, A. (2009). Thursdays with MacGyver. *Children & Libraries*, 7(2), 50-52. Retrieved from: <https://search-proquest.com.sire.ub.edu/docview/212172675?accountid=15293>
- Hall, S.S. Gee, N.R., Mills D.S. (2016). Children Reading to Dogs: A Systematic Review of the Literature. *PLoS ONE* 11(2). Retrieved from: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0149759>
- Inklebarger, T. (2014). Dog Therapy 101. American Libraries. Retrieved from : <http://americanlibrariesmagazine.org/2014/12/22/dog-therapy-101/>
- Jalongo, M. R. & McDevitt, T. (2015). Therapy dogs in academic libraries: A way to foster student engagement and mitigate self-reported stress during finals. *Public Services Quarterly*, 11(4), 254-269. Retrieved from: <https://www.tandfonline.com/doi/abs/10.1080/15228959.2015.1084904>
- Lotz, S. (2017). More than just Rodent Control : A Transdisciplinary Study on Library Cats and their Impact on the Library as Third Place (Dissertation). Retrieved from: <http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-324652>
- Marrall, R. M. (2016). Assistance animals in the library: How one academic library developed best practices. *Reference & User Services Quarterly*, 56(1), 8-13. Retrieved from: <https://search-proquest-com.sire.ub.edu/docview/1824480972?accountid=15293>
- Marrall, R. M. (2016). For Your Enrichment: Assistance Animals in the Library: How One Academic Library Developed Best Practices. *Reference & User Services Quarterly*, 56(1), 8. Retrieved from: [https://cedar.wvu.edu/library\\_facpubs/54/](https://cedar.wvu.edu/library_facpubs/54/)
- Rust, M. & Wise, M. (2017). The Importance of Establishing Assistance Animal Policies for Your Library. *PNLA Quarterly*, 81(2). Retrieved from: <https://digitalcommons.cwu.edu/libraryfac/56/>



- Strand, M. (2012). At the intersection of dog and library. Library and Information Science. Retrieved from: <http://www.pylduck.com/ssqd/wpcontent/uploads/2012/04/dog.pdf>
- Palavecino, G., & Appella, V. (2016). Colaboradores peludos: cuando los perros integran la biblioteca. Retrieved from: <http://eprints.rclis.org/30240/>
- Witter, B. & Myron, V. (2009). Dewey. El gatet de biblioteca que ha commogut el món. Barcelona: Ara llibres. ISBN: 9788492552115



## ANIMALS AT THE LIBRARY: THE BENEFITS OF BRING THEM AT THE LIBRARY

Laura García Piqué, Student of Library and Information Science, Universitat de Barcelona, Barcelona, Spain, lauragp95@gmail.com  
Sonia Camarasa Sola, Student of Library and Information Science, Universitat de Barcelona, Barcelona, Spain, soncamarasasola@gmail.com  
Robert Mokhtari Marmol, Student of Library and Information Science, Universitat de Barcelona, Barcelona, Spain, dareon1988@gmail.com

A lot of people live with a pet. It's difficult to estimate how many pets are in the world, but some statistics have said that the number could be more than 103 million only in Europe (The European Pet Food Industry, 2017).

The role of the Library lies in be able to create a place where pets and users can coexist.



New ways to support their users, researchers or students that talks think the terms of we can have animals.

There are three types of animals that we can see in a library

- Service animal is an animal that is prepared to complete disability-related responsibilities for a person.
- Therapy animal takes classes and/or passed a test that shows it is well-behaved and calm around a variety of people in a variety of situations, it does not have a legal status, and guidelines for training are not regulated.
- Emotional support animal, an animal with the aim to support the emotional wellness of a person.



### Final thoughts of bringing animals at the library

Although the animals in the library bring a lot of benefits, librarians also have to take into account the obstacles and problems that they can generate.

- Considerations to keep in mind:
- library has to be an open and ventilated place.
  - professionals need to make an inspection to reckon if the library is prepared to have animals
  - check the existing legislation
  - know the needs of the community and get the approval

We believe that is important to reconsider a place for pets in the library, we expect that our work contribute to put thought in the minds of librarians.

Finally, the libraries begin to permit enter animals into the library, but not all the libraries have followed a specific rules, it would be important to create guidelines for the future.

### Benefits of the librarian pet

- Library pets have a certain influence on their surroundings, interacting with them provides comfort and facilitates social interaction among the users and among the staff.
- Bringing an educational value to children when they interact with them.
- Are the ideal companions for reading, especially reading at loud, because they listen carefully, help relax and reduce anxiety, do not judge, tease or criticize.
- Reduce stress for users

### Benefits

#### Dogs

- Improve reading performance
- Increase feeling of well being
- Give the dogs sense of training, helps them to stay calm and create a good environment
- Working with children:
  - Helps them improve reading skills
  - Trusting to read aloud
  - Make the action of reading fun and entertaining

#### Cats

- Create an atmosphere of joy and fun,
- Favour interaction between users and the staff
- Encouraging comments on the social networks
- Provide users a user-friendly site
- They are plague control





## PROJECT OF ORGANIZING THE MONASTERY LIBRARY COLLECTION OF THE CONGREGATION OF DAUGHTERS OF MERCY IN BLATO ON THE ISLAND KORČULA

Adriana Hibik

Bachelor Student, Department of Information Sciences of the Faculty of Humanities and Social Sciences, Josip Juraj Strossmayer University of Osijek, Osijek, Croatia  
ahibik@ffos.hr

Maja Šimenić

Bachelor Student, Department of Information Sciences of the Faculty of Humanities and Social Sciences, Josip Juraj Strossmayer University of Osijek, Osijek, Croatia  
msimenic@ffos.hr

Damir Hasenay

Professor, Department of Information Sciences of the Faculty of Humanities and Social Sciences, Josip Juraj Strossmayer University of Osijek, Osijek, Croatia  
dhasenay@ffos.hr

Ines Horvat

Teaching and Research Assistant, Department of Information Sciences of the Faculty of Humanities and Social Sciences, Josip Juraj Strossmayer University of Osijek, Osijek, Croatia  
ihorvat2@ffos.hr

### Abstract

*Projects of organizing monastery library collections play an important part in the preservation and subsequent use of written heritage. These valuable collections can be used for scholarly research especially more so if the information about monastery library collections can be retrieved*



*from online library catalogs. The monastery library in question is in the possession of the Congregation of the Daughters of Mercy whose founder was the blessed Mary of Jesus Crucified Petković. Since the Daughters of Mercy value the written heritage, which they preserved throughout the years, they were aware of the need for expert assistance in organizing their library collection. They have partnered with two Departments of Information Sciences with a purpose to organize and ensure the preservation of the library collection. The purpose of this work is to present an example of good practice where students of Information Sciences from Osijek and Zadar organized a monastery library collection and how such a project can be very important in the preservation and use of written heritage and at the same time ensure the visibility of the collection by making it a part of the Zadar University online library catalog. The project of organizing this particular monastery library collection had begun in 2015 and consisted of several stages during which student volunteers, with the help of their mentors, organized the collection using Universal Decimal Classification and used Croatian Library and Information System (Crolist) to create online records in the aforementioned online catalog. This project shows that the students of Information sciences are aware of the importance of monastery libraries and that they can ensure that these libraries fulfill their social role in the local community by helping them understand their collections and emphasize their cultural importance.*

**Keywords:** library collection, monastery libraries, written heritage

## Purpose

The purpose of this work is to present an example of good practice where students of the Department of Information Sciences organized a valuable monastery library collection of the Congregation of Daughters of Mercy in Blato on the island of Korčula in Croatia. The purpose is also to show the work process of organization through several stages and how organizing such a valuable library collection can be instrumental in the preservation and use of written heritage.

## Background

The project began in 2015 as a result of the collaboration between two partner institutions – the Department of Information Sciences, University of Zadar and the Department of Information Sciences, Faculty of Humanities and Social Sciences, Josip Juraj Strossmayer University of Osijek. The library around which the project revolved is a monastery library situated in Blato on the island of Korčula in Croatia. The Library is in the possession of the Congregation of the Daughters of Mercy whose founder was the blessed Mary of Jesus Crucified Petković (Lupis,



V., 2014). The idea for the organization of the Library dates back to the late 90s of the 20<sup>th</sup> century when the Daughters of Mercy saw the need for expert assistance because the purpose of the Library is to preserve the written heritage but also to ensure the possibility of its use and scholarly research. Staff of both Departments of Information Sciences took the leading role in organizing the project, devised a workflow which consisted of several stages and chose and mentored the students who were willing to participate in the project. Students followed the instructions and in groups stayed in Blato and worked on organizing the library collection.

## Methods used for the study

Before the project began it was necessary to devise a procedure which will be the starting point for all following stages. It was necessary to understand the specifics of a monastery library collection, the state in which it was and to create a workflow which will enable students, and their mentors, to approach the problem of organizing the Library from the very beginning. The preliminary stage included an assessment of the state of the library collection, prediction of potential problems and library users. The project was conducted in three stages (2015-2018) and the workflow consisted of the following stages:

- First stage (2015): unpacking the books which were kept in cardboard boxes, assessing the library collection and making an inventory list.

During the first stage it became apparent that the part of the collection was the collection of local family Ostoić which has an immense value for the Congregation and for the local community and because of that it was decided to separate all these books and documents from the library collection. The Library also has a big collection of the periodical publications (newspaper, magazines and journals) which were also separated and prepared for transport to another monastery of the Daughters of Mercy.

- Second stage (2016-2017): organizing the library collection by Universal Decimal Classification.
- Third stage (2018): using the Croatian Library and Information System (<http://www.unibis.hr/unibis.htm>) for the creation of online records visible in the Zadar University online library catalog.

## Importance and interest of the study

This project is expected to contribute to the better understanding of written heritage which can be found in monastery libraries (Krtalić, M.; Hasenay, D. &



Aparac-Jelušić. T., 2011). Organizing these collections can ensure their use for all interested users, especially researchers. This project is meant to be an example of good practice which demonstrates how much can be achieved using well known methods of organizing library collections and willing participants. The importance also lies in the social role which the monasteries have in their local communities because they collect all which is important to local history.

## Conclusion

Monastery library collections are immensely valuable (Krtalić, M.; Čop, T. & Hasenay, D., 2010) and with projects such as organizing the Library of the Congregation of the Daughters of Mercy one can ensure the preservation of written heritage. A deeper understanding of the context in which some of the collections were created is possible only if one can access the collection. Organizing monastery library collections can create conditions for effective preservation management and ensure possibilities for scholarly research of written heritage. This project shows that students of Information sciences can contribute to organizing, managing and preserving library collections and participate in emphasizing the cultural and social values of monastery libraries and their collections.

## References

- Krtalić, M.; Čop, T. & Hasenay, D. (2010) Organizational prerequisites for the preservation of library collections in monastery libraries. *Libellarium: journal for the research of writing, books, and cultural heritage institutions*, 3(2), 113-134. doi: <http://dx.doi.org/10.15291/libellarium.v3i2.123>
- Krtalić, M. & Hasenay, D. (2011). Zaštita pisane baštine u knjižnicama – analiza stanja i moguće perspektive upravljanja zaštitom hrvatske pisane baštine. *Vjesnik bibliotekara Hrvatske*, 54(1/2), 37-66. Retrieved from <https://hrcak.srce.hr/80464>
- Krtalić, M.; Hasenay, D. & Aparac-Jelušić. T. (2011). Upravljanje zaštitom pisane baštine u knjižnicama – teorijske pretpostavke. *Vjesnik bibliotekara Hrvatske*, 54(1/2), 1-36. Retrieved from <https://www.hkdrustvo.hr/vjesnik-bibliotekara-hrvatske/index.php/vbh/article/view/370/365>
- Lupis, V. (2014). Družba kćeri milosrđa i Blato na Korčuli do II. svjetskog rata. *Crkva u svijetu*, 49(3), 329-351. Retrieved from <https://hrcak.srce.hr/127461>



## ORGANIZATION OF LIBRARY COLLECTION IN THE MONASTERY OF THE CONGREGATION OF DAUGHTERS OF MERCY IN BLATO ON THE ISLAND OF KORČULA

Adriana Hibik<sup>\*s</sup>; Maja Šimenić<sup>\*s</sup>; Damir Hasenay<sup>\*d</sup>; Ines Horvat<sup>\*t</sup>

<sup>\*</sup>Department of Information Sciences of the Faculty of Humanities and Social Sciences, Josip Juraj Strossmayer University of Osijek, Osijek, Croatia  
s - student; d - PhD, full professor; t - teaching assistant  
ahibik@fos.hr

### Purpose

The purpose of this work is to present an example of good practice where students of the Department of Information Sciences organized a valuable monastery library collection of the Congregation of Daughters of Mercy in Blato on the island of Korčula in Croatia. The purpose is also to show the work process of organization through several stages and how organizing such a valuable library collection can be instrumental in the preservation and use of written heritage.



### 2nd STAGE



### Background

The project began in 2015 as a result of the collaboration between two partner institutions - the Department of Information Sciences, University of Zadar and the Department of Information Sciences, Faculty of Humanities and Social Sciences, University of Osijek. The library around which the project revolved is a monastery library situated in Blato on the island of Korčula in Croatia. The Library is in the possession of the Congregation of the Daughters of Mercy whose founder was the blessed Mary of Jesus Crucified Petković. The idea for the organization of the Library dates back to the late 90s of the 20th century when the Daughters of Mercy saw the need for expert assistance because the purpose of the Library is to preserve the written heritage but also to ensure the possibility of its use and scholarly research.



### Conclusion

Monastery library collections are immensely valuable and with projects such as this one can ensure the preservation of written heritage. A deeper understanding of the context in which some of the collections were created is possible only if one can access the collection. Organizing monastery library collections can create conditions for effective preservation management and ensure possibilities for scholarly research of written heritage. This project shows that students of Information sciences can contribute to organizing, managing and preserving library collections and participate in emphasizing the cultural and social values of monastery libraries and their collections.





## DO THEY ALREADY KNOW IT? PRIOR INFORMATION LITERACY SKILLS OF THE FIRST-YEAR UNDERGRADUATES AT THE FACULTY OF HUMANITIES AND SOCIAL SCIENCES IN OSIJEK

Kristina Kiš

Librarian, Faculty of Humanities and Social Sciences in Osijek, Library,  
Osijek, Croatia  
kmitric@ffos.hr

Bernardica Plaščak

Senior Librarian, Faculty of Humanities and Social Sciences in Osijek,  
Library, Osijek, Croatia  
bplascak@ffos.hr

### Abstract

*The goal of this research was to investigate which information literacy skills first-year undergraduates at the Faculty of Humanities and Social Sciences in Osijek have already acquired before enrollment since various aspects of information literacy (IL) skills are embedded in Croatian national elementary and high school curricula. A print survey consisting of 12 questions was conducted on the first-year undergraduate population of the Faculty of Humanities and Social Sciences in Osijek at the point of their first visit to the library in the beginning of the academic year 2017/18. The questions were related to educational background, preferences and habits in information sources usage and attitudes toward these sources, origins of IL skills, self-estimate of individual aspects of IL skills and knowledge concluding with several questions testing the real IL knowledge. 81 responses were collected, that is 26.56% of the first-year undergraduate population. The data were processed by SPSS. The results of the survey revealed that respondents felt more often educated in IL by their teachers, colleagues and family members during elementary and high school than by their school librarians. For their assignments they used most frequently Internet sources, followed by books, journals and teacher advices. According to their self-estimates, less developed aspects of IL skills turned out to be OPAC subject searches, call numbers and shelf arrangement of the books. These findings present a great help to IL teaching librarians at the Faculty of Humanities and Social Sciences in Osijek Library while developing and preparing their IL training sessions.*



**Keywords:** Faculty of Humanities and Social Sciences in Osijek library, information literacy, library instruction, prior knowledge

One of the major social roles of information institutions is reflected in promoting IL skills as a prerequisite for lifelong-learning (Lau, 2006; Špiranec, Banek Zorica, 2006). Libraries from elementary school to university have been focusing on elaboration of various IL training sessions (Milički, 2014; Lasić-Lazić, Špiranec, Banek Zorica, 2012).

The Faculty of Social Sciences and Humanities in Osijek Library has been dedicated to continually improve its IL training program. Although the guidelines on IL teaching are implemented in Croatian elementary (Nastavni plan i program za osnovnu školu, 2006) and high school curricula (Nacionalni okvirni kurikulum za predškolski odgoj i obrazovanje te općeobvezno i srednjoškolsko obrazovanje, 2011) through several courses, some first-year undergraduates regularly experience difficulties in library usage and information literacy during initial period at the Faculty.

It prompted librarians at the Faculty of Humanities and Social Sciences in Osijek to research which information literacy skills the first-year undergraduates have already acquired previously either through their formal education or informal learning paths. A print survey was administered to first-year undergraduates at the point of their first visit to the library in the beginning of the academic year 2017/18 with 81 responses being collected making it 26.56 % of the first-year undergraduate population. The survey included 12 questions relating to educational background, preferences and habits in information source usage and the attitudes toward these sources, origins of IL skills, self-estimate of individual aspects of IL skills and knowledge concluding with several questions testing the real IL knowledge. The data were processed by SPSS.

The results showed that the highest percentage of the respondents (35.8%, n=29) used elementary school library 11-20 times a year, and 33.3% of the respondents used high school library 11-20 times a year, while 80.5% of the respondents used public library as well, but less frequently, 1-10 times a year (33.3%, n=27).

As far as IL origins are concerned, most respondents (34.6%, n=28) stated that elementary school librarians had educated them sometimes (on a five-point scale: very rarely, rarely, sometimes, often, very often), 25.9% (n=21) respondents thought the same of high school librarians. Most respondents (33.3%,



n=27) stated that teachers had educated them often, and as far as 29.6% that they had done it very often. IL instruction among colleagues was rated as sometimes (33.3%, n=27) and often (25.9%, n=21). Many respondents (35.5% (n=29)) thought that their family members had instructed them in IL sometimes. 28.4% respondents thought that they had educated themselves in IL through print books often, and 21% very often. Similar situation is with the IL self-instruction on the Internet, whereby most respondents (39.5% (n=32)) self-educated themselves on the Internet very often, and 35.8% (n=29) often.

The crucial question in the survey presents respondents' self-estimates of their individual IL skills. They were asked to evaluate their knowledge relating to eight aspects of IL on a five-point Likert scale (from *I do not know anything* to *I know very much*). When translated into average numerical scores, undergraduates were most secure about their knowledge on online information searches as well as citing and evaluating of used sources with average scores of 4.6, 3.9 and 3.5 respectively. Their weak points showed to be subject headings, call numbers, orientation through book shelves in the library and OPAC searches (average scores 1.7, 2.2, 2.5 and 2.7 respectively).

On a five-point scale from not important to very important most respondents regarded IL important for their private life as well as academic education (50.6%, n=40 and 65.0%, n=52 respectively). IL is very important for business aspect for 53.2% (n=42) respondents.

The results showed that respondents used their elementary and high school libraries over a dozen times a year, and public library less frequently. Also, in most cases they are very independent in acquiring IL skills, either on Internet or in print sources. Further, they felt that they were more often educated in IL by their teachers, colleagues and family members than by elementary and high school librarians. Online information searches, citing and evaluating of used sources were highest self-graded IL skills, while subject headings, call numbers and orientation through bookshelves got lowest grades. Respondents value IL skills very highly for all three aspects of their lives: private, academic and business.

These valuable data on the previous knowledge and weak spots of first-year undergraduates make a good orientation point for updating Library's IL training program with more focus to be put to subject headings, OPAC subject searches, call numbers and book arrangement on the shelves during IL training sessions. Further periodical surveys of prior IL knowledge would be welcomed in order for the Library to keep pace with users' needs. Also, a wider scale IL skills survey could pinpoint the weak spots of IL programs in Croatian elementary and high school curricula.



## References

- Lasić-Lazić, J., Špiranec, S. & Banek Zorica, M. (2012). Izgubljeni u novim obrazovnim okruženjima – pronađeni u informacijskom opismenjavanju. *Medijska istraživanja*, 18(1), 41-51.
- Lau, J. (2011) *Smjernice za informacijsku pismenost u cjeloživotnom učenju*. Zagreb : Hrvatsko knjižničarsko društvo
- Milički, J. (2014). *Model informacijskoga opismenjavanja u osnovnoškolskim knjižnicama : doktorski rad*. Zagreb, J. Milički
- Nacionalni okvirni kurikulum za predškolski odgoj i obrazovanje te općeobvezno i srednjoškolsko obrazovanje* (2011). [Adobe Digital Editions version]. Retrieved from: [http://mzos.hr/datoteke/Nacionalni\\_okvirni\\_kurikulum.pdf](http://mzos.hr/datoteke/Nacionalni_okvirni_kurikulum.pdf)
- Nastavni plan i program za osnovnu školu* (2006). Zagreb : Ministarstvo znanosti, obrazovanja i športa.



# DO THEY ALREADY KNOW IT?

**RESEARCH QUESTION:** Which information literacy skills first-year undergraduates at the Faculty of Humanities and Social Sciences in Osijek have already acquired before enrollment?

Prior Information  
Literacy Skills of  
the First-Year  
Undergraduates at  
the Faculty of  
Humanities and  
Social Sciences in  
Osijek

## BACKGROUND

- various aspects of information literacy (IL) skills are embedded in Croatian national elementary and high school curricula

## METHODOLOGY

- print survey (12 questions)
- 26.56% of the undergraduate population
- beginning of the academic year 2017/18
- data processed by SPSS



## ORIGINS OF IL SKILLS

- highest scored: self-educated (Internet), teachers, self-educated (printed sources), colleagues and family members
- lowest scored: librarians (elementary, high school and public libraries)

## PREFERENCES AND HABITS IN INFORMATION SOURCES USAGE

- most frequently Internet sources, followed by books, AV publications, journals and teacher advices

## ATTITUDES TOWARD IL

- important and very important for their private life, business career and academic education

## SELF-ASSESSMENT OF IL SKILLS (scale 1-5)

✓ Relevance and reliability evaluation	3.5
✓ Citing references	3.9
✓ Internet searches	4.6
✓ OPAC subject headings	1.7
✓ OPAC searches	2.7
✓ Call numbers	2.2
✓ Shelf arrangement of the books	2.5
✓ Publication types	2.9

## Conclusion

### MOST DEVELOPED IL ASPECTS:

- online information searches
- citing references
- evaluation of used sources

### LESS DEVELOPED IL ASPECTS:

- OPAC subject searches
- call numbers
- shelf arrangement of the books



FILOZOFSKI FAKULTET

#### Authors:

Kristina Kiš, librarian, Faculty of Humanities and Social Sciences in Osijek, Library, Osijek, Croatia, kmitric@ffos.hr

Bernardica Plaščak, senior librarian, Faculty of Humanities and Social Sciences in Osijek, Library, Osijek, Croatia, bplascak@ffos.hr





## AN INFORMATION SCIENCES LIBRARY AT YOUR FINGERTIPS.

### EXPLORE BIBLIOTOUCH AND DISCOVER THE UNEXPECTED!

Delphine Merrien

Chief Librarian, Head of Future Trends Department, Enssib, French National School of Library and Information Science, Université de Lyon, France

[delphine.merrien@enssib.fr](mailto:delphine.merrien@enssib.fr)

#### Abstract

*BiblioTouch is an online open application, that offers a completely new way to access the best resources in Library and Information Science and experiment some innovative searching features in the documentation and library science fields. This tool has been designed by Enssib, the French National School of Library and Information Science, and made by Biin, a team of digital interactions designers and Web developers. The project also included a Lyon-based research team specialized in Information Sciences, Interactive Systems and Computer Science. BiblioTouch offers a visual exploration map, bringing content to the forefront, while enabling more serendipitous discovery. This tool induces faceted browsing and search, letting users sort documents, progressively refine their search during exploration (using themes, publication date, authors, etc.) and check the enriched bibliographical metadata at any time in the process, enabling users to discover documents they were not initially looking for. The visual and mobile friendly layout of this online application allows intuitive and instant use. Wherever they are, users can select documents as they explore, collect references at their own pace and send the final list by email. Our poster will explain the challenges of the project, the research methodology and the first results. The experiment led since 2014 by the newly created EnssibLab service (now Enssib Future Trends Department) was the first step of an applied research program exploring innovative and user-focused discovery tools for libraries. We have already made this new tool powerful enough to meet a wide range of needs and uses in public and academic libraries. The proof of concept of the project led to a touch-based access to a range of titles published during the past two decades by Enssib Press. We now have extended the software to the entire Enssib Library.*

**Keywords:** digital documentary mediation, innovative search process, online open application, user experience, serendipity, Libraries



Over the last 20 years, the role of libraries has been frequently questioned by the advent of personal computers and ubiquitous access to the Web. Search-engines have radically transformed the way we access information. However, search tools reach their limits when it comes to accessing information that users do not define well, either because they are unfamiliar with a domain and do not know how to formulate queries appropriately, or simply because they are seeking out unusual elements. Libraries have more than ever a role to play in serving information to the public and mediating knowledge. This is especially true in cases where people do not know exactly what to search for, need guidance or access to protected information (e.g. copyrighted material, scientific publications, etc.), or simply seek surprise. To this day, search tools for library catalogs are created with professional needs in mind. They are designed to produce relevant results quickly for users performing precise queries with appropriate search vocabulary and syntax. The tools currently available to library users are just simplified versions of these advanced search tools.

The working hypothesis concerning BiblioTouch was to demonstrate, first through proof of concept for a limited number of documents, then on a real documentary basis of several thousand documents, that visual exploration of the documentary offering allows the user to discover more content in a more satisfying way. The experience perceived by the user is thus both more satisfactory and more efficient than a classic search started with imprecise keywords. The goal here is to position the BiblioTouch interface in a complementary way to the classic library catalogs, and even raising awareness about the importance of keywords, since they are the ones that allow the most obvious rebounds in the BiblioTouch tool.

This program relies on an iterative process of development, experimentation and evaluation by users' groups, in a "do it together" spirit of co-creation and progress. That's why the utility of multiple zoom levels has been tested with professional users of the library sector, students in library and information sciences, and non-professional users of information, frequent library users or not.

In addition, the first user workshops, using schematic layers with different possible views for the future BiblioTouch interface, have led to the conclusion that it was irrelevant to distinguish the action of exploring the available contents from the action to seek specific content. Indeed, the search was very quickly positioned as an option of the exploration route, and not a modality to select in advance.



To date, the second wave of tests, conducted on a functional prototype presented on two touch screens of very different dimensions (32-inch touch screen and iPad tablet), reveals that the visual and exploratory aspect of the BiblioTouch interface, reaches its goal of discovery.

The next development step will soon provide a use on smartphone, thanks to a responsive web design, and will encourage effortless use of the interface.

Areas of improvement today concern fine management of backtracking in the exploration routes and the integration of some cognitive reassurance parameters, systematically integrating a reminder of the choices made by the user and the possibility of modifying them in a fluid way, limiting the number of clicks.

## References

- André, P., Schraefel, M.C., Teevan, J., & Dumais, S.T. (2009, October 26-30). Discovery is never by chance: designing for (un)serendipity. *Proceedings of the seventh ACM conference on Creativity and cognition*. ACM, New York, NY, USA, 305-314. doi: 10.1145/1640233.1640279
- Bats, R. & Catelon, L. (2015). Touch collections by fingers. *DESIGN, INNOVATION, PARTICIPATION: BOBCATSSS 2015 Proceedings & Abstracts* (p. 312). Brno: Flow, o.s. Retrieved from <http://eknihy.knihovna.cz/kniha/design-innovation-participation-bobcatsss-2015-proceedings-abstracts>
- Björneborn, L. (2008). Serendipity dimensions and users' information behaviour in the physical library interface. *Information Research. An International Electronic Journal*, 13, 4. Retrieved from <http://www.informationr.net/ir/13-4/paper370.html>
- Catellin, S. (2014). *Sérendipité. Du conte au concept*. Seuil.
- Salaün, J.-M. (2012). *Vu, lu, su : Les architectes de l'information face à l'oligopole du Web*. La Découverte.
- Weinberger, D. (2007). *Everything is miscellaneous: The power of the new digital disorder*. Macmillan.



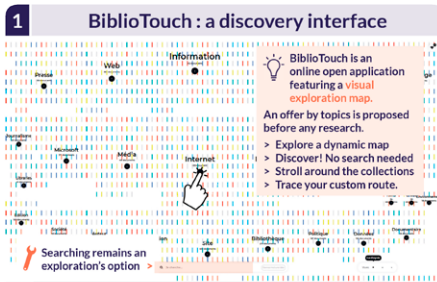
## AN INFORMATION SCIENCES LIBRARY AT YOUR FINGERTIPS

### Explore **BiblioTouch** and discover the unexpected!

Delphine Merrien, Chief Librarian, Head of Future Trends Department  
Enssib, Université de Lyon, France. [delphine.merrien@enssib.fr](mailto:delphine.merrien@enssib.fr)

### How can you find what you didn't expect?

**1 BiblioTouch : a discovery interface**



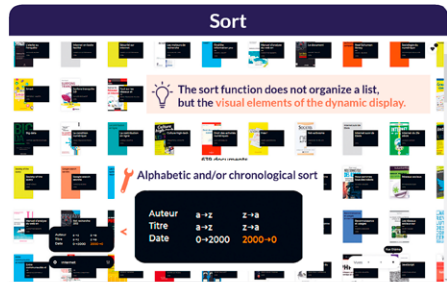
BiblioTouch is an online open application featuring a **visual exploration map**.

An offer by topics is proposed before any research.

- > Explore a dynamic map
- > Discover! No search needed
- > Stroll around the collections
- > Trace your custom route.

Searching remains an exploration's option

**Sort**

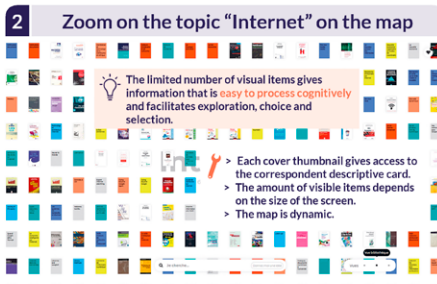


The sort function does not organize a list, but the **visual elements of the dynamic display**.

Alphabetic and/or chronological sort

Auteur a→z Z→a  
Titre a→z Z→a  
Date 0→2000 2000→0

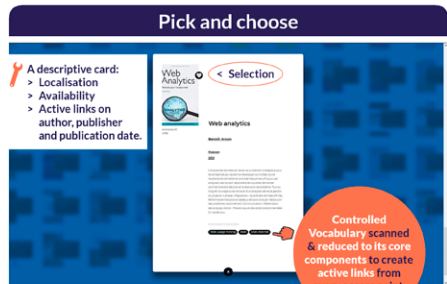
**2 Zoom on the topic "Internet" on the map**



The limited number of visual items gives information that is **easy to process cognitively** and facilitates exploration, choice and selection.

- > Each cover thumbnail gives access to the correspondent descriptive card.
- > The amount of visible items depends on the size of the screen.
- > The map is dynamic.

**Pick and choose**

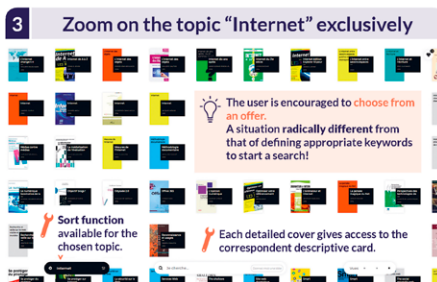


A descriptive card:

- > Localisation
- > Availability
- > Active links on author, publisher and publication date.

Controlled Vocabulary scanned & reduced to its core components: to create active links from every access point.

**3 Zoom on the topic "Internet" exclusively**



The user is encouraged to **choose from an offer**.  
A situation radically different from that of defining appropriate keywords to start a search!

Sort function available for the chosen topic.

Each detailed cover gives access to the correspondent descriptive card.

**Make your own list!**



Everyone can identify their **personalized route** within a collection set by librarians.

Send your selection of documents by email.



## THE ROLE AND IMPORTANCE OF VISUAL LITERACY TRAINING IN THE PUBLIC COMMUNICATIONS AND INFORMATION SCIENCES PROFESSIONAL FIELD

Kamelia Planska-Simeonova

Assistant Professor, PhD, Department of Library Management and Archivists, University of Library Studies and Information Technologies  
Sofia, Bulgaria  
k.planska@unibit.bg

### Abstract

*Globalization and the global society's ever-increasing use of digital information and communications increase the production and consumption of multimedia and is creating a new media and visual culture. Visual culture, culture expressed in visual images, results from the interaction between users and ubiquitous visual technologies. It does not displace linguistic discourse, but rather helps to make that discourse understandable. This report focuses on the role and importance of visual literacy training for students in the professional field of "Public Communications and Information Sciences". Visual literacy enhances a group of people's visual competences - the ability to understand and interpret images as well as other sensory experiences and experiments. This study attempts to clarify the concepts of digital culture, digital literacy, visual culture, visual literacy and the teaching of these fields of study. The methodology and content of visual literacy training and its role and importance for students trained in the professional field "Public communications and information sciences" are described and good practices are presented.*

**Keywords:** digital culture, digital literacy, visual culture, visual literacy, public communication and information science

### Introduction

Numerous students training in a professional field of Public Communications and Information Sciences acquire professional skills in PR, library management, journalism, print and electronic media, public relations, communications, advertising, cultural and historical heritage, book publishing, rhetoric, management of information resources, etc. A requirement for raising the competences of fu-



ture specialists is to increase their digital competence, i.e. IT literacy (information technologies), information literacy, technological literacy, media literacy as well as visual literacy. The clarification of concepts and characteristics in the field of digital competences, respectively visual literacy, helps to understand the role and importance of such training in the professional field “Public communications and information sciences”.

## Methodology of scientific research

In the context of the studied subject definitions of digital culture, visual culture, visual literacy and their essence are studied. The focus is on visual literacy training and its role and importance for students in the field of “Public communications and information sciences”.

## The role and importance of visual literacy training

Visual literacy is the ability of a person to perform the following steps in creating visual media (information boards, signs, brochures, graphics, photographic images, diagrams, posters, etc.) – finding, interpreting, evaluating, using and creating images. Using visualization technology, the viewer could analyze what is seen.

Visual literacy training involves both theoretical training and practical exercises through which students develop not only their sense but also culture of using relevant means of creating illustrative material.

As a result of the training, students should understand that the visual message is a constructed message created through the creative language. The perception of an image differs for each viewer, as the demographic, social and cultural categories in which it falls are important. Visual literacy is oriented towards acquiring knowledge in the field of design, composition, typography, photography, color and other essential components.

## Good practices

In Bulgaria small part of universities offer training in visual literacy in specialties from the professional field of “Public communications and information sciences”. Such training is more often offered in the professional field of “Fine Arts”. Examples are: Southwest University “Neofit Rilski” – Blagoevgrad in con-



tinuing education in the subject "Digital Culture and Society"; Sofia University "St. Kliment Ohridski" – Sofia in the Doctoral Program in the discipline of Graphic Communication; New Bulgarian University – Sofia, Bachelor's program "Photography", in the discipline "Visual images of history".

## Conclusion

The development of digital skills is an investment in different spheres of life and business, and through the global network the communication space is expanding, changing the form of information carriers, creating new social processes such as digital economy, digital culture, digital politics (Pesheva, M., Petrov, M., Popova, M. (2012)). With the appearance of digital technologies, the role of visual literacy is also growing, that's why it is also necessary to be taught students from various specialties such as journalism, communications, advertising, and more. During their bachelor's and master's programs, students must also undergo a Visual Literacy course in order to gain more knowledge and experience regarding the creation, use and usage of illustrative material.

## References

- Autoreferate by Nora Goleshhevska. (2012) isual Rhetoric and Visual Media at the End of XX and beginning of XXI century. Hermeneutical and Semiotic Approaches in the Visual Rhetoric. Research. Retrieved from: [http://www.academia.edu/30127169/Authorship\\_of\\_distribution\\_Visual\\_media\\_and\\_visual\\_rhetory\\_in\\_the\\_20\\_and\\_the\\_general\\_of\\_21\\_v\\_her\\_hermal\\_health\\_and\\_seasonic\\_surveys\\_in\\_the\\_vision\\_review\\_](http://www.academia.edu/30127169/Authorship_of_distribution_Visual_media_and_visual_rhetory_in_the_20_and_the_general_of_21_v_her_hermal_health_and_seasonic_surveys_in_the_vision_review_)
- Lukova, K. (2016). Visual Culture in Contemporary Humanitaristics and Humanitar Education. Retrieved from: [http://research.bfu.bg:8080/jspui/bitstream/123456789/838/1/375\\_PDFsam\\_Sbornik-BFU-TOM1%20%D0%91%D0%A1%D0%A3.pdf](http://research.bfu.bg:8080/jspui/bitstream/123456789/838/1/375_PDFsam_Sbornik-BFU-TOM1%20%D0%91%D0%A1%D0%A3.pdf)
- Marinov, R. (2010). Interactive Communications – Strategies and Knowledge. Digital Competence and Identity. Retrieved from: [http://ebox.nbu.bg/prob12/view\\_lesson.php?id=244](http://ebox.nbu.bg/prob12/view_lesson.php?id=244)
- Pesheva, M., Petrov, M., Popova, M. (2012) Digital media. Glossary of Basic Concepts, Faber 46-47.
- Tsvetkova, M. (2000). The paradoxes of the information culture. Retrieved from: [https://www.kultura.bg/media/my\\_html/2133/infkul.htm](https://www.kultura.bg/media/my_html/2133/infkul.htm)

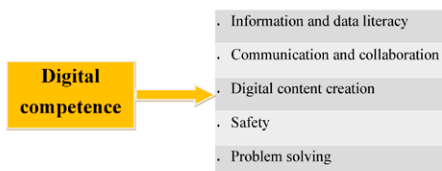


# THE ROLE AND IMPORTANCE OF VISUAL LITERACY TRAINING IN THE PUBLIC COMMUNICATIONS AND INFORMATION SCIENCES PROFESSIONAL FIELD



Assist. Prof. Kamelia Planska-Simeonova, PhD  
Department of Library Management and Archivistics  
University of Library Studies and Information Technologies  
Sofia, Bulgaria, e-mail: [k.planska@unibit.bg](mailto:k.planska@unibit.bg)

**Digital competence** includes "the use of Information Society Technologies (ICT) for work, leisure and communication" (Electronic Platform for Adult Learning in Europe, 2018)



**Digital Culture**  
It involves the appreciation, the exploration and the shared enjoyment of the various digital tools, environments and artefacts which inform and facilitate our work. (Rowles, 2018)

**Visual Culture**  
Visual culture is a term used to summarize the forms in which we consume media, such as paintings, drawings, films, television broadcasts, photographs, and digitally constructed images.



## Learning outcomes of Visual Literacy:

- Encourages young people and children to ask questions about multimedia culture and teaches them to be active and capable of distinguishing media users
- Promotes the development of multiple intelligence, analyzing and managing information
- Encourages young people to make creative use of multimedia products
- Helps them develop their critical thinking skills and search and evaluation strategies on the information found on the Internet

## Introduction

This report focuses on the role and importance of visual literacy training for students in the professional field of "Public Communications and Information Sciences". Visual literacy enhances a group of people's visual competences - the ability to understand and interpret images as well as other sensory experiences and experiments. This study attempts to clarify the concepts of digital culture, digital literacy, visual culture, visual literacy and the teaching of these fields of study. The methodology and content of visual literacy training and its role and importance for students trained in the professional field "Public communications and information sciences" are described and good practices are presented.

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## Good practices

In Bulgaria small part of universities offer training in visual literacy in specialties from the professional field of "Public communications and information sciences". Such training is more often offered in the professional field of "Fine Arts".

## Examples are:

- Southwest University "Neofit Rilski" – Blagoevgrad in continuing education in the subject "Digital Culture and Society";
- Sofia University "St. Kliment Ohridski" – Sofia in the Doctoral Program in the discipline of Graphic Communication;
- New Bulgarian University – Sofia, Bachelor's program "Photography", in the discipline "Visual images of history".

## Conclusion

The development of digital skills is an investment in different spheres of life and business, and through the global network the communication space is expanding, changing the form of information carriers, creating new social processes such as digital economy, digital culture, digital politics. With the appearance of digital technologies, the role of visual literacy is also growing, that's why it is also necessary to be taught students from various specialties such as journalism, communications, advertising, and more. During their bachelor's and master's programs, students must also undergo a Visual Literacy course in order to gain more knowledge and experience regarding the creation, use and usage of illustrative material.

## References

- Assist. Prof. Kamelia Planska-Simeonova, PhD. (2018). Visual Literacy as a Competence for the 21st Century. In: *Information and Technology Transforming Lives: Connection, Interaction, Innovation*. Sofia: Unibit. Retrieved from <http://www.unibit.bg>
- Assist. Prof. Kamelia Planska-Simeonova, PhD. (2018). Visual Literacy as a Competence for the 21st Century. In: *Information and Technology Transforming Lives: Connection, Interaction, Innovation*. Sofia: Unibit. Retrieved from <http://www.unibit.bg>
- Assist. Prof. Kamelia Planska-Simeonova, PhD. (2018). Visual Literacy as a Competence for the 21st Century. In: *Information and Technology Transforming Lives: Connection, Interaction, Innovation*. Sofia: Unibit. Retrieved from <http://www.unibit.bg>
- Assist. Prof. Kamelia Planska-Simeonova, PhD. (2018). Visual Literacy as a Competence for the 21st Century. In: *Information and Technology Transforming Lives: Connection, Interaction, Innovation*. Sofia: Unibit. Retrieved from <http://www.unibit.bg>
- Assist. Prof. Kamelia Planska-Simeonova, PhD. (2018). Visual Literacy as a Competence for the 21st Century. In: *Information and Technology Transforming Lives: Connection, Interaction, Innovation*. Sofia: Unibit. Retrieved from <http://www.unibit.bg>
- Assist. Prof. Kamelia Planska-Simeonova, PhD. (2018). Visual Literacy as a Competence for the 21st Century. In: *Information and Technology Transforming Lives: Connection, Interaction, Innovation*. Sofia: Unibit. Retrieved from <http://www.unibit.bg>
- Assist. Prof. Kamelia Planska-Simeonova, PhD. (2018). Visual Literacy as a Competence for the 21st Century. In: *Information and Technology Transforming Lives: Connection, Interaction, Innovation*. Sofia: Unibit. Retrieved from <http://www.unibit.bg>
- Assist. Prof. Kamelia Planska-Simeonova, PhD. (2018). Visual Literacy as a Competence for the 21st Century. In: *Information and Technology Transforming Lives: Connection, Interaction, Innovation*. Sofia: Unibit. Retrieved from <http://www.unibit.bg>
- Assist. Prof. Kamelia Planska-Simeonova, PhD. (2018). Visual Literacy as a Competence for the 21st Century. In: *Information and Technology Transforming Lives: Connection, Interaction, Innovation*. Sofia: Unibit. Retrieved from <http://www.unibit.bg>
- Assist. Prof. Kamelia Planska-Simeonova, PhD. (2018). Visual Literacy as a Competence for the 21st Century. In: *Information and Technology Transforming Lives: Connection, Interaction, Innovation*. Sofia: Unibit. Retrieved from <http://www.unibit.bg>



## NEW CHALLENGES FOR THE LIBRARIES IN THE DIGITAL ERA

Rita Radó

Doctoral Student, Institute of Library and Information Science, Faculty of Humanities, Eötvös Loránd University, Budapest, Hungary

National Széchényi Library, Budapest, Hungary

rado.rita@oszk.hu

### Abstract

*Libraries around the world should proactively face changing users' needs and provide immediate responses to these. Libraries should also be available to readers in digital form, but to achieve this in a modern, user-friendly environment, the library system needs to be reconsidered and even reorganized. Several libraries around the globe had to cope with these new tasks, roles and challenges; and those changes they had made. New workflows will be introduced by digitalization. These workflows are mainly related to the archiving of digital documents and their inclusion in the service. These workflows will only work efficiently if they are effectively integrated into the library's organizational operations. However, in many cases this requires complete transformation of the current organizational structure. Many international examples show that effective organizational development allows long-term strategic goals to be achieved. During my research I encountered several variations of organization transformations. With a comparative analysis, I would like to present changes in the introduction and organization of digitization-related work processes in the library structure of European national libraries. The variety of implementation methods for organizational transformations have highlighted that, though the services introduced are similar, the transformation of the organizational structure has been made via different approaches.*

**Keywords:** digitization, digital document authentication, library service development, long term preservation, national library, organization development

### The background and purpose

The focus of the present study is the examination of the digitization projects of major European libraries, and the associated problems, challenges, and possible solutions. The public collections and/or library collections are one of the most important content providers in a knowledge-based society. It is in the



interests of our users to ensure the widest possible access to cultural goods in the most liberal form (Public 2017). In this process, the device system of the digital world has made a major step forward. However, for libraries the digital world is not just an opportunity but also a new challenge. The basic triple task (collection-preservation-service) remains, but a new perspective on the library's institutional system needs to be developed.

Most digitization-related library development is about what new services should be offered without paying attention to what new challenges a given organization or institution is facing. However, the development of an organizational structure appropriate to the new workflows is inevitable. (Radó 2018) Libraries had to face all these new tasks, roles and challenges, and those they have made. We can see difference solution in libraries for the organizational structure of digitization workflows.

There are at least six different new workflows that are related to the digitalization. The first is, the *digitization*, actually the scanning. The other three parts are different aspect of preservation: the *electronic legal deposits*, the *long-term preservation* of digital documents, and *web-archiving* (Drótos 2017). Here we must also emphasize the *digital rights management* of documents, as copyright protection has come to a whole new dimension. Last, but not least comes the *digital document authentication* (Intersoft 2018). The credibility of digital document services is a basic requirement for digitization of cultural heritage.

Our documents are nowadays different, and our workflows also changed a lot, but our organization systems are still mostly the same. It's very much contradictory situation.

## Procedures

Using a comparative analysis approach, the changes in the introduction and organization of digitization-related work processes in the library structure of major European national libraries will be presented (Jouguelet 2006). In the National and University Library of Zagreb all the digitalization workflow is under the Preservation and storage department. A similar solution with a little difference can be seen in German National Library where the digitization is part of the preservation, also coupled with the user service department. A different approach is implemented in National Library of the Czech Republic. A dedicated Digitization and Technologies Department can be found here. There are also libraries that create an independent department for the digital workflow and a



separate one for the digital collections; one examples for this latter is the Royal Bibliothek in Denmark. There is a somewhat similar solution at the National Library of Sweden: they also have a separate department for the Digital collection and the associated workflows, but the metadata and system support is at the Information System Department.

## Conclusions

The variety of implementation methods for organizational transformations have highlighted, that though the services introduced are similar, the transformation of the organizational structure has been approached in a significantly different way. In Hungary, the National Széchényi Library is currently running an ongoing organization development and an informatics renewal project, which is involving the establishment of an advanced digitization headquarter with a supporting digitalization software-framework. Thus, understanding and analyzing the experiences, examples, and pitfalls of library transformations in other countries will provide us vital and useful information in the establishment of our digital national library system.

## References

- Drótos, L (2017). Archiving the Internet as a library task. [in Hungarian] Tudományos és Műszaki Tájékoztatás, 64/ 7/8, 361-371.
- Intersoft.hu. (2018). Loca Credibilia. [online] Retrieved from: <http://www.intersoft.hu/palyazataink/loca-credibilia.html>
- Jouguelet, S., (2006). Organizational charts in a selection of LIBER libraries: analysis of current trends. LIBER Quarterly. 16(3-4), p.None. DOI: <http://doi.org/10.18352/lq.7864>
- Public Collection Digitalisation Strategy (2017) - Közgyűteményi Digitalizálási Stratégia (2017-2025). <https://digitalisjoletprogram.hu/files/27/c4/27c41541f-b75cfb0bfd4ceb02385fb4e.pdf>
- Radó, R. (2018). Digitization in the National Library of the Netherlands. [in Hungarian] Könyvtári Figyelő, 28(1), 91-97



## New challenges for the libraries in the digital era



**Rita Radó**  
National Széchényi Library, Budapest, Hungary  
Institute of Library and Information Science, Faculty of Humanities, Eötvös Loránd University, Budapest, Hungary  
rado.rita@oszk.hu



Libraries around the world should proactively face users' needs and provide immediate responses to these. Libraries should also be available to readers in digital form, but to achieve this in a modern, user-friendly environment, the library system needs to be reorganized or even reconsidered. Most digitization-related library development is about what new services should be offered without paying attention to what new challenges a given organization or institution is facing. The development of an organizational structure appropriate to the new workflows is inevitable. Libraries must realize all these new tasks, roles and challenges. We can see different solutions, goals and strategies in libraries for the (re-)organizational structure of the digitization workflows.

Library digitized their collection:

For who?  
What?  
How?  
Why?  
Where?



Digitization Plan  
Digitization Manual  
Digitization Strategy

The way of delivering, preserving and storing **electronic legal deposit** requires a whole new technical system and requires the establishment of a reorganized service system.



Libraries have to face the wide-ranging problem of digital content management - the digital rights management of documents. The **copyright** protection has come to a whole new dimension.



The basic task of libraries is to ensure the **long term preservation** of digital documents, and also storing digital data with the correct metadata. Suitable storage system must be built and the necessary storage capacity should also be provided.



As a further aspect of preservation, the need to archive web content and the long-term preservation of Internet resources has emerged. The timeliness of **web archiving** is now indisputable in the library world.

One of the most important issues in producing a digital content is to provide **authentication** and to match digital copies to original copies. A document authentication system developed in Hungary, *Loca Credibilia*, has a unique authentication technology.



Introducing new tasks

**Organization development and digitization**

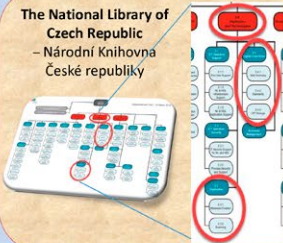
Develop existing services



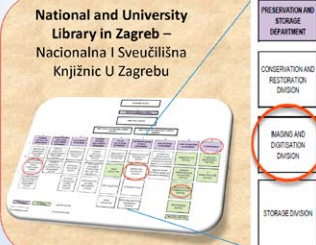
- o Designing and developing digitization workflows
- o IT service development
- o Reorganisation the acquisition and collection development

- o Creating / improving a Standardized Service Policy (the strategy reconsideration)

**The National Library of Czech Republic**  
- Národní knihovna České republiky



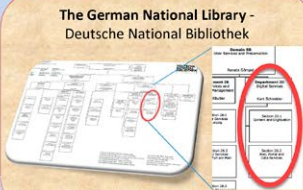
**National and University Library in Zagreb**  
- Nacionalna i Sveučilišna Knjižnica U Zagrebu



**The Royal Bibliothek in Denmark** - Det Kgl. Bibliotek



**The German National Library** - Deutsche Nationalbibliothek



**National Library of Sweden** - Kungl. Biblioteket



**National Széchényi Library, Hungary** - Országos Széchényi Könyvtár



Several libraries all around the globe had to face all these new tasks, roles and challenges; and those changes they have made. We can see their responses in organizational development. There are many types of workable solutions, depending on the goal and strategy of the library.



## CRYPTOGRAPHIC ALGORITHMS: AN OVERVIEW AND COMPARATIVE ANALYSIS

Alojz Šekrst

Bachelor, Faculty of Humanities and Social Sciences Osijek, Osijek,  
Croatia  
asekrst@ffos.hr

Anita Papić

Assistant Professor, Faculty of Humanities and Social Sciences Osijek,  
Osijek, Croatia  
apapic@ffos.hr

### Abstract

*Undoubtedly, information security and cryptography is extremely important in today's network of communication channels. That's why the focus of this poster are cryptographic algorithms as sequences of operations. In the fact, cryptographic algorithms are two mathematical functions. The poster shows an overview and comparative analysis of the most famous symmetric, asymmetric and hybrid cryptographic algorithms. The compared symmetric cryptographic algorithms are DES (Data Encryption Standard) cryptographic algorithm and AES (Advanced Encryption Standard) cryptographic algorithm. Also, a great attention is given to the most famous asymmetric cryptographic algorithm named Rivest-Shamir-Adleman (RSA) cryptographic algorithm. Besides, several representatives of hybrid cryptographic algorithms are illustrated such as MD5 (Message Digest Algorithm) cryptographic algorithm, SHA-1 (Secure Hashing Algorithm) cryptographic algorithm and HMAC (Hash-based message authentication code) cryptographic algorithm.*

**Keywords:** comparative analysis, cryptographic algorithms, information security

### The background and purpose

To clarify and close the intrigue of cryptographic algorithms, this poster used visualizations of every type of algorithm and their keys. The aim of the poster is to show what are the similarities and differences in symmetrical, asymmetric and hybrid algorithms.



## Methods and procedures

The poster shows three types of algorithms according to symmetry, which means that the message being transmitted is decrypted. The first type of algorithm, the so-called symmetric algorithms have a secret of both keys, so that in the display is used the same key format as the sender's. In Asymmetric, one key that is encrypted is public, and the decryption is private, which allows for greater secrecy. Because no one else has access to the private decryption key. The Hybrid cryptography scheme combines the convenience of the Asymmetric encryption scheme and the effectiveness of the Asymmetric encryption scheme. Hybrid cryptography is achieved by transferring data using unique key sessions along with symmetrical encryption. The public encryption key is implemented for accidental encryption using symmetric cryptography. The recipient then uses the public key encryption method to decipher the symmetric key. Once the symmetric key is detected, it can be used to decrypt the message.

## Conclusion

Scientists in the cryptography area continuously and systematically adopt algorithmic standards and improve them by creating new versions. All this points to the fact that one of the main preoccupation of computer science today is the protection of confidential data and ensuring a smooth transfer of data to secure communication channels to the intended recipient. The best quality of cryptographic systems is achieved by combining the features of symmetrical and asymmetric algorithms. That's how complex crypto-systems are formed that are harder to hack. It is important to take all the safeguards of cryptography for the reason that after breaking into cryptography the attacker cannot be traced, and sometimes even notice that the attack was committed. If we want to ensure the security of computer systems, we need to know the algorithms on which these systems are resting.

## References

- Accuhash: What is MD5?. Retrieved from <http://www.accuhash.com/what-is-md5.html>
- Data Encryption Standard. (1999). *Federal Information Processing Standard Publications 46 (3): 1-2*. Retrieved from <http://csrc.nist.gov/publications/fips/fips46-3/fips46-3.pdf>



- Diffie, W. and M. E. Hellmann. New directions in cryptography: Invited paper. Retrieved from [http://courses.isi.jhu.edu/netsec/papers/new\\_directions.pdf](http://courses.isi.jhu.edu/netsec/papers/new_directions.pdf)
- Dr. Dobb's: The HMAC Algorithm. Retrieved from <http://www.drdobbs.com/security/the-hmac-algorithm/184410908>
- Internet-Computer-Security.com: MD5 i Sha-1 algorithm – VPN Tutorial. Retrieved from <http://www.internet-computer-security.com/VPN-Guide/Sha-1.html>
- Mukhopadhyay, S. The DES Algorithm. Retrieved from <http://www.facweb.iitkgp.ernet.in/~sourav/DES.pdf>
- Search Security: Advanced Encryption Standard (AES). Retrieved from <http://searchsecurity.techtarget.com/definition/Advanced-Encryption-Standard>
- Search Security: Asymmetric cryptography (public-key cryptography). Retrieved from <http://searchsecurity.techtarget.com/definition/asymmetric-cryptography>
- Search Security: Data Encryption Standard (DES). Retrieved from <http://searchsecurity.techtarget.com/definition/Data-Encryption-Standard>
- Search Security: RSA algorithm (Rivest-Shamir-Adleman). Retrieved from <http://searchsecurity.techtarget.com/definition/RSA>
- Search Security: MD5. Retrieved from <http://searchsecurity.techtarget.com/definition/MD5>
- Techopedia: Hybrid Encryption. Retrieved from <http://www.techopedia.com/definition/1779/hybrid-encryption>
- The Keyed-Hash Message Authentication Code. (2002). *Federal Information Processing Standards Publications* 198 (3) . Retrieved from <http://csrc.nist.gov/publications/fips/fips198/fips-198a.pdf>
- What are cryptographic algorithms? Retrieved from <http://www.wisegeek.com/what-are-cryptographic-algorithms.htm>



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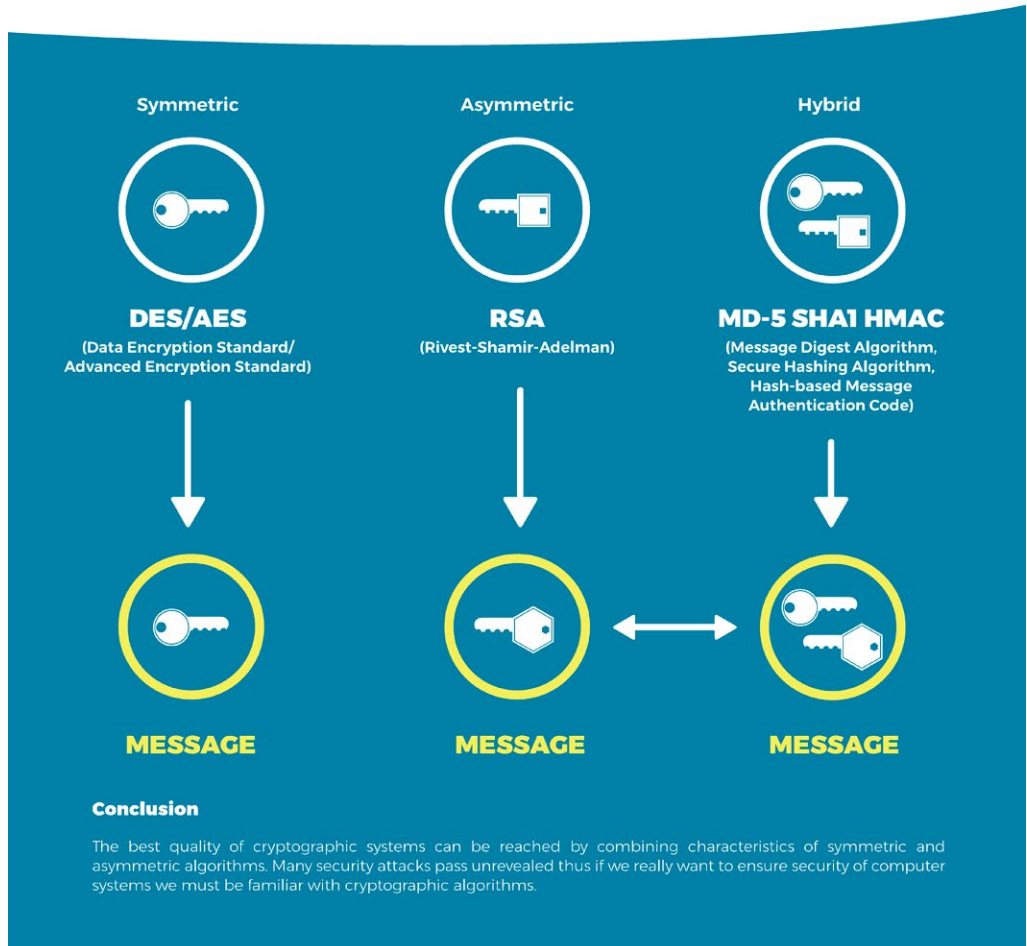


**Alojz Šekrst**, univ.bacc.informatol. | **Anita Papić**, PhD, Assistant Professor

## CRYPTOGRAPHIC ALGORITHMS: An Overview and Comparative Analysis

### Abstract

Undoubtedly, information security and cryptography is extremely important in today's network of communication channels. That's why the focus of this poster are cryptographic algorithms as sequences of operations. In the fact, cryptographic algorithms are two mathematical functions. The poster shows an overview and comparative analysis of the most famous symmetric, asymmetric and hybrid cryptographic algorithms. The compared symmetric cryptographic algorithms are DES (Data Encryption Standard) cryptographic algorithm and AES (Advanced Encryption Standard) cryptographic algorithm. Also, a great attention is given to the most famous asymmetric cryptographic algorithm named Rivest-Shamir-Adleman (RSA) cryptographic algorithm. Besides, several representatives of hybrid cryptographic algorithms are illustrated such as MD5 (Message Digest Algorithm) cryptographic algorithm, SHA-1 (Secure Hashing Algorithm) cryptographic algorithm and HMAC (Hash-based message authentication code) cryptographic algorithm.





## COMPARISON OF INFORMATION SCIENCE STUDIES BETWEEN OSIJEK AND PÉCS UNIVERSITY

Zsolt Vačora

Faculty of Humanities and Social Sciences Osijek, Osijek, Croatia  
zvacora@ffos.hr

### Abstract

*Although these two universities are just 100 kilometres away from each other, the current distance between Croatia and Hungary due to substantial language differences and weak traffic connections have brought their relations to an unsatisfactory level. Since the cities are so close but in different countries and culture circumstances, it would be valuable to analyze similarities and differences of Information science studies in these terms. In the process of poster making, academic year 2018./2019. Information science study at Pécs joined Faculty of Humanities. Also there is a big difference currently there is between the University library in Osijek and the one in Pécs. The current University library in Osijek is under construction and currently shares a building with Osijek's City library. On the other side, the Hungarian one was built in 2010., within the frames of Pécs candidacy for the European capital of culture.*

**Keywords:** mobility, information science studies, University Pécs, University Osijek

### Purpose

This poster will compare Information Science study programs at the Faculty of Humanities, Osijek (Croatia) and Faculty of Cultural Sciences, Education and Regional Development, Pécs (Hungary) later Faculty of Humanities. The purpose of poster is to present Information sciences studies on both universities, analyze and compare their study programs at the undergraduate and graduate levels. Also since Information science significantly takes part in terms of Library science it would be valuable to mention University library infrastructure in both cities. It is important to touch the field of conditions of the complete study process.

### Methodology

In the research process we analyzed Information sciences studies in Croatia and Hungary, and also in which cities are they offered. Used methods in research



process were comparison of studies guides of Universities in Osijek and Pécs, curriculums on MA and BA level, gathering data from online databases about higher education from felvi.hu, oktatás.hu, mozzg.srce.hr and Erasmus+ visit of Department of Information science Pécs in year 2017 – 2018.

## Results

Pécs city is bigger almost by half more precisely 45% (Osijek - 108 048, Pécs - 156 049) measurements data are from 2011. University of Pécs leaves an impact of bigger tendency to international study programs because there is a large number of international students, almost 10% of total student number. Also at Pécs University there is mentionable well organized Erasmus+ program network. On the other side Osijek strengths would be the longer tradition of Information sciences department and wider range of acquired student competencies. Besides competencies for working in library, museums and other information institutions, students in Osijek can place their interests on the field of IT or publishing. Pécs left an impact that is mainly concentrated on presenting competences about libraries and museums, and that a student with finished MA in Pécs can primary find a future work in such institutions. Osijek broaden the opportunities for students with IT, publishing companies and teaching informatics in primary schools. Both Departments in their study goals mention how it is necessary to enable student and staff international exchange. It would be valuable for both universities to encourage better relations and cooperation, which is currently on very low level. With better networking of these two Universities it is possible to decrease presented differences and obstacles.

## References

- Pécs University (2018.) Retrieved from: Information technology bachelor studies description:  
[http://btk.ptt.hu/sites/btk.ptt.hu/files/files/felveteli/BA/ba\\_infokonyvt\\_18.pdf](http://btk.ptt.hu/sites/btk.ptt.hu/files/files/felveteli/BA/ba_infokonyvt_18.pdf)
- Knok, Ž., Grof, P. (2015.) Modeling and implementation of database for the purpose of monitoring Erasmus student exchange. Zbornik radova Međimurskog veleučilišta u Čakovcu, Vol.6 No.2 Siječanj 2016. 95-106. Retrieved from: <https://hrcak.srce.hr/151165>
- Vodič za buduće studente: FFOS (2018.) Retrieved from: <http://softwarecity.hr/istrazivanje/vodic-buduce-studente-ffos/>



- Vodič za buduće studente: akademska godina 2018./2019. (2017.) Sveučilište Josipa Jurja Strossmayera u Osijeku
- Petr Balog, K. i Martinović, I. (2009). Na tragu ishoda učenja : kompetencije diplomiranih knjižničara Odsjeka za informacijske znanosti u Osijeku. *Vjesnik bibliotekara Hrvatske*, 52 (1/4), 1-17. Retrieved from: <https://hrcak.srce.hr/83011>
- Sipos, A (2016.) Könyvtárosból informatikus könyvtáros – az OTDK dolgozatok tükrében. *Könyvtári Figyelő* - 62. évf. 4. sz. 488-499. Retrieved from: [http://epa.oszk.hu/00100/00143/00338/pdf/EPA00143\\_konyvtari\\_figyelo\\_2016\\_4\\_488-499.pdf](http://epa.oszk.hu/00100/00143/00338/pdf/EPA00143_konyvtari_figyelo_2016_4_488-499.pdf)
- Könyvtártudomány mesterszak (2018.) Retrieved from: <http://kpvk.pte.hu/content/konyvtartudomany-mesterszak>
- Informatikus könyvtáros alapszak (2018.) Retrieved from: [http://btk.pte.hu/sites/btk.pte.hu/files/files/felveteli/BA/ba\\_infokonyvt\\_19.pdf](http://btk.pte.hu/sites/btk.pte.hu/files/files/felveteli/BA/ba_infokonyvt_19.pdf)



# COMPARISON OF INFORMATION SCIENCE STUDIES BETWEEN OSIJEK AND PÉCS UNIVERSITY

Zsolt Vačora

University of Osijek

zvacora@ffos.hr

## OSIJEK

The establishment of Department was under the name of Library sciences program in academic year 1998 - 1999 on Faculty of Humanities and Social Sciences (ex. Faculty of Pedagogy). In academic year 2005 - 2006 it was re-organized and it became Information sciences studies program, under which name there is also today.

### Mission and vision

(According to Information sciences curriculum of Department of Information sciences, University of Osijek, 2005)

- offer education in the field of Information sciences which will enable students to become polyvalent information professionals following the educational process programs and scientific research topics
- orientation on new technologies, interdisciplinary research and long distance learning opportunities
- attract students and employees in the Information sciences sector with their openness to the other studies programs, institutions-partners and potential students from neighboring countries

### Studies goals

- respond to the growing needs of the society for educated information professionals, include the basic knowledge and skills needed for each future information professional
- enable students and staff international exchange on the basis of agreed cooperation and to encourage students to overcome linguistic and cultural obstacles

## PÉCS

The Department of Library Sciences in Pécs was established in 2004, and the Bologna system in Hungary was introduced in 2006, this year has been established the Library and information sciences BA and in 2009 the Information science MA. It was based on few faculties since then, we will mention Faculty of Adult Education an Human Resource Management, Faculty of Cultural Sciences, Education and Regional Development and current Faculty of Humanities and Social Sciences since academic year 2018 - 2019.

### Studies goals

(According to MA Information sciences studies guide University Pécs, 2018)  
Training of professionals with knowledge in basic informatics and library science in information society institutions like libraries, cultural institutions and centers, research and development organizations institutions in the field of economy, business, public administration related to the production, organization, processing and utilization of information content, as well as management of related services.

Students will be able to perform tasks related to the production, organization, processing of information, utilization of information content, as well as management of related services and mediation in culture. Students will acquire appropriate knowledge and knowledge to continue their studies in doctoral programs.

## RESEARCH PROCESS AND CONCLUSIONS

Mentioned cities are only under 100km away from each other but because of large language difference they leave an impact of much wider distance. The current distance between Croatia and Hungary due to substantial language differences and weak traffic connections have brought their relations to an unsatisfactory level. Pécs is bigger almost by half more precisely 45% (Osijek - 108 048, Pécs 156 049) measurements data are from 2011. University of Pécs leaves an impact of bigger tendency to international study programmes because there is a large number of international students, almost 10% of total student number. Also at Pécs University there is mentionable well organized Erasmus+ program network. On the other side Osijek strengths would be the longer tradition of Information sciences department and wider range of acquired student competencies. Besides competencies for working in library, museums and other information institutions, students in Osijek can place their interests on the field of IT or publishing. Pécs left an impact that is mainly concentrated on presenting competences about libraries and museums, and that a student with finished MA in Pécs can primarily find a future work in such institutions. Osijek broaden the opportunities with IT and publishing companies. Both Departments in their study goals mention how it is necessary to enable student and staff international exchange. It would be valuable for both universities to encourage better relations and cooperation, which is currently on very low level. With better networking of these two Universities it is possible to decrease presented differences and obstacles. Used methods in research process were comparison of studies guides, curricula on MA and BA level, gathering data from online databases about higher education; felvi.hu, oktatás.hu, mozzvag.srce.hr, Erasmus+ visit of Department of Information science Pécs in year 2017 - 2018

### CIRCUMSTANCES OF UNIVERSITIES

Both cities have universities with history but Hungarian tends to be longer. Pécs University foundation is connected with year 1367, next to the foundation of universities in Krakow (1364) and Vienna (1365). Foundation of University in Osijek is connected with year 1975 but first mention of higher education institution is in 1707. Number of student in Osijek in year 2017 was 17 078, and in same year in Pécs was 20 075 with almost 2000 international students. University library Osijek shares a building with City library Osijek, in one inadequate building and new University library is currently under the construction process. On the other side Pécs University and City library was built in year 2010, under the terms of candidature for European Capital of Culture. It represents the highest achievements of current modern architecture.



University library Osijek under the construction process, 2018



Pécs University and City library, "Knowledge center", 2010

## INFORMATION SCENCES STUDIES

### CROATIA

- University of Zagreb, Faculty of Humanities and Social Sciences
- University of Zadar
- University of Osijek, Faculty of Humanities and Social Sciences

### HUNGARY

- ELTE Budapest, Faculty of Humanities and Social Sciences
- University of Debrecen, Faculty of Informatics
- University of Szeged, Faculty of Humanities and Social Sciences
- Eszterházy Károly University Eger, Faculty of Natural Sciences
- University of Pécs, Faculty of Humanities and Social Sciences



## EUROPEAN INFORMATION SCIENCE EDUCATION: INSIGHTS AND CONTRIBUTIONS FROM ERASMUS+ PROJECT EINFOSE

Cvijetin Vidaković

Master Student, Faculty of Humanities and Social Sciences, University of  
Osijek, Croatia  
cvidakovic@ffos.hr

Mislav Glavačević

Master Student, Faculty of Humanities and Social Sciences, University of  
Osijek, Croatia  
mglavacevic1@ffos.hr

### Abstract

*European Information Science Education or EINFOSE is a project which started on 1. October 2016. and was completed on 30. September 2018. Project was funded with the support from European Commission and was part of Erasmus+ initiative. The aim of this project was to overcome differences that exist in the area of entry requirements and learning outcomes in the field of Information Science. Main coordinator of this project was Faculty of Humanities and Social Sciences, University of Osijek, Croatia. Partners of EINFOSE project were University of Borås from Sweden, University of Hildesheim from Germany, University of Graz from Austria, University of Ljubljana from Slovenia, University of Pisa from Italy, University of Barcelona from Spain and Hacettepe University from Turkey. Target groups of this project were students with Bachelor's degree, university professors and other professionals from the field of Information Science.*

**Keywords:** education, information Science, MA program, summer school

### Introduction

Due to wide range of differences in curriculum between European Higher Education Institutions that offer MA program, barriers were created which caused a lot of issues in perspective of mobility. At the beginning of EINFOSE project it



has been indicated that those barriers can be eliminated by strengthening partnership between Higher Education Institutions, exchanging the best practices through seminars for professors from partner institutions, summer schools that will provide students with the most relevant basic knowledge to allow them to start their MA programs, creating an online teaching and communication platform, and intellectual activities that would contribute to outcomes of this project (Bosančić, Badurina, Faletar Tanacković, Mandl, 2018). University of Osijek has a main responsibility to make an open source learning platform for collaborative learning and teaching through the internet by use of resource sharing, online conferences, blogs etc. Platform offers various tools for teaching and promotes teamwork between teachers, students and future students. University of Hildesheim created an Open Educational Resources which offer an opportunity to share, use and reuse knowledge. Open Educational Resources consist of four full courses and include materials, modules, textbooks, tests, gaming tools etc. Main courses were related to advances in Information Sciences, Research methodology, Principles of information seeking and retrieval and Evaluation of information services. Other Universities contributed to intellectual outputs of the project by creating Evaluation and Didactic Frameworks (Aparac-Jelušić, Faletar Tanacković and Petr Balog, 2018) Through two years of its duration, project had two summer schools. European Summer School on Information Science (ESSIS) is an intensive one week teaching event for BA students who want to enrol in a MA program in information science. The lectures for core areas in LIS have enabled students to close their knowledge gaps and to prepare better for MA programs. Those summer schools enabled a unique learning experience in an international group, gave a chance to enrol in a MA program in LIS and opportunity to learn basics of information science. Students had the opportunity to meet other students and professors from other countries and other schools of Information Science ([www.einfose.ffos.hr](http://www.einfose.ffos.hr)).

## Methodology

Main goal of our research was to find out what colleagues who participated in those two ESSIS comment on OER's. The research questions we had are: a) How do they see the selection of four offered courses and then we had sub – questions: whether this is enough to enter the IS field, what they will add to courses, what they suggest to be removed, have the course meet their expectations; b) How do they see OER's structure with sub – questions like: Are offered sections efficient enough (what they would add and what they suggest to be removed) and how do they see the presentations offered (does the subject of presentations fulfill



their interests, what they would add and what they suggest to be removed). Research methodology which was used in this research was an online questionnaire with open-type questions. In order to present research findings more accurately quantitative and qualitative analysis were used.

## Conclusion

Since project EINFOSE is finished, there would be no more ESSIS. Hopefully, the results of this research will be interesting to a lot of students and information science professionals and it would start a discussion which will result in creating a program which would start Summer Schools again where will students from all around the world learn the basics of information science and enroll in master program in information science.

## References

- Aparac-Jelušić, Tatjana; Faletar Tanacković, Sanjica; Petr Balog, Kornelija. Approach to Harmonization of Entry Requirements for Graduate Program in Information Science at European Higher Institutions: EINFOSE project.//Proceedings of the Association for Library and Information Science Education Annual Conference: ALISE 2018.
- Bosancic, B.; Badurina, B., Faletar Tanacković, S., & Mandl, T.(2017). EINFOSE project: Stimulating diversity of students and teachers' engagement in the european higher education area.//Proceedings of the Association for Information Science and Technology 54,1(2017). Retrieved from: <https://onlinelibrary.wiley.com/doi/abs/10.1002/pa2.2017.14505401093>



CVIJETIN VIDA KOVIĆ

MISLAV GLAVAČEVIĆ

# EUROPEAN INFORMATION SCIENCE EDUCATION

INSIGHTS AND CONTRIBUTIONS FROM  
ERASMUS + PROJECT EINFOSE

## AIM

To overcome differences that exist in the area of entry requirements and learning outcomes in the field of Information Science

## TARGET GROUP

Students with Bachelor's degree, university professors and other professionals from the field of Information Science

## SUBJECTS

Introduction to Information Science, Research Methodology in Information Science, Information Seeking and Retrieval, Evaluation of Information Services

- presented courses are sufficient for entering the field of IS
- courses have completed everyone's expectations
- all subject presentations have fulfilled everyone's interests
- Open Educational Courses were sufficient enough

- additional courses: digital preservation or digitalization in general, evaluation of information services, introduction to cataloguing, information seeking and retrieval
- shorter lessons
- more tools, more resources
- more examples



## THE ROLE OF SOCIAL MEDIA IN CONSUMING NEWS AMONG POST-MILLENNIALS

Tena Vilček

Master Student, Department of Information Sciences, Faculty of Humanities and Social Sciences, University of Osijek, Croatia  
tvilcek@ffos.hr

Sanja Sušilović

Master Student, Department of Information Sciences, Faculty of Humanities and Social Sciences, University of Osijek, Croatia  
ssusilovic@ffos.hr

Darko Lacović

Postdoctoral Research Assistant, Department of Information Sciences, Faculty of Humanities and Social Sciences, University of Osijek, Croatia  
dlacovic@ffos.hr

Snježana Stanarević Katavić

Assistant Professor, Department of Information Sciences, Faculty of Humanities and Social Sciences, University of Osijek, Croatia  
sstanare@ffos.hr

### Abstract

*Rowlands et al. (2008) stated that people who are considered to be members of the post-millennium, or so-called Google generation, were born after 1993, which means that they were born and grew up in a world that was already dominated by the Internet. One of the main characteristics of this generation is that they are very informatically literate, but usually information illiterate. The purpose of this research was to explore the role of social media in the context of searching, sharing and avoiding news among post-millennials. Quantitative methodology in the form of an online questionnaire was used. The sample consisted of students of information sciences at the Faculty of Humanities and Social Sciences in Osijek. Data were collected during December 2017 and January 2018. A total of 91 survey question-*



*naires were returned (a response rate of about 70%). According to the research results most of the respondents usually read news using social media such as Facebook (91%), YouTube (85%) and Instagram (62%). Respondents on daily basis read news about daily events in the world (73%) and in Croatia (60%), but they also read „light news“, like lifestyle (60%). About 80% of the respondents stated they do not share news on their profiles, while others share news about lifestyle and entertainment. As expected students mainly avoid news about politics (53%), sports (45%), religion (43%) and black chronicle (39%) because they are not interested in those topics (67%) or they find them disturbing (44%). The methodology of the research can be used for further studies which will include larger sample of the respondents.*

**Keywords:** Department of Information Sciences in Osijek, information behaviour, news, post-millennials, social media

## The background and purpose of the research

Although members of Google generation often possess good skills of computer literacy, Chen & Wo (2011), Cervi, Paredes, & Tornero (2010) emphasize that in the new century society an individual needs to be information and media literate using Internet and Web 2.0. Results of an American study (Media Insight Project, 2015) show that some members of post-millennium generation describe themselves as active seekers of news, while Facebook, YouTube and Instagram are the most used social media for reading news. The purpose of this research was to explore and describe the role of social media in consuming news, ie. in the context of searching, sharing and avoiding news among members of the post-millennium generation.

## Research methods and instruments

In the research was used quantitative methodology (online questionnaire) and respondents were students of information sciences at the Faculty of Humanities and Social Sciences in Osijek who were born after 1993. The research was conducted during December 2017 and January 2018. A response rate was about 70% which means that 91 survey questionnaires were returned. Research questions were: To what extent do post-millennials use social networks for information on daily events compared to other sources? What kind of news do post-millennials share through social networks? News from which thematic areas post-millennials prefer to discover and read on social networks? News from which thematic areas post-millennials prefer to avoid on social networks?



## Findings and conclusion

Research results showed that most of the respondents (85%) usually read news over Facebook (91%), YouTube (85%) and Instagram (62%) which was also confirmed in a mentioned American study (Media Insight Project, 2015). Students on daily bases mostly read news about daily events in the world (73%) and in Croatia (60%), as well as traffic and weather news (45%). The majority of respondents read news on social media via mobile devices (90%) and on laptop (75%), while about a quarter of the respondents stated that they read news on a personal computer, and only 6% read them on the tablet. According to expectations most of the students usually avoid news about politics (53%), sports (45%), religion (43%), black chronicle (39%) and the most common reasons for avoiding that kind of information is lack of interest in those topics (67%) or some disturbing information from that areas (44%). Unfortunately, post-millennials stated they are aware of a bad quality (76%) and irrelevance (71%) of the news they consume over social media, but they still read them.

The results of this research can help librarians in educating young people about the importance of reading news they usually find uninteresting and boring, for example about politics, religion etc. Also, the results can be useful in encouraging librarians to organize workshops about (ir)relevance of online information, which young people are most often unaware of.

## References

- Cervi, L. M. P., Paredes, O., & Tornero, J. (2010). In Understanding new media literacy: an explorative theoretical framework. Retrieved from [https://pdfs.semanticscholar.org/d059/e57917f9cfb91b58e42f74e5abd83559e61c.pdf?\\_ga=2.100152859.425469791.1543359909-59996167.1543359909](https://pdfs.semanticscholar.org/d059/e57917f9cfb91b58e42f74e5abd83559e61c.pdf?_ga=2.100152859.425469791.1543359909-59996167.1543359909)
- Chen, D.-T., & Wu, J. (2011). In Understanding new media literacy: an explorative theoretical framework Retrieved from [https://pdfs.semanticscholar.org/d059/e57917f9cfb91b58e42f74e5abd83559e61c.pdf?\\_ga=2.100152859.425469791.1543359909-59996167.1543359909](https://pdfs.semanticscholar.org/d059/e57917f9cfb91b58e42f74e5abd83559e61c.pdf?_ga=2.100152859.425469791.1543359909-59996167.1543359909)
- Media Insight Project (2015). *How millennials get news: inside the habits of America's first digital generation*. Retrieved from: <http://www.americanpressinstitute.org/wp-content/uploads/2015/08/Media-Insight-Millennials-Report-March-2015.pdf>
- Rowlands, I., Nicholas, D., Williams, P., Huntington, P., Fieldhouse, M., Gunter, B., Withey, R., Jamali, H. R., Dobrowolski, T., & Tenopir, C. (2008). The Google generation: the information behaviour of the researcher of the future. *Aslib Proceedings*, 60(4), 290-310. doi: <https://doi.org/10.1108/00012530810887953>



## THE ROLE OF SOCIAL MEDIA IN CONSUMING NEWS AMONG POST-MILLENNIALS

TENA VILČEK (tvilcek@ffos.hr), SANJA SUŠILOVIĆ (ssusilovic@ffos.hr),  
DARKO LACOVIĆ (dlacovic@ffos.hr), SNJEŽANA STANAREVIĆ KATAVIĆ (sstanare@ffos.hr)

Department of Information Sciences, Faculty of Humanities and Social Sciences,  
University of Osijek, Croatia

### RESEARCH QUESTIONS

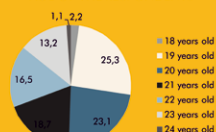
1. To what extent do post-millennials use social networks for information on daily events compared to other sources?
2. News from which thematic areas post-millennials prefer to discover and read on social networks?
3. What kind of news do post-millennials share through social networks?
4. News from which thematic areas post-millennials prefer to avoid on social networks?

#### GENDER OF THE RESPONDENTS

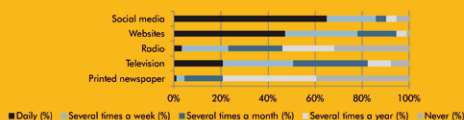


LEVEL OF STUDY  
78% Undergraduate study  
22% Graduate study

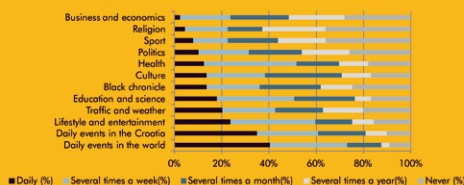
#### AGE OF THE RESPONDENTS



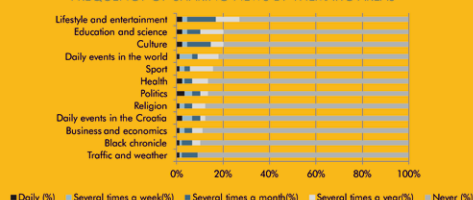
#### FREQUENCY OF USING CERTAIN INFORMATION SOURCES FOR READING NEWS ABOUT DAILY EVENTS



#### FREQUENCY OF READING NEWS BY THEMATIC AREAS



#### FREQUENCY OF SHARING NEWS BY THEMATIC AREAS



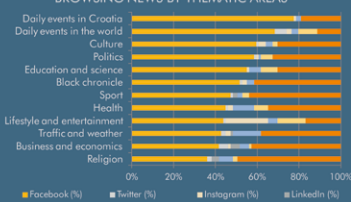
### METHODOLOGY

- HOW? Quantitative methodology (online questionnaire)
- WHO? Students of information sciences at the Faculty of Humanities and Social Sciences in Osijek born after 1993
- WHEN? December 2017 and January 2018
- HOW MANY? Response rate of about 70% (91 survey questionnaire)

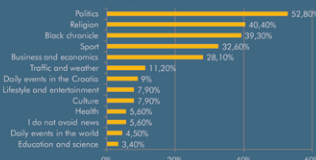
*I'm aware of an inaccuracy, unreliability and irrelevance of the news I find on social media (Mean = 4,1)*

*I do not have the habit of searching news on social media, but I read them if they appear in my newsfeed. (Mean = 3,9)*

#### USING CERTAIN SOCIAL MEDIA FOR SEARCHING AND BROWSING NEWS BY THEMATIC AREAS



#### THEMATIC AREAS RESPONDENTS USUALLY AVOID TO READ ABOUT



#### REASONS FOR AVOIDING NEWS I avoid news...



### CONCLUSION

The results showed that members of Google generation who participated in this research often read news using social media, mostly using Facebook, YouTube and Instagram. Most often they read about events in the world and in Croatia, but avoid news about politics, sports, religion and black chronicle. Results also showed that most of the respondents rarely share news on social media, while others share so-called lightnews. Unfortunately, post-millennials stated they are aware of a bad quality and irrelevance of the news they consume over social media, but they still read them. The results of this research can help librarians in educating young people about the importance of reading news they usually find uninteresting and boring. Also, the results can be useful in encouraging librarians to organize workshops about (ir)relevance of online information, which young people are most often unaware of.



## W O R K S H O P S



## WORKSHOP: HOW INFORMATION AND COMMUNICATION TECHNOLOGIES COULD BE THE KEY COMPONENT OF SMART CITIES DEVELOPMENT?

Eberhardt Clement

Master Competitive Intelligence, Paris-Est Marne-la-Vallée University,  
Paris, France  
eberhardtclement@gmail.com

Camille Coulon

Master Competitive Intelligence, Paris-Est Marne-la-Vallée University,  
Paris, France  
camille.cath.coulon@gmail.com

Pauline Davy

Master Competitive Intelligence, Paris-Est Marne-la-Vallée University,  
Paris, France  
pauline.davy@hotmail.com

Loïc Gayé

Master Competitive Intelligence, Paris-Est Marne-la-Vallée University,  
Paris, France  
loicgaye84@gmail.com

Maxime Vebret

Master Competitive Intelligence, Paris-Est Marne-la-Vallée University,  
Paris, France  
maxime.vebret@orange.fr



## Abstract

*The future is coming. Nowadays Smart cities, Big Data and Artificial Intelligence (AI) are more than ever a huge topic. Technologies are surging for the greatest and the worst of uses. This is why we need to create a smart city, which will be good for everyone. In order to improve our cities, we need to find better ways to use such powerful technologies as AI and the Big Data. Here, data and information are not the same, a data is a fact that is a bit of information, however an information is more complex and relevant as it is composed of several data that leads to increase our knowledge on a subject. In order to illustrate the power of information and communication technologies on the smart cities' development, first we will introduce the subject and then we will answer to multiple questions with the use of serious games by teams and different problematics. Our presentation aims on the concept of Big Data, IA, IT and subjects all around the concept of smart cities. As together we are stronger, this workshop will improve our common knowledge on the subject as a whole team. What a nice coincidence that Smart Cities also need a collective to be efficient. The workshop will aim to make participants aware of the concept of smart cities. By group, they'll have to reflect on the different uses of information to make the city more "intelligent." Each group will treat one city more or less intelligent in the world. For this serious game we decided to treat five cities which are: Kyoto, Mumbai, Nice, Saint-Petersburg and Toronto. Each city needs to be improved by technology and participants have to find some solutions (using Big Data and the concept of what we call a smart city). Of course, the problems can be real or not, we just want to treat this concept playfully. The goal of the workshop is making participants thinking out of the box about subjects that are only merging. As we are only at the beginning of this type of cities, it will be a good exercise to compare what we expect with what scientist predict.*

**Keywords:** communication, information, innovation, Smart Cities

These exchanges will bring a presentation and a sharing of ideas of each working table and a debate on the possibilities offered by the Big Data to improve citizens' life. The interest of this work is to confront the points of view of the participants from different countries, to understand the different needs according to these countries.

As we are five speakers: each of us can manage one group of three to five participants, a total of fifteen to twenty-five people during one hour.

According to the IESE Cities in Motion Index in 2018, New York (1), London (2) and Paris (3) has been declared the smartest city in the world. In order to be in the top cities, have to improve their global connectivity, way of life and sustainability. Even if this is not surprising that these cities are advanced, it does not mean they will succeed.



Demography, climate changes and collaborative economy are factors leading to a new vision of cities as we know them. The concept of a Smart City is not clear because it depends on the major goals of every city. According to the European Commission “*A smart city is a place where traditional networks and services are made more efficient with the use of digital and telecommunication technologies for the benefit of its inhabitants and business.*” A Smart City should be composed of newest technologies available such as 5G, Internet of Things, connected car, virtual reality and innovations we don’t even know yet. However, in order to succeed during the process, information and communication technologies are useful as it allows every part of the city to be interconnected, that is why, communication infrastructures will be a key component of the smart city development. In order to be smart, a city should use high-end connection capacity (glass fiber, 5G), Artificial Intelligence and Big Data, Edge Computing and Software Defined Network – Network Function Virtualization (SDN NFV).

## References

- Bertot, J. (2011) Proceedings of the 12th Annual International Digital Government Research Conference Digital Government Innovation in Challenging Times. New York, NY: ACM (ACM Digital Library).
- Deloitte (2017) Smart Cities The importance of a smart ICT infrastructure for smart cities. European Commission Smart Cities.
- Odendaal, N. (2003) Information and communication technology and local governance: understanding the difference between cities in developed and emerging economies. *Computers, Environment and Urban Systems*, vol. 27, n° 6, p. 585–607. DOI: 10.1016/S0198-9715(03)00016-4.
- Sprague, R.-H. (2012) 2012 45th Hawaii International Conference on System Science. (HICSS) ; USA, 4-7 Jan. 2012. Piscataway, NJ : IEEE.



## GOOGLE, THE GLAM SECTOR AND THE UNTOUCHED POTENTIALS FOR PARTICIPATION

Astrid Elisabeth Jessen & Thore Davies

Bachelor students at Department of Information Studies, University of Copenhagen. Copenhagen, Denmark

fwh470@alumni.dk and pjh889@alumni.ku.dk

### Abstract

*The purpose for this practical workshop is to inspire participants to think in new and sustainable ways for the future of the GLAM (Galleries, Libraries, Archives and Museums) sector. We show how power nests in every selection, curation and representation; thus, power relations are pressing key issues to become aware of when engaged with information institutions' designs, and their future social roles.*

**Keywords:** access, GLAM, interaction, participation, sustainability.

### Workshop content

This workshop is both theoretical and practical. We take participants through a series of pressing issues of cultural politics in the digital era, particularly in terms of access, interaction, participation and the dissemination of cultural content in the perspective of memory institutions and power relations.

Through a quick introduction to our analysis of the platform Google Arts & Culture, we present key cultural political terms. In a digital context participation is increasingly made easier, but users of the global actor Google Arts & Culture are not empowered to participate. While not allowing for participation in their interface design, users are excluded from influence, thus never being able to challenge existing and dominating narratives. As we will argue, this potentially has negative implications for the cultural sector, users and their interrelations.

Moving from theory into practice, we encourage a quick and analogous ideation process for which we bring lots of printed versions of visual arts, generously sponsored by the National Gallery of Denmark. Through cut and paste-techniques participants' intuitive, quick drawn sketches/wireframes will lay the



grounds for discussing ways of facilitating participation, the cultural political implications of access, and future digital dissemination of cultural content in relation to information institutions.

## Outcome

Emphasising social roles of the memory institution, this workshop will give participants knowledge and understanding of key theoretical concepts that underlie information institutions, also giving tools to reflect and evaluate political implications of interface design.

## References

- Carpentier, N. (2015). Differentiating between access, interaction and participation. *Conjunctions. Transdisciplinary Journal of Cultural Participation*, 2(2), 7-28.
- Castells, M. (2010). *The rise of the network society* (2nd ed.). Oxford: Wiley-Blackwell.
- Jenkins, H., Ito, M., & boyd, d. (2015). *Participatory culture in a networked era: A conversation on youth, learning, commerce, and politics*. Cambridge, UK: Polity Press.
- Klindt, M. (2017). When and How Do We Participate? On Participation from a Museological and Cultural- Political Perspective. Retrieved from [http://www.ark-en.dk/wp-content/uploads/2017/04/when-and-how-do-we-participate\\_-by-maj-klindt\\_bulletin-2017-1.pdf](http://www.ark-en.dk/wp-content/uploads/2017/04/when-and-how-do-we-participate_-by-maj-klindt_bulletin-2017-1.pdf)
- Manovich, L. (2002). *Data Visualization as New Abstraction and Anti-Sublime*. Retrieved from <http://manovich.net/index.php/projects/data-visualisation-as-new-abstraction-and-anti-sublime>
- Sanderhoff, M. (2014) *Sharing is Caring. Openness and Sharing in the Cultural Heritage Sector*. (1st ed.). Copenhagen: The National Gallery of Denmark. Retrieved from <https://www.smk.dk/en/article/the-sharing-is-caring-anthology/>
- Schweibenz, W. (2004). The Development of Virtual Museums. *ICOM NEWS*, 3, 3.
- Simon, N. (2010). *The participatory museum* (1st ed.). Santa Cruz: Museum 2.0. Retrieved from <http://www.participatorymuseum.org/read/>
- Whitelaw, M. (2015). Representing Digital Collections. In: Carlin, D., & Vaughan, L., (Ed.), *Performing digital, multiple perspectives on a living archive* (77-95). Farnham, Surrey: Ashgate.



## WE CAN'T SAVE OUR PLANET, MAYBE 'AI & BIG DATA' CAN

Antonie Feitsma

Hanze University of Applied Sciences, Communication,  
Multimedia & Design, Groningen, The Netherlands  
a.s.feitsma@st.hanze.nl

Miguel Seroon

Hanze University of Applied Sciences, Communication,  
Multimedia & Design, Groningen, The Netherlands  
m.s.seroon@st.hanze.nl

Mitchel van der Waard

Hanze University of Applied Sciences, Software engineering  
Groningen, The Netherlands  
mi.van.der.waard@st.hanze.nl

Qiao Wang

Beijing Technology and Business University, Beijing, China  
q.wang@st.hanze.nl

### Abstract

*Artificial Intelligence (AI) does more than make our technology smarter, it also protects the planet. (McGregor, 2018). Currently nature is being destroyed in different ways. With the continuous growth of the world population, and the increasing of human activities, human society has encountered a series of environmental problems, such as the ongoing catastrophic loss of biodiversity (Joppa, 2018). With the arrival of artificial intelligence, 'AI' can be used to open new ways to cope with the current situation. The term 'AI' is frequently applied to computer systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience (Copeland, 2018). By using 'AI' towards the support of biodiversity it has the potential to change the ways which we monitor and maintain our planet. For instance, it can be used to gather information and data*



*to prevent the loss of species. When we lose species through extinction the circle of life will be destroyed, this will have effect on the ecosystems and nature's capacity to provide humans with food, oxygen, and water (Hance, 2018). In our workshop, we will present the result of expert interviews on the role of 'AI', 'big data' in the protection of 'biodiversity'. In our workshop we want to engage the participants in a playful way by using a simulation which lets the workshop participants experience the benefits of AI first hand. In addition, we will illustrate the potential of AI to increase awareness about the challenge of biodiversity the world is facing. The aim of the workshop is to excite people about the possibilities of AI.*

**Keywords:** artificial intelligence, big data, open data, biodiversity

## Workshop description

Currently nature is being destroyed in different ways, such as waste being generated by humanity. Although technology has come far, we still haven't found a way to prevent this.

With the continuous growth of the world population, and the increasing of human activities, human society has encountered a series of environmental problems, such as the ongoing catastrophic loss of biodiversity (Joppa, 2018). Although many people may not realize how important biodiversity is, biodiversity provides people with food, water, oxygen, energy, stabilization of earth's climate, medicine, opportunities for recreation and tourism.

With the arrival of artificial intelligence, 'AI' can be used to open new ways to cope with the current situation. The term 'AI' is frequently applied to computer systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience (Copeland, 2018).

By using 'AI' towards the support of biodiversity it has the potential to change the ways which we monitor and maintain our planet. For instance, it can be used to gather information and data to prevent the loss of species. When we lose species through extinction the circle of life will be destroyed, this will have effect on the ecosystems and nature's capacity to provide humans with food, oxygen, and water. (Hance, 2018)

The goal is to excite people about the possibilities of AI and to engage the participants in a playful way by using a simulation which lets the workshop participants experience the benefits of AI first hand. The workshop will inform the audience how they can make a difference regarding the safety of our planet with



the help of Artificial Intelligence. In the workshop We can't save our planet, maybe 'AI & Big Data' the topics ai and biodiversity will be Introduced. The participants will learn about the definition and current status. Examples will be given about the usage of AI in our daily life, and what the possibilities are for AI in the future. Also, the potential of AI will be illustrated to increase awareness about how AI is used to monitor and protect biodiversity. Participants will get the opportunity to experience some of these applications. In the workshop, results of expert interviews on the role of 'AI', 'big data' in the protection of 'biodiversity' will be presented.

## References

- Copeland, B. J. (2018). Artificial Intelligence | Definition, Examples, and Applications. Retrieved from: <https://www.britannica.com/technology/artificial-intelligence>
- Hance, J. (2018). Biodiversity is the 'infrastructure that supports all life'. Retrieved from: <https://www.theguardian.com/environment/radical-conservation/2018/jun/28/biodiversity-is-the-infrastructure-that-supports-all-life>
- Joppa, L. (2018). How Artificial Intelligence Could Save the Planet. Retrieved from: <https://www.paulallen.com/how-artificial-intelligence-could-save-the-planet/>
- McGregor, S. (2018). How 'computational sustainability' uses AI to protect the planet. Retrieved from: <https://news.itu.int/how-computational-sustainability-uses-ai-to-protect-the-planet-3-use-cases/>



## AUGMENT MY PROFESSION

Ziming Gong

Bachelor Student, Beijing Technology and Business University, China  
z.gong@st.hanze.nl

Rik de Vries

Bachelor Student, Hanze University of Applied Sciences, The Netherlands  
rk.r.de.vries@st.hanze.nl

Laia Darbra Martinez

Bachelor Student, University of Barcelona, Barcelona  
l.darbra.martinez@st.hanze.nl

Yang Liu

Bachelor Student, Beijing Technology and Business University, China  
yn.liu@st.hanze.nl

Wout Feringa

Bachelor Student, Hanze University of Applied Sciences, The Netherlands  
w.feringa@st.hanze.nl

Max Ehlert

Bachelor Student, International School of Management, Germany, max.  
ehlert.17@student.ism.de

## Abstract

*In 2016, one certain mobile application enjoyed an unprecedented success and had an evident impact on social behavior for quite some time. People around the world were walking around the streets looking at their smartphones while trying to catch little colorful monsters, called Pokémon, with the augmented reality-based application Pokémon Go. It turned out to be the*



most successful app in 2016 and has reached over 800 million downloads, helping the Japanese multinational company Nintendo out of its financial crisis by generating almost 2-billion-dollar revenue until now (Artyom Dogtiev, 2017). Despite or perhaps because of the great success of Pokémon Go, Augmented Reality (AR) is often seen as a mere technical gadget or playful gimmick. However, this technology also offers and might provide even more surprising application possibilities for more professional, occupational tasks. Through technological advancements and the commercial success of smartphones, AR has already become available for a large amount of people. Since AR is a considerable new technology, naturally some questions arise in this context, such as: How useful is this technology going to be in different professional settings? Will it be usable for everyone? How long will it take until AR is completely present in our professional lives? What are potential fields of application? Thus, the full potential of this technology is yet to be discovered. Moreover, there are new products in development, such as Microsoft's HoloLens, which are capable of way more sophisticated and immersive AR applications and experiences. Such devices seem to have the potential to significantly shape the way we learn and work (Microsoft Reporter, 2018). Nevertheless, many people are still questioning the usefulness of using AR in their respective workplace and are doubtful about its benefits in terms of supporting them with their occupational tasks. One of the professional areas where AR already had a significant impact, is the medical field. Nowadays, AR healthcare applications can provide supplementary aid for rehabilitation patients. For instance, certain applications can support stroke victims and patients after brain surgery to stick to their rehabilitation regimen (Mayo Clinic Staff, 2017). Next to the health sector, there are also many other fields where AR is already influencing the work of professionals in a beneficial way. For example, Story of the Forest is an immersive installation that transforms 69 drawings from the William Farquhar Collection of Natural History Drawings into three-dimensional animations (National Museum of Singapore, 2018). Although this research project also addresses the question of how AR might affect professional work in general, it is mainly focusing on how this technology can be employed in the context of educational and memory institutions. To achieve this, we interviewed several experts on AR and these professions to gain their insights and opinions on the potential advantages and disadvantages of using AR in a professional working context. One of the topics of this research will therefore be dedicated to current and potential practices regarding the application of (mobile-based) AR technologies for facilitating tasks of memory institutions such as libraries, museums and archives.

**Keywords:** augmented reality, healthcare, medical care, memory institutions, education



## Workshop

The content of the BOBCATSSS workshop are, first and foremost, motivated by the primary and secondary research which were conducted within the last couple of months. During this workshop, the results of this research project will not only be presented but participants will also be offered the opportunity to experience the project's findings first-hand. More specifically, the workshop is aiming at providing the participants a better understanding of what AR is and which significant prospects it might hold for shaping their working practices in the future. To achieve this, the workshop will not only illustrate diverse implementations of AR in today's working environment in an interactive way but also present some of the findings of the conducted expert interviews. In those interviews, several teachers, a librarian and an IT-Startup founder were asked about the future of AR in our society and working culture. Moreover, we want to encourage the participants to reflect on the opportunities, challenges and potential of AR in relation to their respective occupation by implementing activities which invites them to experience AR-based applications themselves by employing several smart devices. Furthermore, additional, related energizers will be used to ensure an active and inspiring workshop experience for its participants so that they leave the workshop excited about what AR can mean for them personally and their line of work.

## References

- Nee A.Y.C., Ong S.K. (2017). Virtual and Augmented Reality Applications. Retrieved from  
<https://www.sciencedirect.com/science/article/pii/S1474667016342562>
- Mayo Clinic Staff. (2017) Stroke rehabilitation: What to expect as you recover. Retrieved from  
<https://www.mayoclinic.org/diseases-conditions/stroke/in-depth/stroke-rehabilitation/art-20045172>
- Microsoft Reporter. (2018). The power of mixed reality in the modern workplace. Retrieved from  
<https://news.microsoft.com/en-gb/features/the-power-of-mixed-reality-in-the-modern-workplace/>
- Randy Nelson. (2018). Pokémon GO Caught Nearly \$800 Million in Global Revenue Last Year, Growing 35% Over 2017 Retrieved from  
<https://sensortower.com/blog/pokemon-go-revenue-december-2018>



## BUILDING ON-LINE REPOSITORIES FOR DIGITAL HUMANITIES WITH THE HELP OF ISLANDORA SOFTWARE FRAMEWORK

András Simon

Tünde Molnár

Qulto - Monguz Ltd., Eötvös Loránd University - Centre for Digital Humanities, Hungary

### Abstract

The Centre for Digital Humanities at Eötvös Loránd University is creating a new Islandora CLAW based online repository, in order to store and preserve content according to the most recent technological developments. The pilot project is the Online Knowledge Base of Hungarian Philosophy (Magyar Filozófiai Tudástár) which aims to collect texts, sound- and video recordings that are relevant to the history of Hungarian philosophy. These materials will fill certain gaps in this scientific area, and hopefully help to make an outline for the history of the Hungarian philosophical canon. The software base for this and other projects in the future is the open source Islandora CLAW which was released not that long ago and had been greatly improved compared to previous versions. The most essential upgrade was the change in the infrastructure. Islandora CLAW consists of a Drupal 8 content management system, a Fedora 4 database, a Blazegraph database, a Solr search engine and a synchronisation component. Some of the features provided by Islandora CLAW are: site management, localization, the creation of personalised forms by using unique or standard metadata descriptions, like Dublin Core or the schema.org along with Fedora RDF mapping. Certain features can only be accessed by downloading external modules. These include for example displaying dynamic content and audiovisual materials, batch import, automatic indexing, etc. Islandora CLAW is still very much in development, which means that some potentially useful components might be missing but are continuously developed and then added.

Islandora is an open-source software framework designed to help institutions and organizations and their audiences collaboratively manage, and discover digital assets using a best-practices framework. Islandora was originally developed



by the University of Prince Edward Island's Robertson Library, but is now implemented and contributed to by an ever-growing international community.

Built on a base of Drupal, and Solr , Islandora releases solution packs which empower users to work with data types (such as image, video, and pdf) and knowledge domains. Solution packs also often provide integration with additional viewers, editors, and data processing applications.

**Key words:** *Digital Humanities, Full Text Content, Long Term Preservation, Repository*

## The background, purpose and expected outcomes of the workshop

With the help of our Islandora components, configuration of the interface, collection management, content management, and handling of semantic data can be done. While providing the conditions of semantic data management, there are no restrictions regarding entity fields, any ontology or unique principle is acceptable to store data structure. Indexing of full-text contents is possible, furthermore, faceted search and mass import functions are also available.

The primary aim of the workshop is to provide user-level knowledge of Islandora software components, to get an overall picture of the configuration possibilities, and also to familiarize participants with the basic activities in the system. Although a 60-minutes long event is not sufficient for mastering the entire system, the workshop could serve as a good starting point for future engagement. Consequently, participants of the workshop might consider Islandora CLAW and its components as a possible alternative during their professional work.

## Details of the methods, procedures or instruments used

Functions that will be covered during the workshop: creating and displaying content; tagging; linking different types of content; creating and running semantic statements; customizing search result templates.



## Discussion and conclusion

Comparing the framework with other repositories and tripple stores, and discussing the topic of preserving contents in the long-run.

## References

Islandora CLAW documentation (n.d.). Retrieved from: <https://islandora-claw.github.io/CLAW/user-documentation/intro-to-claw/>



## SAY GOODBYE TO YOUR PRIVACY? A WORKSHOP ON ONLINE PRIVACY IN SMART HOMES

Núria Toneu Llobet

Bachelor Student, Hanze University of Applied Sciences,  
Groningen, The Netherlands  
toneu.llobet@gmail.com

Joost Verberne

Bachelor Student, Hanze University of Applied Sciences,  
Groningen, The Netherlands  
joost.verberne@live.nl

Chia Ling Lee

Bachelor Student, Hanze University of Applied Sciences,  
Groningen, The Netherlands  
linglee1997@gmail.com

Wei Jen Chou

Bachelor Student, Hanze University of Applied Sciences,  
Groningen, The Netherlands  
0919200895AMNZ@gmail.com

### Abstract

*During the past few years, we have incorporated the internet into many different aspects of our lives and the Internet of Things (IoT) has revolutionized the way we can gather and exchange information. The IoT is based on a network that connects physical objects that can interact with each other through wireless and wired connections in order to sense information from the real world, processing and sharing it (Patel, 2016). One of the main IoT applications are Smart Homes, an interconnected home where devices interact with each other via the Internet, providing additional comfort, security, and environmental sustainability. Smart Home systems interconnect sensorial physical devices such as the heating, air conditioning, media devices, lighting, fridges, or curtains.*



*The list of IoT devices in Smart Homes is expanding every year and even a simple teddy bear can have internet connection and become part of the Smart Home system. All the advantages provided by this technology can also be abused. Insecure or vulnerable IoT systems can be accessed by hackers which represents a serious threat to our personal data and privacy. In 2017 a company which sold smart teddy bears that allowed kids and far-away parents to exchange hard feel messages left more than 800,000 customer credentials and two million message recordings totally exposed online for anyone to see and listen to (Franceschi-Bicchierai, 2017). Overall, Smart Homes deal with three main privacy threats: confidentiality, authentication, and access (Heartfield, 2018). In our workshop we will assess the privacy awareness of the participants and let them interact with several Smart Homes devices. In an experiment we will let the audience experience the loss of privacy to make them aware of privacy and security issues in Smart Homes and show them how to cope with possible threats and how to prepare for the future internet.*

**Keywords:** smart home, personal data, privacy protection.

## Workshop description

For humans, home is the place where we enjoy most our privacy and disconnect from the outside world. However, privacy can be threatened by the implementation of a Smart Home. Even though the Internet of things has proven to solve environmental issues and improve our life by offering personalized services, it has also result on a lack of trust by the users regarding its weaknesses on security and privacy. The privacy issues that we can find in the Internet, like behaviour and health tracking, will soon be inside our homes. This situation requires a lot of responsibility by companies, and the users need to be aware of what data they give and for what purposes, so that they can give an informed consent.

In this workshop, our main goal is to put awareness on the privacy issues in Smart Homes and teach the audience possible solutions and improvements to prevent privacy violations. During the workshop we are going to introduce each other with an ice breaker activity and afterwards will explain what Smart Homes are, its privacy issues and different examples of privacy violations. At the end, the workshop will conclude with the presentation of possible solutions regarding the privacy weaknesses in Smart Homes. This explanation and skills will be facilitated through some theoretical explanation and two facilitators techniques, so the workshop is as practical and interactive as possible. All this knowledge is based on a qualitative research that consists of literature review, interviews with IoT professionals and a focus group of students.



Overall, in this workshop we are going to present the results of our research, and it aims to give the audience the necessary knowledge about privacy issues and other ways in which we can prevent privacy violations. All the content is going to be presented and discussed with the audience through two interactive activities and we will give the opportunity to interact with a Smart Device in order to experience the IoT world. All the needed material is going to be provided by the facilitators.

## References

- Franceschi-Bicchierai, L. (2017). Internet of Things Teddy Bear Leaked 2 Million Parent and Kids Message Recordings. MotherBoard. Retrieved from: [https://motherboard.vice.com/en\\_us/article/pgwean/internet-of-things-teddy-bear-leaked-2-million-parent-and-kids-message-recordings](https://motherboard.vice.com/en_us/article/pgwean/internet-of-things-teddy-bear-leaked-2-million-parent-and-kids-message-recordings)
- Heartfield, R., Loukas, G., Budimir, S., Bezemskij, A., Fontaine, J. R. J., Filip-poupolitis, A., & Roesch, E. (2018). A taxonomy of cyber-physical threats and impact in the smart home. *Computers & Security*. <https://doi.org/10.1016/j.cose.2018.07.011>
- Patel, K. K., & Patel, S. M. (2016). Internet of things-IOT: definition, characteristics, architecture, enabling technologies, application & future challenges. *Int. J. Eng. Sci. Comput*, 6 (5). <http://doi.org/10.4010/2016.1482>



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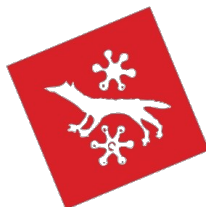


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