ROMANIAN JOURNAL OF LIBRARY AND INFORMATION SCIENCE

ROMANIAN JOURNAL OF LIBRARY AND INFORMATION SCIENCE

CONTENTS

RESEARCH ARTICLES

Information needs and practices in teaching and using industrial property for nonlawyers in Slovenia

Tjaša Jug
Assist. Dr.
Oddelek za bibliotekarstvo, informacijsko znanost in knjigarstvo, FF UL
E-mail tjasa.jug@ff.uni-lj.si

Polona Vilar
Dr.
Oddelek za bibliotekarstvo, informacijsko znanost in knjigarstvo, FF UL
E-mail polona.vilar@ff.uni-lj.si

Katarina Švab
Assist. Dr.
Oddelek za bibliotekarstvo, informacijsko znanost in knjigarstvo, FF UL
E-mail katarina.svab@ff.uni-lj.si

Introduction. The paper presents some findings of the Erasmus+ project IPEDU, which aims to include intellectual property education, more specifically industrial property, in the curriculum of technical universities, through training the teaching, support staff and librarians. We present selected results of the first two project stages for Slovenia, which is one of the project partners.

Methods. Initial stages of the project assess the current level of inclusion of industrial property topics into higher education curricula and labour market needs. Samples include Slovenian technical sciences faculties, and employers of technical profiles with needs for industrial property knowledge. Online surveys are used for data collection.

Results. General, not positive, alignment was found in terms of expected competencies: Companies do not place high priorities on industrial property competencies of their non-law employees. Furthermore, many higher education institutions do not include these topics in their teaching. Industrial property teaching is needed, but not done, which implies the need for educators-employers dialogue. A relatively traditional image of libraries emerges, as they are usually not involved in teaching. This provides an excellent opportunity for libraries to evolve and become more proactive.

Conclusions. Our findings offer a valuable contribution to the planning of a systematic and holistic intellectual property curriculum for technical studies within the European Union.

Keywords: intellectual property, industrial property, technical sciences, higher education, labour market, academic libraries

1. Introduction

With the increasing accessibility to various digital works and online information about products it is more likely for this content to be unauthorizedly accessed, distributed or misused in other ways. Therefore, awareness of intellectual property issues and challenges has become even more important.

According to World Intellectual Property Organization (World Intellectual Property Organization 2020), intellectual property refers to various creations of the mind, such as literary and artistic works, inventions, designs, symbols and names. Intellectual property is protected by law, which has a positive effect on creativity, innovation, competitiveness, development, research, and investment (Slovenian Intellectual Property Office n.d.; World Intellectual Property Organization 2020). While copyright is one of the most recognizable type of intellectual property, industrial property (IP)[1] is equally important. It is focused on protecting the design of a product that is new and has individual character (Slovenian Intellectual Property Office n.d.). IP includes patents for inventions, industrial designs, models, trademarks, service marks, commercial names, designations, and geographical indications (Bux & Maciejewski 2022; World Intellectual Property Organization 2020). It and may protect three-dimensional features of the product, such as shapes, or two-dimensional features, such as patterns, lines or colour (World Intellectual Property Organization 2020). Depending on the country, IP is governed by different international and national laws. For example, in Slovenia, IP rights are subject to the European Union legislation (Bux & Maciejewski 2022) and are additionally regulated by various national acts, such as the Industrial Property Act (Zakon o industrijski lastnini 2001), Act Amending the Industrial Property Act (Zakon o spremembah in dopolnitvah Zakona o industrijski lastnini 2020), and Employment Related Industrial Property Rights Act (Zakon o pravicah industrijske lastnine iz delovnega razmerja 2003) that determine the types of IP, procedures regarding their registration and protection, and defines rights and obligations of stakeholders.

IP plays an important role in various disciplines, from mechanical engineering, biotechnology to fashion. There is a demand in the labour market for workers who have a high level of awareness and competencies in intellectual property field (Soetendorp 2008). Along with other factors (such as legal and fiscal frameworks, the state of science and technology, etc.), they are a fundamental prerequisite for creating an encouraging, supportive, innovative, and legally safe environment. While IP knowledge can be self-taught, but they are more effective when provided by competent professionals as part of systematic training and formal educational processes. However, there is no guarantee that IP training will be included in the curricula of faculties other than law schools.

Higher education (HE) institutions are frequently positioned at the crossroads of research, education, and innovation and their goal is to produce a competent workforce. Therefore, Soetendorp (2008) argues that intellectual property education is relevant for students at all levels and from all disciplines. Educators should not only promote awareness of the IP rights themselves, but also teach better management of these rights in contracts, agreements, and workflows in

---

[1]   The acronym "IP" is most often used for Intellectual Property. However, as this paper focuses on Industrial Property, which is its sub-area but consists of words with the same starting letters, we use IP to denote the latter.

general, including appropriate use of relevant information sources. In addition, educational focus should be aligned with the actual needs and expectations of the labour market and industry.

Not only teachers, but also academic libraries, which are usually part of HE institutions, should play an important role in these processes by providing relevant sources, consulting, and participating in teaching. Through their innovative approaches, librarians are slowly transforming from mere instructors to active collaborators in the educational process (Corrall & Jolly 2019). Many academic libraries have a copyright expert (Schmidt & English 2015), while some university libraries around the world have also developed a special professional profile known as a "copyright librarian", "scholarly communications librarian" or "copyright officer". Interestingly, most of these professionals have a degree or academic background in Library and Information science rather than formal legal education (Fernández-Molina et al. 2020; Patterson 2016).

According to their users' needs, libraries usually pay more attention to copyright. However, they may also provide support in other subfields, such as IP, especially if they are located at a HE institutions that specialise in technical fields. In some countries, such as the United States of America, England, Scotland, and China, intellectual property and IP centres are located in public, university, state, or special libraries (Allinson et al. 2019; Yang & Liu, 2021; Wallace & Reinman 2018).

Meanwhile, in some other countries, such as Slovenia, the system of education and dissemination of knowledge about IP is not yet so widespread. There is a lack of research and information on the extent to which technical HE education institutions (such as the Biotechnical Faculty, the Faculty of Electrical Engineering, or the Faculty of Mechanical Engineering) include IP in their curricula. Furthermore, intellectual property offices are not located in libraries and not much is known about the role of librarians in providing IP training and support. However, there are so-called Knowledge Transfer Centres/Offices that are part of universities, such as the Knowledge Transfer Office at the University of Ljubljana, the TechnoCenter at the University of Maribor, and the Centre for Knowledge Development and Transfer at the University of Primorska.

This paper presents the Slovenian findings of the international survey of higher education institution practices and the actual labour market needs for current and future workers' IP competencies. The research was conducted in the first two stages of IPEDU project, which is aimed at introducing and enhancing education in the field of IP in the curricula of technical universities. The final goal of the project is to develop relevant learning methods that can be used by all stakeholders (IPEDU Project n.d.).

By comparing the data from two studies, we wanted to gain insight into the content and teaching approaches related to IP in the technical studies at Slovenian HE institutions and to compare these with employers' perceptions of the IP knowledge and skills of their non-law employees and job candidates. We pursued the goal of identifying potential differences between HE and labour market perceptions and needs in terms of IP topics. We developed three research questions:

- Do study programmes in technical sciences include learning goals from the areas of intellectual property and IP, which IP contents and topics were these, what are the reasons for potential non-

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

3

inclusion, how is the teaching conducted (with outside experts and/or in-house libraries and librarians)?

- How important is it to the employers that their non-law staff and job candidates (engineers, scientists, business managers, entrepreneurs) possess IP skills and competencies?

- What is the attitude of the employers towards training in IP?

2. Methodology

In both studies, we used an online survey with questions of various types. For the first study, we used 12 yes/no, open-ended and Likert-scale questions asking about different aspects of IP teaching (contents, collaboration, etc.). For the second study, we used 11 menu-based, Likert-scale, and alternative questions asking about various aspects of the role and importance of IP in the workplace.

The target population for the first study were public and private faculties in Slovenia which offer study programmes in the field of technical sciences. To identify appropriate organisations, we analysed the list of all Slovenian faculties obtained from the publicly available data at the Ministry of Education, Science and Sport[2], reflecting the situation in December 2020. From this list, we selected only faculties with KLASIUS-P-16 (classification of fields of educational activities/qualifications) code 7 - engineering, manufacturing, and construction. We identified 32 such institutions, and sent them the invitation to complete the survey. Libraries and leaders of study programmes answered the questionnaire in January and February 2021. We obtained responses from 15 institutions (47%); of these, 11 institutions perform only technical study programmes, while 4 institutions have technical study programmes alongside other study programmes.

The target population for the second study were companies and offices that deal with industrial property (often as outsourcing agents), work with employment candidates, or have an intellectual property department or function, and also employ technical profiles. Because it is difficult to assess the size and structure of the population, we opted for purposeful sampling. The invitation to the survey was distributed in various ways in order to achieve maximum attention from potential respondents and thus generate maximum response. The request for participation was distributed through the national Office for Intellectual Property, national Chamber of Commerce and Industry, Intellectual Property Office of the University of Ljubljana, Central Technical Library, and various individual channels. Data collection lasted from February to October 2021 (in the meantime, due to the Covid-19 pandemic, the IPEDU project was suspended for 6 months). We obtained 62 adequately completed surveys. Three of them indicated that they employed only profiles from the law sector, making them not relevant respondents for our survey.

Due to the small numbers the results are presented using only descriptive statistics.

---

[2]   Available at: https://www.gov.si/assets/ministrstva/MIZS/Dokumenti/Visoko-solstvo/eVS-evidenca-VSZ-in-SP/ eVS_VSZ_04122020.xlsx

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

4

3. Results

When asked whether their study programmes included learning goals from the area of intellectual property, 11 responded positively, 7 responded negatively, and 11 did not know. Among the justifications of the negative answers, the most interesting were that these topics are covered by the centre for career development, and that the curricula are composed according to the ACM guidelines, which do not contain recommendations for IP topics inclusion. The IP topics covered are: System approaches in handling an innovative organization (analysis of state, setting innovation goals, building an organizational innovation culture, systems of encouraging and rewarding, innovation and research management), IP (patents and models, procedures in registering and acquiring rights), WWW and EU support environment in innovations and research, project preparation, use of various materials, citing, open access, elements of IP protection (prevention of misappropriation, plagiarism, copyright). Also interesting were the answers to the question how often the specific IP topics were present in the study programmes in accordance with what would be needed.

Most respondents answered that IP topics are not included, although they would be necessary, especially general topics such as "*Fundamentals of IP legislation for the protection of intellectual property, which allows the individual to know how to protect their creations, products*." Respondents also indicated that there is a lack of knowledge about the different types of intellectual property. Surprisingly, most respondents actually do not know how intellectual property is represented in their study. Moreover, none of the respondents answered that intellectual property knowledge is taught wherever it is needed. This suggests that respondents generally do not have a complete insight into all curricula and content.

Regarding cooperation with outside experts and institutional librarians, only two of the 6 participants, who answered this question, indicated that they cooperate with the economy when preparing and executing the courses. The types of mentioned cooperation were: presentations and lectures by outside experts, and cooperation with a particular patent office. Only one participant (from a purely technical faculty) stated that they collaborated with the institutional library and librarians when preparing and executing the courses - the area was presentation of search approaches and various databases. The question to the librarians revealed that in general librarians are very rarely involved in the pedagogical process, and in a relatively limited manner. Some of them introduce the use of library information systems and catalogues, databases, citation methods, and two librarians have already presented the challenges of plagiarism.

The second survey showed that the notion of the importance of employers towards IP competencies of non-law staff is generally, although not entirely, positive. This can be seen from the 53% positive answers to the question of whether IP knowledge of employees or colleagues would be beneficial to the company/organization activities, and from the 78% positive answers that IP knowledge is relevant for their company's work (for 35% it is very relevant, and for 43% somewhat relevant). The overall average of responses to the Likert-scale questions on the importance of individual IP-related competencies is also on the positive side: 3,06 for new job candidates and 3 for current employees.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

5

With the Likert-scale questions, we wanted to identify the IP-related knowledge and skills that were the most and the least valued by employers in job candidates and current employees (Tables 1 and 2). Given the data available and the possible analyses, a threshold was set of more than 25% of responses in at least one of the values on each side of the scale, i.e. stronger statements (1 or 2, 4 or 5), but only if that value was not equally represented on the other end of the continuum in the same category. As can be seen, a tendency of a stronger agreement with statements regarding the importance of IP knowledge and skills among job candidates is evident in the following five competencies and therefore indicating their stronger importance: "Knowledge what IP is","Knowledge of hazards of infringing or misappropriating other's IP assets","Knowledge where to find information on existing patents, trademarks, models etc.", "Awareness when and how to consult with an IP expert or adviser","Basic knowledge on the different types of intellectual property". Values 1 or 2, representing the attitude "not important", were most strongly indicated for the competency "Ability for financial assessment of industrial property assets." Regarding current employees, a tendency toward stronger agreement with statements about the importance of IP knowledge and skills is evident in the following five competencies: "Knowledge what IP is", "Knowledge how to utilize IP in their work", "Knowledge of hazards of infringing or misappropriating other's IP assets", and "Knowledge where to find information on existing patents, trademarks, models etc.", while values 1 or 2 (not important) were mostly indicated for the competency "Knowledge of the basics of IP law".

Table 1: Employers' perceptions of importance of areas IP knowledge for job candidates

IP skills and competencies on:	1 – not important	2 - slightly important	3 - moderately important	4 - important	5 - very important	Not sure	Total	Avg.	SD
what IP is	6	8	9	9	12	0	44	**3,3**	1,4
basics of IP law	7	9	11	14	3	0	44	**2,9**	1,2
how to utilize IP in their work	8	8	9	10	8	1	44	**3,1**	1,5
hazards of infringing or misappropriating other's IP assets	7	8	6	14	8	1	44	**3,3**	1,4
where to find info on patents, trademarks, models etc.	8	4	11	13	8	0	44	**3,2**	1,4
when and how to consult with an IP expert/adviser	9	3	7	15	8	2	44	**3,4**	1,5
different types of intellectual property	9	5	8	14	7	1	44	**3,2**	1,5
process of obtaining IP protection	11	12	8	6	7	0	44	**2,7**	1,4
IP-related risk management	10	9	8	7	8	1	43	**2,9**	1,5
role of IP assets in strategic business planning	12	4	10	11	7	0	44	**2,9**	1,5

financial assessment of IP assets	13	6	11	7	5	1	43	**2,7**	1,5
utilizing IP domain to acquire info on competitors	11	4	9	12	9	0	45	**3,1**	1,5
								3,6	

Table 2: Employers' perceptions of importance of areas IP knowledge for current employees

IP skills and competencies on	1 – not important	2 - slightly important	3 - moderately important	4 - important	5 - very important	Not sure	Total	Avg.	SD
what IP is	7	9	4	12	12	0	44	3,3	1,5
basics of IP law	7	14	7	11	5	0	44	2,8	1,3
how to utilize IP in their work	7	11	7	14	5	0	44	3,0	1,3
hazards of infringing or misappropriating other's IP assets	8	10	5	14	6	0	43	3,0	1,4
where to find info on patents, trademarks, models etc.	8	9	5	10	12	0	44	3,2	1,5
when and how to consult with an IP expert/adviser	5	13	3	10	11	1	43	3,3	1,5
different types of intellectual property	8	10	7	12	7	0	44	3,0	1,4
process of obtaining IP protection	11	13	6	10	4	0	44	2,6	1,3
IP-related risk management	8	13	4	12	7	0	44	2,9	1,4
role of IP assets in strategic business planning	10	9	6	7	9	1	42	3,0	1,6
financial assessment of IP assets	10	12	5	11	5	1	44	2,8	1,5
utilizing IP domain to acquire info on competitors	8	10	6	9	10	0	43	3,1	1,5
								3,00	

This result can be supplemented by the finding that more than half of the companies (53%) prefer to use an outside specialist when it comes to IP issues, and only 11% prefer to use their own employees with IP knowledge. In addition, only one third (29%) of employees believe that it would be beneficial for the company/organization to have more non-law employees with IP knowledge.

We can't be so happy looking at the employers' attitude towards IP training, as these trainings are offered inadequately (42% said they never provide them even though it would be needed, and

another 11% almost never provide it even though it would be needed), in spite the opinion that such trainings would be beneficial to the overall work/success of the company (53% agreed with this statement). When asked about the frequency of these trainings, i.e. how often they should be offered, the answer was that training should be organized when needed – that is whenever an IP issue arises, with a relatively large proportion believing that it should be done regularly, but no more than once or twice a year. It is also worth mentioning the large share of the answers "I am not sure". This implies that probably many of the respondents either have not considered these issues to be important or have not dealt with them at all. The question that arises is, would a solution here be higher awareness of the importance of IP skills and competencies.

4. Discussion

What do these results mean in the context of IP skills and competencies in teaching and within labour market? First and foremost, we see some sort of general alignment in terms of expected competencies, although these are not very positive in the context of IP teaching: Companies do not place high priorities on the IP competencies of their non-law employees, and also, HE institutions do not include them in their teaching and are unsure if these competencies are needed. We can therefore expect only limited circumstances shaping information needs and practices in either case, but some still emerge. Looking at the HE situation, topics that seem to receive more attention revolve around what intellectual property is, what types there are, its practical applications and associated risks, and where to find information on patents, etc. At the workplace, the areas of high importance are the same (especially for new job candidates), but what seems to be most important is, when and how to consult with an IP expert/adviser. We would need to look deeper into what information HE educators, including academic librarians, need to provide quality teaching and good information resources and services, but it is already rather evident on which areas to concentrate.

It is interesting to note, however, that the need for IP competencies by non-law employees and job candidates still appears to be higher in companies than the need detected by the educational institutions. In other words, IP teaching is needed, but not done, which implies that perhaps some sort of dialogue between educators and employers is needed, including awareness-raising. Especially since the employers do not appear to be compensating for the lack of competencies with their own workplace training of non-law staff but are finding other ways when the need for IP expertise arises (training employees when the need arises, hiring outside law specialists – both of which can be more expensive).

Another rather sad fact, that needs improvement, is that that academic libraries do not seem to play an important role in HE education in the field of technical sciences in regard to IP competencies. If at all, they are included as information infrastructure and not as teaching aid. Here it is worth mentioning that the Slovenian LIS study programme, delivered at the University of Ljubljana, provides graduates with at least basic intellectual property competencies, which implies that librarians could be worthy teaching collaborators, even without too much additional training. A relatively traditional image of libraries emerges from our study, which in turn offers libraries an excellent opportunity to change it. Not only by researching the needs and behaviours of their users, but also by better and more active information provision for the identified needs. IP is a topic which

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

8

is by its nature also a library topic, whether through information sources or through identification and taking care of users' information needs. It seems that here, too, proactivity is the answer for better placement of the library within its HE institution. What we see as another potential solution is that a library could also play an important role in opening the opportunities for the communication between educators and employers mentioned above.

5. Conclusions

A general picture of the situation regarding IP contents in the Slovenian technical study programmes and in the labour market I s emerging: The presence and inclusion of IP topics are poor and the perception of their importance is low. Even poorer is the inclusion and participation of academic libraries and librarians. Respondents see the need to include certain IP topics in study programmes and among job-related skills.

Several questions arise: Which IP competencies should be developed within the technical sciences HE. Indeed, it may be questionable whether explicit IP knowledge and skills are even necessary for engineers. Perhaps they should in their education receive awareness when and how to apply IP in their work, and when and how to include other experts, e.g., from the field of law. Another question concerns the competencies of educators, which include academic librarians, as it is obvious that they need to be appropriately qualified to provide adequate training, backed with relevant information resources.

One of the drawbacks of the current research is small sample and response rate. This research could therefore be considered pilot in its nature. To obtain results with wider validity, our surveys would have to be executed on a larger and more systematically represented population, including at least coordinators of technical study programmes, study pro-deans, and, ideally, teachers in these programmes, as well as librarians at the respective institutions; and on the other side as wide as possible sample of employers to investigate whether any differences can be identified between industry sectors.

To get a more complete picture, we should also include questions about HE respondents' opinions on HE whether libraries and librarians should be included in planning and execution of teaching, whether a stronger presence of intellectual property topics is needed, what specific subtopics would be most relevant, whether teachers themselves feel confident and competent to teach intellectual property (and, if not, how this could be improved), whether librarians are competent and libraries should be included (and, if not, how this could be improved), and, last but not least, what would be needed to improve the overall situation, where to start, etc.

Nevertheless, our findings offer a valuable contribution to the planning of a systematic and wholistic intellectual property curriculum for technical studies within EU.

6. Acknowledgment

7. References

Allinson, G., Bagherli, L., Williams, A., Robertson, J., Houston, M., and Ridley-Castle, T. (2019) Economic impact evaluation of the British Library Business & IP Centre National Network [online], available: http://explore.bl.uk/BLVU1:LSCOP-WEBSITE:MBsip63565 [accessed 12 December 2022].

Bux, U. and Maciejewski, M. (2022) Intellectual, industrial and commercial property, Fact Sheets on the European Union, [online], available: http://www.europarl.europa.eu/factsheets/en/sheet/36/intellectual-industrial-and-commercial-property

Corrall, S. and Jolly, L. (2019) Innovations in learning and teaching in academic libraries: Alignment, collaboration, and the social turn, New Review of Academic Librarianship, 25 (2-4), pp. 113-128.

Fernández-Molina, J. C., Martínez-Ávila, D. and Silva, E. G. (2020) University copyright/scholarly communication offices: Analysis of their services and staff profile, The Journal of Academic Librarianship, 46 (2), available: https://doi.org/10.1016/j.acalib.2020.102133 [accessed 12 December 2022].

IPEDU Project (n.d.) The IPEDU project [online], available: https://www.ipeduproject.eu/ [accessed 12 December 2022].

Patterson, E. (2016) The Canadian university copyright specialist: A cross-Canada selfie, Partnership: The Canadian Journal of Library and Information Practice and Research, 11 (2), available: https://doi.org/10.21083/partnership.v11i2.3856 [accessed 12 December 2022].

Schmidt, L. and English, M. (2015) Copyright instruction in LIS programs: Report of a survey of standards in the USA, The Journal of Academic Librarianship, 41 (6), pp. 736-743, available: https://doi.org/10.1016/j.acalib.2015.08.004 [accessed 12 December 2022].

Slovenian Intellectual Property Office (2022) Intellectual property [online], available: https://www.gov.si/en/policies/business-and-economy/intellectual-property/ [accessed 12 December 2022].

Soetendorp R. (2008) Teaching intellectual property to non-law students, in Takagi, Y., Allman, L. and Sinjela, M. (eds.) Teaching of intellectual property: principles and methods, Cambridge: Cambridge University Press, pp. 230-267.

Wallace, M. K. and Reinman, S. (2018) Expanding the intellectual property knowledge base at university libraries: Collaborating with patent and trademark resource centers, Issues in Science and

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

10

Technology Librarianship, Winter 2018 (88), available: https://doi.org/10.29173/istl1716 [accessed 12 December 2022].

World Intellectual Property Organization (2020) What is intellectual property? [online], available: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_450_2020.pdf [accessed 12 December 2022].

Yang, W. and Liu, T. (2021). Intellectual property information services and the impacts on academic libraries' transformation from the perspective of Chinese university libraries, IFLA journal, 47 (4), pp. 531-547.

Zakon o industrijski lastnini (ZIL-1) (2001), No. 51/06, 100/13 and 23/20 [online], available: http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO1668 [accessed 12 December 2022].

Zakon o pravicah industrijske lastnine iz delovnega razmerja (ZPILDR-UPB1) (2003), No. 7/03 [online], available: http://pisrs.si/Pis.web/pregledPredpisa?id=ZAKO3574 [accessed 12 December 2022].

Zakon o spremembah in dopolnitvah Zakona o industrijski lastnini (ZIL-1E) (2020), No. 23/20 [online], available: http://www.pisrs.si/Pis.web/pregledPredpisa?id=ZAKO7768 [accessed 12 December 2022].

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

11

Undergraduate students' perception of the level of development of information literacy skills

Daniela Popa
Assoc. prof. PhD.
Transilvania University of Braşov
E-mail danapopa@unitbv.ro

Angela Repanovici
Prof. Phd.
Transilvania University of Braşov
E-mail arepanovici@unitbv.ro

Abstract:
Digital natives are often perceived as experts in managing digital technology, but recent studies show that they do not have a very high level of developing information literacy skills. This research aimed to investigate the relationships between students' level of development of information literacy skills and the teacher's level of expression of pedagogical skills. A correlational research design was used. The research method was questionnaire survey. The results show that there are links between how students perceive pedagogical competences in action and the level of assimilation of information and information literacy skills.

Keywords: digital natives, information literacy skills, digital competences, bachelor level students

1. Introduction

Today's students are considered digital natives, as they were born and raised in the era of internet expansion. They are often described as being surrounded by gadgets, preferring virtual activities (games, social media, etc.) and ways of communicating online. Most studies describe them as having information and communication technology skills and being multitaskers in everyday behaviors (Flynn, 2021).

This particularity influences the way they communicate, learn and socialize, with profound educational implications (Underwood, 2007). Although representatives of this generation are good at everything that can be characterized as web 1. 0, i.e. the use of digital content, the same cannot be said of studies on how they engage in the specifics of web 2.0, i.e. the creation of digital content (Bennett, Maton, & Kervin, 2008). Nevertheless, we observe a substantial proportion of this generation moving towards the creation of digital content, especially in the sphere of leisure activities.

An area of intense debate in pedagogical studies is the relationship between digital native pupils and students and their teachers, who are considered digital immigrants, those born before 1980. Although some researchers believe that the level of digital literacy development of this generation is extremely high, many recent studies show that the reality is not quite so, with typical characteristics often equated with generational differences (Helsper, & Eynon, 2010).

Especially after the COVID -19 pandemic, these generational differences are intensely discussed, in the context of forced digitization, online learning and the revival of the blended learning concept. Priority areas for action during the pandemic period have been to analyze and improve the level of digitization of educational establishments and to improve the level of development of teachers' competences for online teaching (Basilotta-Gómez-Pablos, Matarranz, Casado-Aranda, & Otto, 2022).

Recent studies have shown directly and indirectly that not only these aspects were deficient but also the level of digital skills of those considered digital natives. Important factors that limit the access to education of this generation of learners have been discovered, such as: their access to digital media and devices and the corresponding opportunities to participate in digital life, and thus in social life (Janschitz, & Penker, 2022).

Digital competences are defined as: "the safe, critical and responsible use of and interaction with digital technologies for learning, at work and for participation in society. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), security (including digital well-being and cybersecurity related skills), intellectual property issues, problem solving and critical thinking"(Council of the European Union, 2018, p. 9). As we see in this definition, the components of information literacy are highlighted as the primary aspects of digital competence. This broad sense of digital competence highlights the need for a critical and responsible approach to information sources. This set of knowledge, skills, attitudes, and values are necessary for the effective integration of information technologies in teaching-learning and working.

Cultivating students' information literacy skills has become an imperative requirement for teachers in the 21st century. Recent research shows that among the factors influencing how students' competences in this area are formed are: the extent of use of digital resources in teaching and learning, teachers' perceived usefulness of information literacy skills, information processing skills and information ethics (Wu, Zhou, Li, & Chen, 2022).

Although initially information literacy was a concept whose scope covered only the skills to identify, acquire, evaluate, organize, and effectively use information needed to manage certain issues (ALA, 1989), as digitization entered the educational sphere, information literacy skills became extremely important for students, taking on new meanings (Sezer, 2020).

The information explosion, the plethora of materials available online that can be used for learning-assessment activities make students opt for the resources that are easiest and fastest to use, regardless of whether they are suitable as a bibliographic source at university level. The vast majority of students seem to rely more on the ranking of search engines and less on the suitability and credibility of the information source. Although there are courses that train them from the first year of study on how to use information sources correctly and responsibly, their information literacy skills are underdeveloped. In a multi-year study it was shown that information literacy training contributes to the acquisition of minimal research skills that students need to develop (Fain, 2011).

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

13

In a research study investigating the relationship between school curricula that support the development of information literacy skills and students' actual skills, it was found that although educational policy documents emphasize skills development, many students fail to demonstrate sophisticated information-seeking and critical evaluation skills. The study found that teachers tend to focus on the content of the subject being taught, rather than on information literacy skills, and on deficits in information literacy skills among teachers themselves (Julien, & Barker, 2009).

This research attempts to answer the following question: to what extent does the level of pedagogical skills development contribute to the development of students' information literacy skills?

2. Methodology

The present study had a quantitative, correlational research design and the research method was a questionnaire survey. The research instrument was constructed to investigate how students perceive both their own information literacy skills and the pedagogical and information literacy skills of the teacher.

Procedure: the questionnaire was administered at the end of a training module on Information literacy. Prior to the application of the instrument, research participants were asked to complete an informed consent form that included information related to the purpose of the research, rights and obligations of research participants. Only those who wished to participate completed the questionnaire, which was distributed online. The questionnaire had 38 items, 3 of which focused on socio-demographic indicators, and the rest represented 2 different scales, one investigating information literacy skills (23 items), Cronbach's Alpha coefficient being 0.91 and one assessing teachers' pedagogical skills (12 items, of which 2 were subjective), Cronbach's Alpha coefficient being 0.71.

Participants: Two hundred students participated in the research, 148 of whom were female, representing 74% of the total participants. These are students from the technical (62%) and socio-human (38% of total respondents) fields.

The objectives of this research are to investigate the level of development of information literacy skills and the level of pedagogical skills of the teacher from the students' perception.

Hypotheses:

There is a significant correlation between teacher's pedagogical skills and students' level of information literacy assimilation.

There is a significant correlation between the teacher's pedagogical competences and the degree of assimilation of students' information literacy skills.

3. Results

The first hypothesis of the research is thus confirmed that there are correlations between the indicators of teachers' pedagogical competences and the level of assimilation of students' information literacy, as can be seen in Table 1 Correlation between level of pedagogical competences and information literacy knowledge. Although the correlation coefficients are not large, the correlations are highly statistically significant, with the significance threshold below 0.001 (N-.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

14

Table 1 Correlation between level of pedagogical competences and information literacy knowledge

	MM	E	I	D	SS	BO	CS	TD	BS	CP	CL	RC	EI	CE
Interactive (I)	.677**	.689**	.514**	.310**	.331**	.317**	.277**	.355**	.287**	.333**	.414**	.382**	.333**	.258**
Modern methods (MM)	1	.696**	.587**	.310**	.344**	.303**	.302**	.339**	.312**	.374**	.420**	.447**	.331**	.315**
Sufficiently explained (E)		1	.546**	.325**	.365**	.292**	.250**	.333**	.319**	.376**	.421**	.471**	.335**	.352**
Inciting (I)			1	.268**	.313**	.236**	.314**	.309**	.243**	.257**	.353**	.361**	.227**	.274**
Databases				1	.560**	.308**	.424**	.505**	.414**	.432**	.468**	.456**	.500**	.485**
Search strategies (SS)					1	.477**	.482**	.421**	.577**	.596**	.622**	.628**	.599**	.550**
Boolean operators (BO)						1	.424**	.254**	.531**	.414**	.526**	.527**	.436**	.508**
Citation methods and styles (CS)							1	.466**	.613**	.468**	.453**	.477**	.525**	.291**
Types of documents (TD)								1	.310**	.410**	.357**	.373**	.463**	.220**
Automatic bibliography generation software (BS)									1	.575**	.570**	.600**	.554**	.484**
Copyright protection (CP)										1	.666**	.616**	.580**	.460**
Creative licensing (CL)											1	.734**	.621**	.557**
Reusable content (RC)												1	.659**	.554**
Evaluating information on the internet (EI)													1	.478**
Carbon emissions from online search (CE)													.478**	1

Regarding the correlation of students' perceived level of teachers' competencies with the level of students' information literacy skills, we can state that the hypothesis is confirmed, as can be seen in Table 2 Correlations between teachers' pedagogical competencies and students' information literacy skills.

Table 2 Correlations between teachers' pedagogical competencies and students' information literacy skills

	I	In	MM	E	ILB	ILS
Inciting (I)	1	.514**	.587**	.546**	.484**	.277**
Interactive (In)	.514**	1	.677**	.689**	.402**	.131
Modern methods (MM)	.587**	.677**	1	.696**	.412**	.252**
Sufficiently explained (E)	.546**	.689**	.696**	1	.372**	.314**
information literacy behaviour (ILB)	.484**	.402**	.412**	.372**	1	.231**
Information literacy skills (ILS)	.277**	.131	.252**	.314**	.231**	1

**. Pearson Correlation is significant at the 0.01 level (2-tailed). N=200

Among the most interesting topics mentioned by students are critical evaluation of information available on the internet, reusable content, bibliography generation software and carbon emissions from online searches.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

15

The main issues related to teaching skills that students value are: the teacher's willingness to explain the information content, the use of modern teaching-learning methods, the teacher's ability to highlight the practical value of new knowledge.

4. Discussion and conclusions

Through the present research we wanted to investigate the extent to which teachers' pedagogical skills contribute to the formation of students' information literacy skills. The answer obtained from the statistical data analysis is that pedagogical competences are essential in the formation of students' information literacy skills. The results support recent research in this area, such as the findings of the study on student skills gaps and the difficulty of effectively assessing learning improvement achieved through games, highlighting lessons learned and open problems (Encheva, Tammaro, & Kumanova, 2020). This research is also congruent with studies showing that using a variety of teaching approaches contributes to the development of information literacy skills (Derakhshan, Hassanzadeh, & Nazari, 2015).

One of the limitations of this research is that the data were collected by self-report, therefore we consider that there is a possibility that they are biased by social desirability.

We propose the inclusion in educational policy documents of explicit provisions and concerns for the development of teachers' pedagogical skills that can contribute to the development of information literacy skills so necessary for new generations of students.

5. References

American Library Association (ALA). "American library association presidential committee on information literacy." Retrieved from https://www.ala.org/acrl/publications/whitepapers/presidential (1989).

Basilotta-Gómez-Pablos, Verónica, et al. "Teachers' digital competencies in higher education: a systematic literature review." *International Journal of Educational Technology in Higher Education* 19.1 (2022): 1-16.

Bennett, Sue, Karl Maton, and Lisa Kervin. "The 'digital natives' debate: A critical review of the evidence." *British journal of educational technology* 39.5 (2008): 775-786.

Consiliul Uniunii europene (2018). Recomandarea Consiliului din 22 mai 2018 privind competenţele-cheie pentru învăţarea pe tot parcursul vieţii. Retrieved from https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri= CELEX:32018H0604(01)&from=SV

Derakhshan, Maryam, Mohammad Hassanzadeh, and Maryam Nazari. "Developing information literate librarians: A study of LIS academics pedagogical approaches in the development of information literacy competencies." *The Journal of Academic Librarianship* 41.6 (2015): 777-785.
Encheva, Marina, Anna Maria Tammaro, and Alexandra Kumanova. "Games to improve students information literacy skills." *International Information & Library Review* 52.2 (2020): 130-138.
Fain, Margaret. "Assessing information literacy skills development in first year students: A multi-year study." *The journal of academic librarianship* 37.2 (2011): 109-119.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

16

Flynn, Susan. "Education, digital natives, and inequality." *Irish Journal of Sociology* 29.2 (2021): 248-253.

Helsper, Ellen Johanna, and Rebecca Eynon. "Digital natives: where is the evidence?." *British educational research journal* 36.3 (2010): 503-520.

Janschitz, Gerlinde, and Matthias Penker. "How digital are 'digital natives' actually? Developing an instrument to measure the degree of digitalisation of university students–the DDS-Index." *Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique* 153.1 (2022): 127-159.

Julien, Heidi, and Susan Barker. "How high-school students find and evaluate scientific information: A basis for information literacy skills development." *Library & Information Science Research* 31.1 (2009): 12-17.

Sezer, Baris. "Implementing an information literacy course: Impact on undergraduate medical students' abilities and attitudes." *The Journal of Academic Librarianship* 46.6 (2020): 102248.

Underwood, Jean DM. "Rethinking the Digital Divide: impacts on student-tutor relationships". European Journal of Education. 42.2 (2007): 213-222.

Wu, Di, et al. "Factors associated with teachers' competence to develop students' information literacy: A multilevel approach." *Computers & Education* 176 (2022): 104360.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

17

Physiotherapist perceptions on rehabilitation services digitalization

Ciprian Vasile Pojala
PhD.
Transilvania University of Braşov
Email ciprianpojala@yahoo.com

Ionela Maria Bărsan
Assistant PhD
Transilvania University of Braşov
Email o.barsan@yahoo.com

Abstract
Digital health solutions have experienced an essential expansion during the COVID-19 pandemic. Digitization contributes to ensuring the continuity of care for people and offers the possibility of more accessible access to information related to the patient, facilitates communication and can be a way to provide medical services through telemedicine. This work aims to identify the potential of the digitization of physiotherapy services. 17 physiotherapists from Romania completed a questionnaire with ten items. The results showed that although physiotherapists consider themselves prepared for computer systems, their use in medical practice mainly relates to communication with colleagues and other medical specialties.

Keywords: information retrieval, healthcare, digital tools, questionnaire, telemedicine

1. Introduction

Once with the COVID-19 pandemic, in addition to the implications of health and epidemiological policies, among the health systems, many of the medical specialties that did not represent a medical emergency suffered both at the international and national levels (*Davis , Bankhead-Kendall and Dumas, 2022)*.

Regarding rehabilitation, in most cases addressing cases of chronic disease, the legislation during the COVID-19 pandemic in Romania limited the access of chronic patients to physical rehabilitation services, implicitly to physiotherapy services. During the COVID-19 pandemic, services, applications and technologies were developed to favor telemedicine and telerehabilitation *(Kim et el. 2022, Kreider et al. 2022).* Moreover, to the extensive use of digital services and technologies generated by the COVID-19 pandemic, today's society is reshaping itself in a current and ongoing digital transformation as a central element and interfering with the health sector to a large extent. While some medical disciplines, such as radiology, have developed considerably concerning digital innovations, other medical specialties where a physical examination is required, such as orthopedics, rehabilitation and physiotherapy, are at an early stage of digital adaptation *(Estel et al. 2022).*

Besides telehealth, telemedicine and telerehabilitation, the digitalization of healthcare services also implies facilitating information gathering, retrieval and deposit. In healthcare services, the use of electronic patient files, the use of databases, specific software and technological tools is necessary for professional assistance. In physiotherapy, are available several digital tools, including smartphone applications which facilitate patient assessment (range of motion through smartphone camera), appointment schedule applications, or synchronized applications with wearable sensors *(Rosettini et al. 2021, Ødegaard et al. 2021)*

All these technologies, information retrieval and physiotherapy management require the professional significant knowledge and specific abilities or working preference to be translated to practice besides research purposes. Therefore, our research aims to identify the opinions of physiotherapists regarding physiotherapy services digitalization trough a pilot questionnaire.

Material and methods

After a literature consultation regarding the potential factors influencing physiotherapist perceptions regarding telerehabilitation and physiotherapy services digitalization, a questionnaire of ten items was developed. The questionnaire contained only ended questions, with 4 questions on a one to five scale and the other 6 questions with multiple answers. The questionnaire was disseminated through Google Forms, and 17 physiotherapists participated in the study. No personal data was required, and all participants approved consent for data.

2. Results

The sample size of the respondents was of 17 participants, with a mean age of 30.53 years , SD=7.49. The work experience average was 5.88 years with SD 4.24. From 17 participants, eight were females (47.05%) and nine males (52.95%); a percent of 41.18% (n=7) had a Bachelor degree, while 58.82% (n=10) were Master graduates. Thirteen participants (76.47%) came from urban area, while four (23.53%) from rural area.
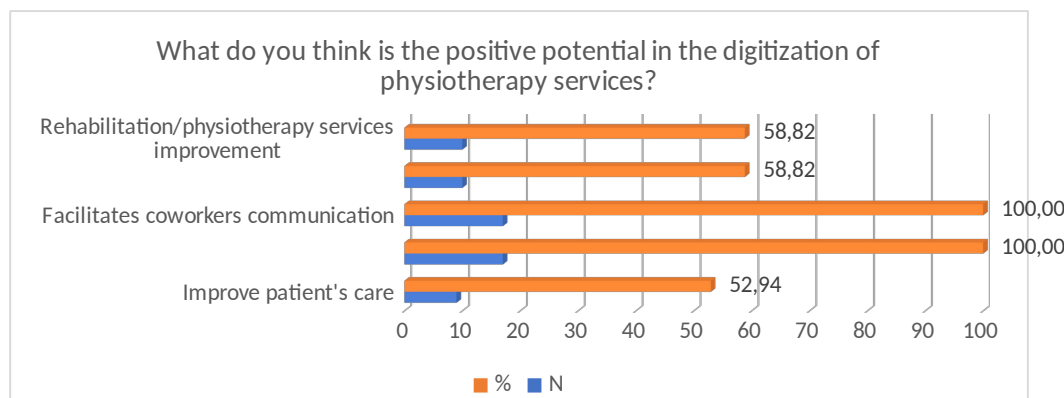
Figure 1. Smartphone application use

The items used in the questionnaires are found within figures graphics and depicts percentage of physiotherapist perceptions regarding professional services digitization. One of the elements followed in the research was to identify the use and the perceptions of smartphone applications in physiotherapy practice.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

19

In Figure 1 and Figure 2 the usability of electronic recordings, smartphone applications and other types of information access tools are depicted.
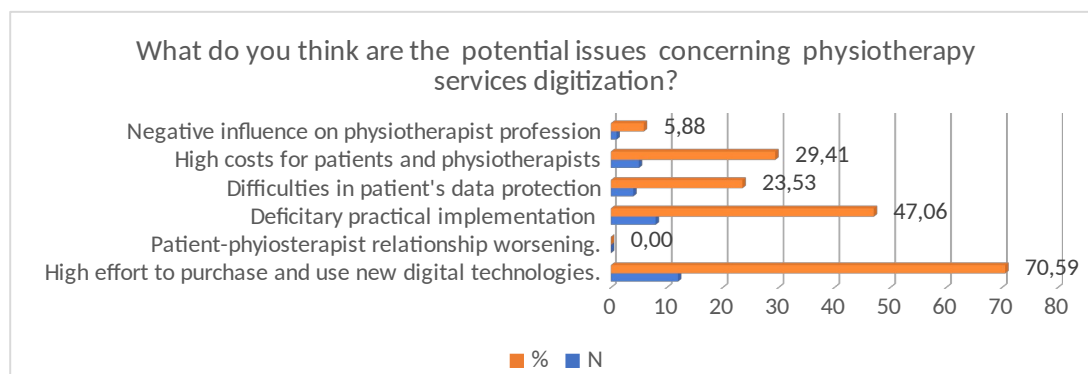
Figure 2. Information retrieval and dissemination

Most participants reported to use smartphone applications for communication with coworkers and more than half for organizing their professional service, while only 11.76% reported that use in daily practice an electronic file for patient's data management. None of the participants perform video consultation or have a web-based page to offer information for patients. For the use of telemedicine, the item included actions like telephone communication with coworker, physicians or patients, and the item is not linked with video call services. Another usual tool used for information communication is the personal email.
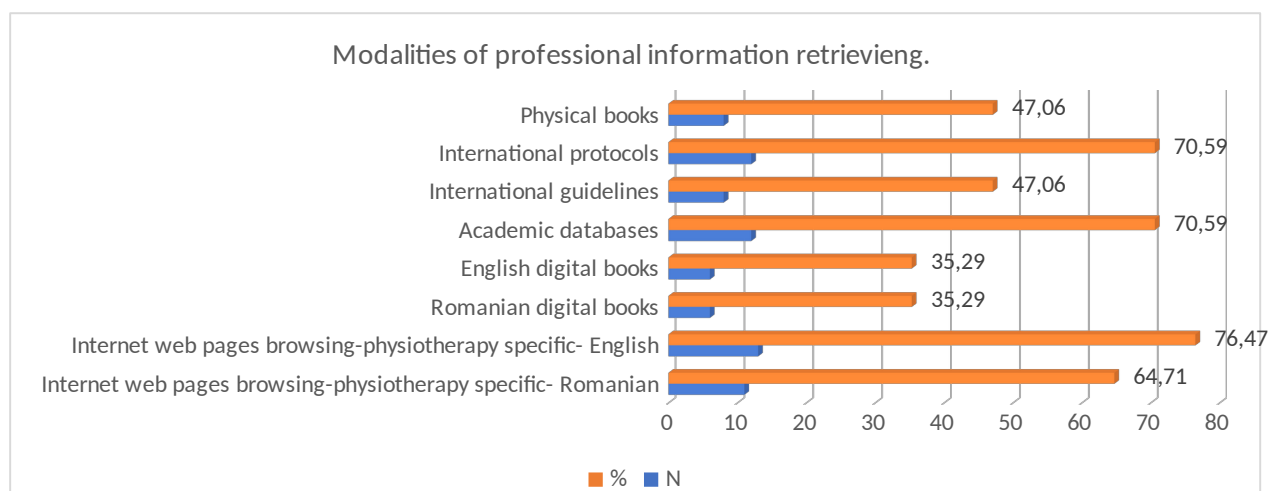
Figure 3. Physiotherapy digitalization potential

As it regards the potential of physiotherapy services digitalization, the participants in the study agreed that it can facilitate information communication with colleagues and professional activity (Figure 3) and 50% percent considered that trough digitalization services, communication and patient's care can be improved. If only the electronic patient file would be seriously implemented, the patient's follow-up and further physiotherapy or rehabilitation clinic would require less time for gathering the necessary information and the patient would benefit of more therapy time.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

20
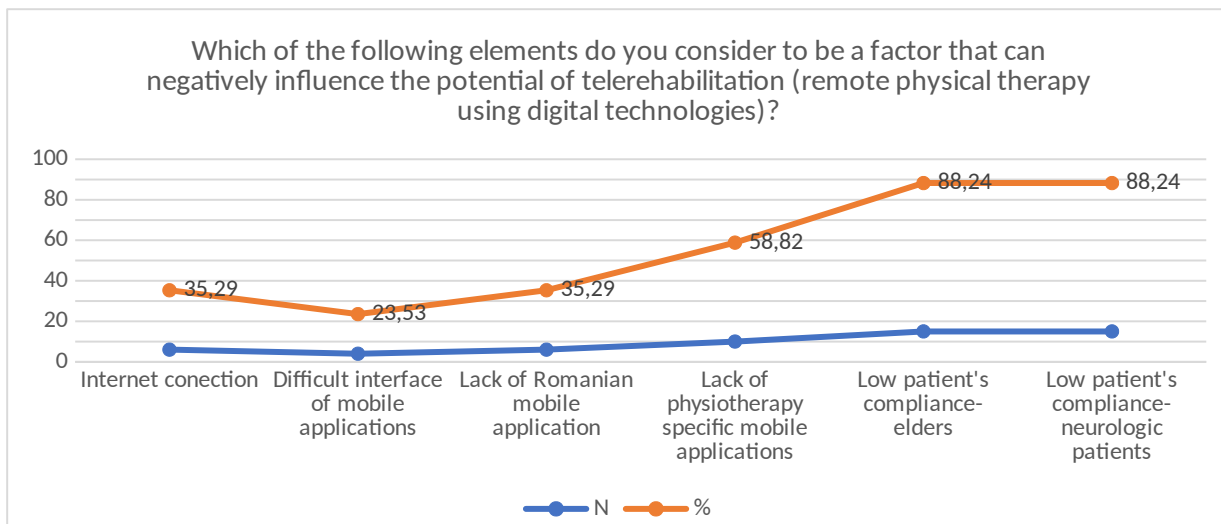
Figure 4. Possible negative influences on physiotherapy services digitalization

As all new technologies or tools, awareness must be emphasized related to possible negative influences or outcomes of the appliance. In this aspect, in Figure 4 are depicted the physiotherapists opinions regarding the potential issues of professional services digitalization. Unfortunately, only 23.53% participants considered the patient's data protection a potential issue, although is a tremendous problem in personal data and information protection, for the most of the healthcare providers. On the other side, the majority of the participants considered the finances as an important feature and reported this element as a high effort for physiotherapy digitalization. Another important element is linked to the practical implementation of digitalization technologies and software, suggesting that the physiotherapist have encountered issues in digital technology use in medical daily practice.

Figure 5.
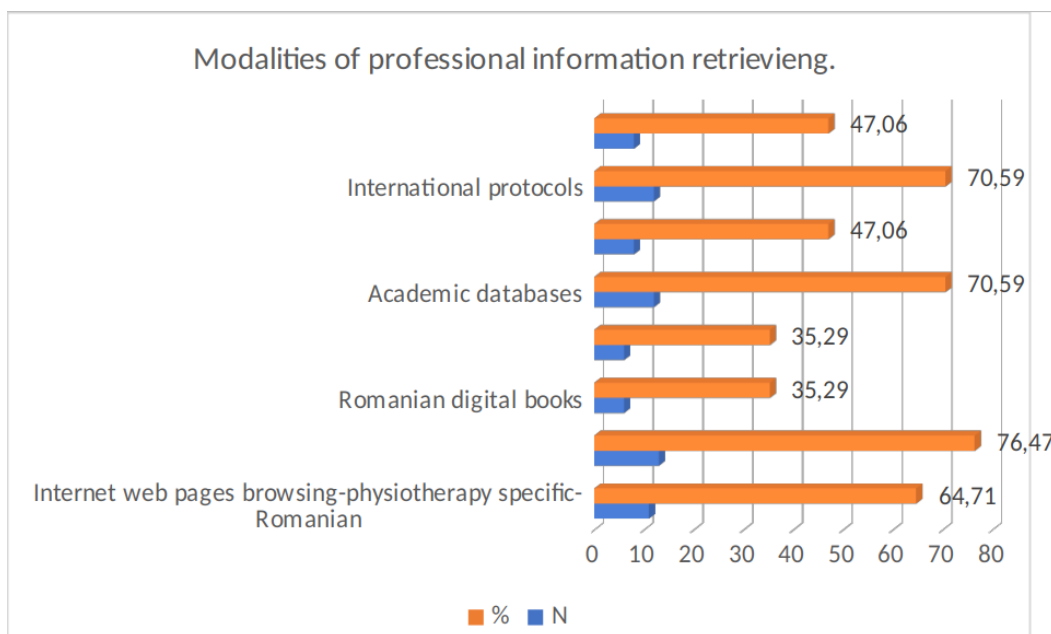
Physiotherapist's modalities of professional information documentation

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

21

To create a better understanding of physiotherapists perceptions and acquittances regarding information retrieval, we used in our questionnaire an item to identify the methods by which they gather professional information. The results suggest that the academic databases and web pages navigation are the most preferred methods, while physical books reading is the lowest in physiotherapists preferences, the results suggesting that digital information is most accessible since personal internet computers and smartphones become accessible and user friendly.
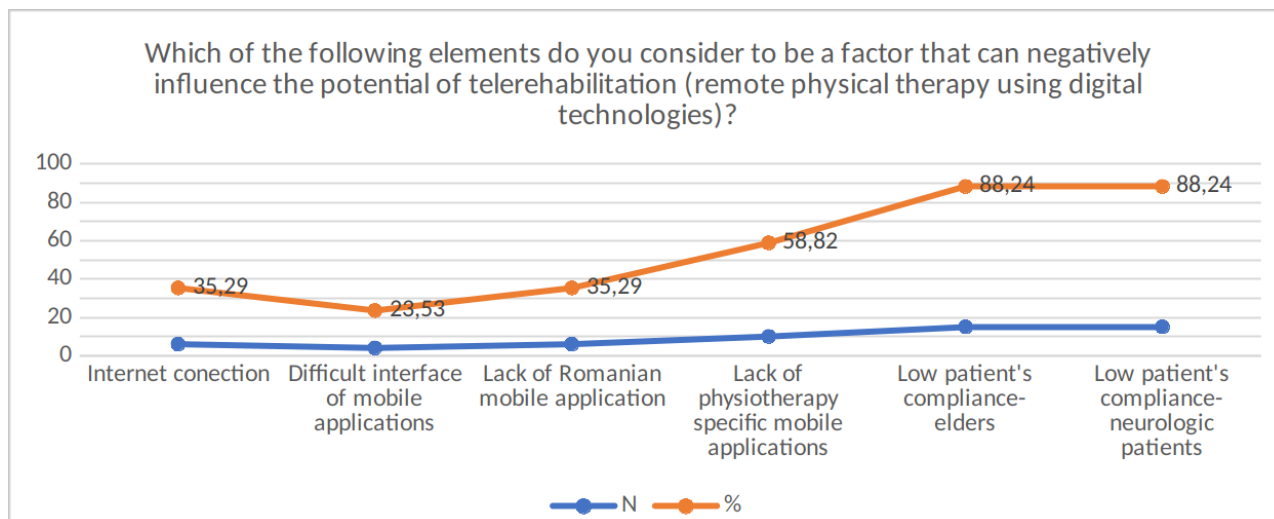
Figure 6. Potential factors of telerehabilitation limitations

As a future perspective of telerehabilitation, we asked the participants, based on their perceptions which of the following elements depicted in Figure 6 can negatively influence future physiotherapy digital practice; in high percent, the subjects considered that a significant impediment in telerehabilitation use might be elder or neurological patients, since they are not familiarized with the use of digital technology, nor as the neurological patients, who's central nervous system is damaged and frequently, the cognition is affected.

Other important and limiting features are linked with small number of physiotherapy dedicated smartphone applications and the usability in Romanian language.

Other elements of the applied survey investigated the physiotherapists self-perception regarding the knowledge and the compliance with digital tools in daily practice. The results of the other 4 items are shown in Table 1.

Table 1. Physiotherapists self-perception on digital skills

On a scale from 1 to 5	Mean±SD
How much "addapted" are you keeping yourself when it comes to digitizing your professional activities?	3.76±0.64
To what extent do you consider that you have the skills to use mobile phone	4.18±0.71

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

22

applications for organizing professional activities or for documenting the techniques and methods used in physical therapy.

To what extent do you consider that you have the skills to search for documents in scientific databases? 3.59±1.14

To what extent do you think that your interest in digital information/applications has increased after the pandemic? (in relation to professional activity) 3.65±0.76

3. Discussions

The results of our research show that although physiotherapists seem to be aware of the importance of medical care services digitalization and the facilities they offer, the use of these technologies for information retrieval, data storage and flexible and distance communication are poorly implemented in daily practice.

A very small percent of participants reported to use the patient electronic file, which can represent a facile method to quiqly identify personal information, recorded assessments and other important healthcare data.

Another essential issue which seems that is not sufficiently taken into consideration is linked to patient's data protetction when using digital tools for physiotherapy services; therefore, only a quartaer of the participants reported concerns regarding this issue, although nowadays, with the software development and legislation requirements, patient's data protection is mandatory (Wacksman 2021).

Compared to the classic way of following up and running a rehabilitation program, telerehabilitation brings multiple advantages to everyone involved in the process. Unfortunately, our respondents seem not to use even the mobile phone for online consultation. The patient can perform the recovery program in his own comfort space. It can also notify the existence of a troublesome symptomatology. The patient acquires a sense of confidence in order to reinsert into the social circuit. The physiotherapist monitors effectiveness and adherence to therapy remotely and optimizes the program to maintain increased adherence *(Rogante et al. 2015)*.

In our research, the physiotherapists expressed their concern regarding the use of digital physiotherapy services in neurological and elderly populations. Elderly and neurologic patients are more vulnerable to rehabilitation services to support function, physical activity and quality of life. These categories often have limited access to rehabilitation. Transportation to the clinic and low income are just two examples that can lead to non-performance of rehabilitation procedures. Whatsoever, even telerehabilitation can be an useful tool for home physiotherapy, new technologies may be difficult to use especially by the neurologic patients, since many of them have limbs and ambulation deficiencies, but also have cognitive disfunctions. Therefore, future research and telerehabilitation devices should focus on the usability of these new technologies, considering users functional and cognitive limitations *(Bezuidenhout et al. 2022)*.

The development of medical services digitalization and the use of these technologies can have an important potential to redefine the physiotherapy practice especially by the segment of smart wearables, by creating a platform that is positioned between the current generation of wrist-based tools (smart watches/fitness bracelets) and ultra-specialized systems in medical institutions.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

23

Future directions of real-time information retrieval may become a trend in the coming years, namely the concern of modern man to develop prophylactic programs and features for an increased state of health, but also for monitoring patients with different illnesses like diabetes, heart rhythm dysfunction, increased blood pressure or oxygen consumption *(Peretti et al. 2017)*.

4. Conclusions

Although it seems that Romanian physiotherapists are aware of the need of medical practice services digitalization and report to have knowledge on different types of mobile applications or electronic information programs, the physiotherapy services digitalization is very little used in everyday practice. Further research is needed to identify forthcoming directions and technologies which can facilitate physiotherapy practice digitalization.

5. References

Davis B, Bankhead-Kendall BK, Dumas RP. A review of COVID-19's impact on modern medical systems from a health organization management perspective. Health Technol (Berl). 2022;12(4):815-824. doi: 10.1007/s12553-022-00660-z. Epub 2022 Mar 25. PMID: 35371904; PMCID: PMC8956330.

Estel K, Scherer J, Dahl H, Wolber E, Forsat ND, Back DA. Potential of digitalization within physiotherapy: a comparative survey. BMC Health Serv Res. 2022 Apr 13;22(1):496. doi: 10.1186/s12913-022-07931-5. PMID: 35418069; PMCID: PMC9007581.

Kim SY, Daley K, Pruski AD, AlFarra T, Azola A, Gonzalez Fernandez M, Keszler MS, Friedel S, Haaf H, Segall H, Lien P, Cypher J, Mazariegos J, Raghavan P. Implementation of a Framework for Telerehabilitation in Clinical Care Across the Continuum During COVID-19 and Beyond. Am J Phys Med Rehabil. 2022 Jan 1;101(1):53-60. doi: 10.1097/PHM.0000000000001904. PMID: 34915545; PMCID: PMC8667677.

 Kreider CM, Hale-Gallardo J, Kramer JC, Mburu S, Slamka MR, Findley KE, Myers KJ, Romero S. Providers' Shift to Telerehabilitation at the U.S. Veterans Health Administration During COVID-19: Practical Applications. Front Public Health. 2022 Mar 4;10:831762. doi: 10.3389/fpubh.2022.831762. PMID: 35309184; PMCID: PMC8931404.

Lucian Bezuidenhout,1,2 Conran Joseph,3 Charlotte Thurston,1Anthea Rhoda,2 Coralie English,4 and David Moulaee Conradsson Telerehabilitation during the COVID-19 pandemic in Sweden: a survey of use and perceptions among physiotherapists treating people with neurological diseases or older adults

 Ødegaard NB, Myrhaug HT, Dahl-Michelsen T, Røe Y. Digital learning designs in physiotherapy education: a systematic review and meta-analysis. BMC Med Educ. 2021 Jan 13;21(1):48. doi: 10.1186/s12909-020-02483-w. PMID: 33441140; PMCID: PMC7805166.
Peretti A, Amenta F, Tayebati SK, Nittari G, Mahdi SS. Telerehabilitation: Review of the State-of-the-Art and Areas of Application. JMIR Rehabil Assist Technol. 2017;4(2):e7. doi: 10.2196/rehab.7511.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

24

Rogante M, Kairy D, Giacomozzi C, Grigioni M. A quality assessment of systematic reviews on telerehabilitation: what does the evidence tell us? Ann Ist Super Sanita. 2015;51(1):11–18.

Rossettini G, Turolla A, Gudjonsdottir B, Kapreli E, Salchinger B, Verheyden G, Palese A, Dell'Isola A, de Caro JX. Digital Entry-Level Education in Physiotherapy: aCommentary to Inform Post-COVID-19 Future Directions. Med Sci Educ. 2021 Nov 4;31(6):2071-2083. doi: 10.1007/s40670-021-01439-z. PMID: 34754600; PMCID: PMC8567978.

Wacksman, J. Digitalization of contact tracing: balancing data privacy with public health benefit. Ethics Inf Technol 23, 855–861 (2021). https://doi.org/10.1007/s10676-021-09601-2

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

25

Scientometric analysis of 3D printing in libraries, and implications for copyright

Mihai Bârsan
PhD.
Email mihai_c_barsan@yahoo.com

Ane Landøy
Norwegian Government, The Directorate for Higher Education and Skills
E-mail ane.landoy40@gmail.com

Ionela Maria Bărsan
Assistant PhD.
Transilvania University of Braşov
Email o.barsan@yahoo.com

Angela Repanovici
Prof. PhD.
Transilvania University of Braşov
E-mail arepanovici@uitbv.ro

Abstract

3D printing is a process whereby users can create a three-dimensional solid object of any shape by operating a 3D printer using a digital design, thereby creating their own designs or replicate and electronically customize scanned objects. The technology has existed for several decades; however, it was not until around 1990 it really gained momentum (Van Wiele, 2019).

3D-printing is a service that is on offer in both public and academic libraries, and there are issues with copyright.

In this paper the authors investigated research on 3D printing in libraries and copyright through a scientometric analysis, by searching in Web of Science for libraries, 3D printing and copyright. The data was mapped in WoS-viewer, to show the most important authors, the most cited documents, and the most cited sources. 107 results from WoS Core Collection for "3D printing" AND copyright was found.

Searching the scholarly literature, it became evident that there are several issues of copyright when it comes to 3D printing: How can the interests of the following key actors "be balanced: (i) rights holders that typically wish to control design dissemination; (ii) design sharing platforms that seek to facilitate design creation and dissemination; and (iii) consumers who require access to digital designs"? (Van Wiele, 2019)

Also, the authors researched library websites in Norway for guidelines and rules concerning copyright and 3D printing. Norwegian copyright law does not mention 3D printing as such, so how are academic and public libraries teaching or mentoring copyright issues to patrons and students?

Keywords*: 3D printing, Copyright, Plagiarism, Norway, Libraries*

1. Introduction

3D printing is a process whereby users can create a three-dimensional solid object of any shape by operating a 3D printer using a digital design, thereby creating their own designs or replicate and electronically customize scanned objects. The technology has existed for several decades; however, it was not until around 1990 it really gained momentum (Van Wiele, 2019).

The process can be used for technological manufacturing in a business sense. However, in this paper we are mainly looking at 3D printing from the point of view of citizens who want to make something for themselves (or others) as a hobby, and not for monetary gain. We are also investigating libraries (municipal or scholarly) where 3D printing equipment may be found, and where rules and regulations may be explained to patrons wishing to use the equipment.

2. Scientometric study

Scientometrics is an emerging trend and thrust area of scientometrics study that derives quantitative and qualitative research for describing the results of cited documents. https://digitalcommons.unl.edu/libphilprac/4477/

We performed a research study based on direct interrogation of the scientific literature, based on the Web of Science (WoS) database.

We have established that the main research items are composed of Libraries AND 3D printing. The Advanced Search Option was selected for interrogation, and the Query Terms were set to "All fields" with the Boolean "and" value.

After the initial interrogation, a total of 50 articles were shown.

Fig 1: The 50 most cited documents:
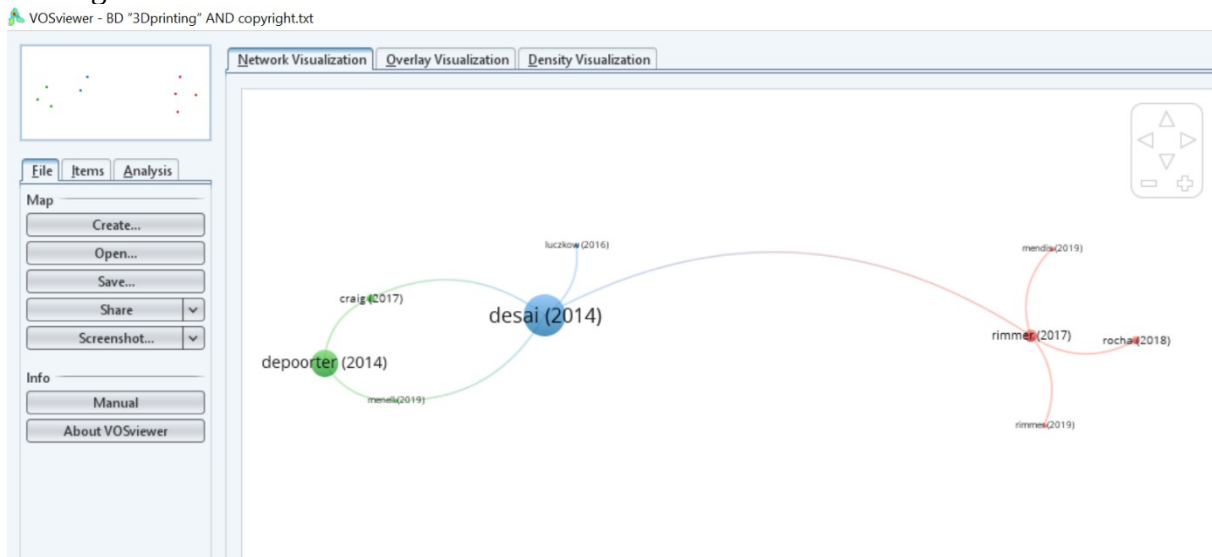
We selected the top cited authors in Table 1
Table 1: Top cited authors

Author	Citations	Links
Bhattacharjee (2016)	543	0
Bishop (2017)	200	0
Despeisse (2017)	152	0
Murr (2016)	122	0
Muwaffak (2017)	122	0
Bates (2016)	96	0
Madamesila (2016)	58	0
Raphael (2017)	56	0
Desai (2014)	53	4
Lin (2018)	48	0
Liu (2016)	48	0
Zhao (2016)	44	0
Hu (2019)	33	0
Domingo-roca (2018a)	27	1
Hou (2017)	26	5
Gardan (2016)	26	0
Alifui-segbaya (2017)	23	0
Depoorter (2014)	22	2
Macq (2015)	14	2
Domingo-roca (2018b)	12	1

The sources where we found documents are show in Fig 2 and table 2

Fig 2: Sources of documents

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

28
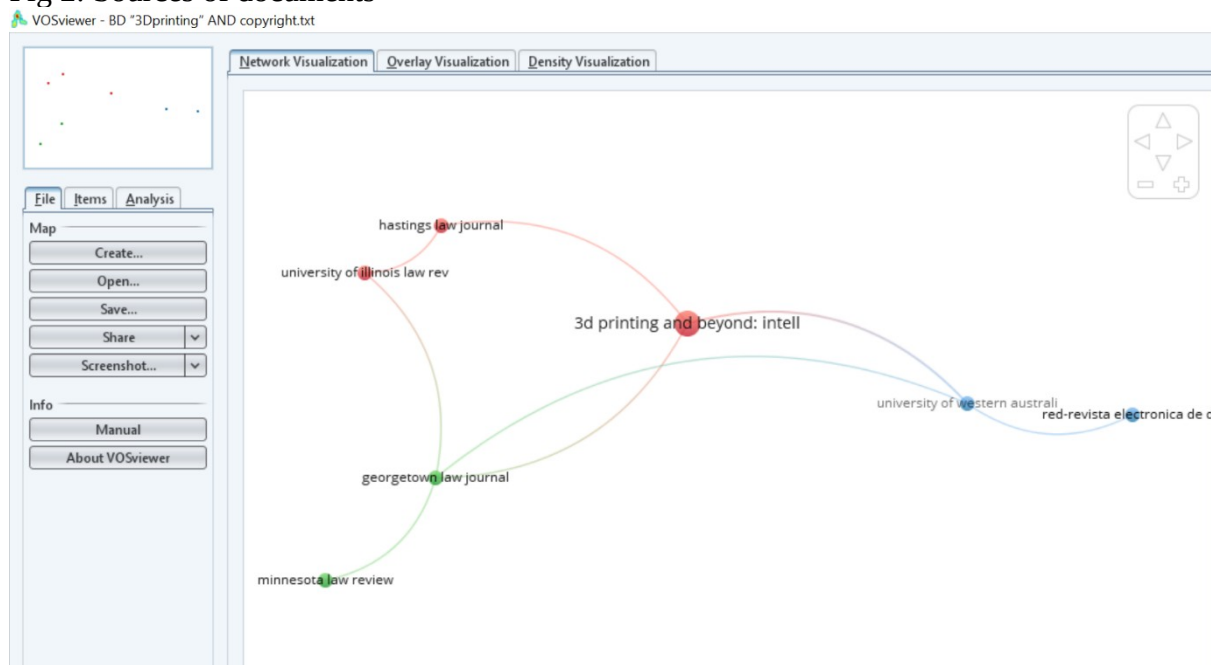
Table 2 Sources for articles in the field

Source	Number of documents
3d printing and beyond: intellectual property and regulation	3
Epl	2
Ifac papersonline	2
Journal of materials science & technology	2
Materials & design	2

The most productive countries are USA, Spain, England, Chile, Netherlands. (see Table 3)

Table 3 The most productive countries

Country	Documents	Citations
USA	8	942
Spain	1	543
England	11	471
Chile	1	152
Netherlands	1	152
Peoples r China	5	125
South Korea	7	85
Canada	2	58
Germany	1	48
Taiwan	1	48
Scotland	2	39
Australia	5	36
Belgium	2	36
France	2	26
Wales	1	23
Malaysia	1	6
Japan	3	2
Portugal	1	2
Norway	1	1

The co-word occurrence maps drawn show stabilities in the concepts related to the field of Libraries and #D printing. 239 keywords were found. (Fig 3)

Fig 3: Density map of keywords

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

29
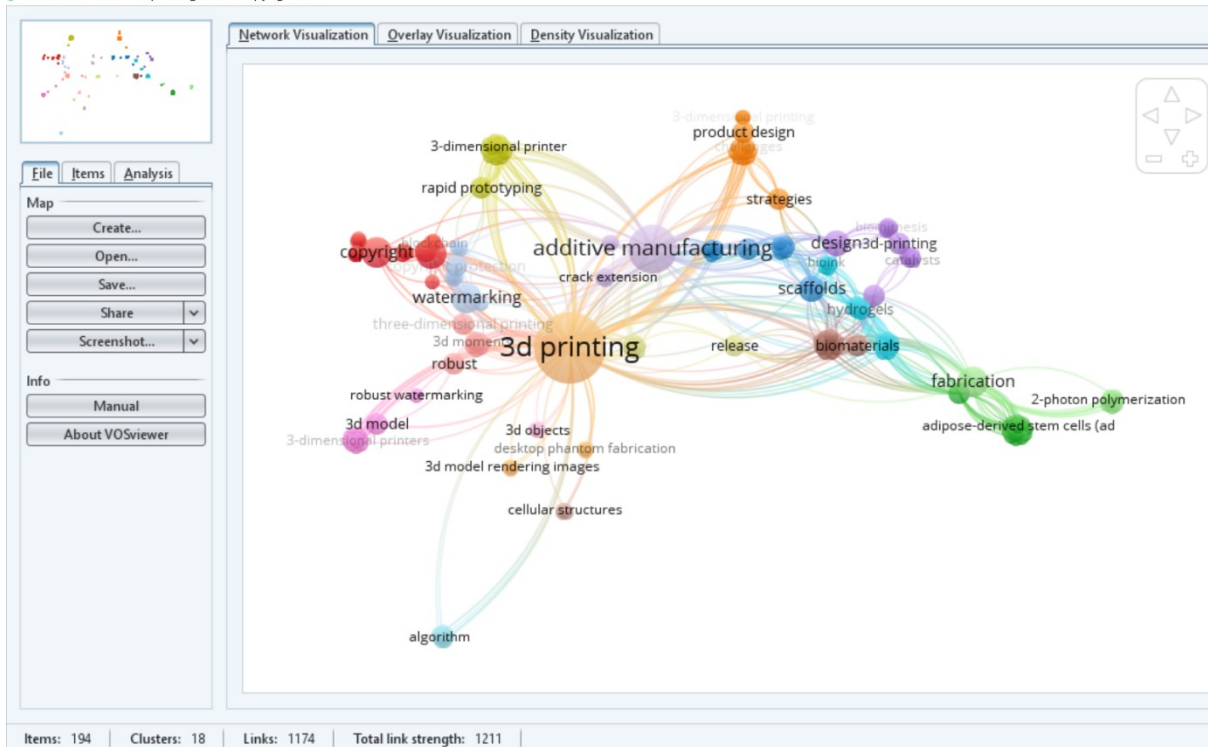
3. About 3D printing:

Mæhlum 2022 explains:

> "3D printing, or additive manufacturing, is a collective term for techniques that build objects in solid material based on a three-dimensional digital model. The work is carried out by a 3D printer. The process differs radically from traditional machining, where components are built by separating chips from a workpiece.
>
> In its simplest form, 3D printing occurs when material is extruded in a hot state through a nozzle and adheres to the surface layer by layer. In more advanced printers, powder or wire is used which is melted before it hits the surface. Another principle is that material is applied from a powder bath or bath of liquid substance.
>
> A wide range of material types have proven useful for additive manufacturing: various polymers and plastics, metals, alloys, ceramics and composites, nutrients and biological material.
>
> 3D printing has proven to be able to produce components with an internal and external geometric complexity that is impossible to create with traditional chip separation processes. In some quarters, great expectations are attached to additive manufacturing in goods production, and in particular to more specialized components, for example in biotechnology.
>
> 3D printing can be traced back to 1983, when American engineer Chuck Hull developed a method of additive manufacturing called stereolithography. A laser beam is guided in a pre-programmed pattern over a vessel with liquid, light-sensitive plastic mass so that the surface layer is hardened by photopolymerization. The substrate for the workpiece is then lowered one notch into the tub for the application of a new layer. Hull patented the method the

following year and started the company 3D Systems in 1986." (Mæhlum 2022, authors' translation)

3.1 Piracy/Plagiarism

With the emerging possibilities of the new production technologies comes a requirement for legal protection of ideas in this unchartered technological area. Several authors have pointed to the necessity of balancing the needs of different actors: "(i) rights holders that typically wish to control design dissemination; (ii) design sharing platforms that seek to facilitate design creation and dissemination; and (iii) consumers who require access to digital designs" (Van Wiele, 2019), and "3-D printing introduces many copyright infringement issues for digital 3-D objects because the object data can be directly printed and distributed both online and physically. New distribution scenarios not previously considered also pose new content security problems." (Hou et al, 2018).
Law-making is a somewhat long process, and therefore it can be observed that in many countries, the intellectual property laws and copyright laws are not updated with specific regulations towards 3D printing issues. This may cause problems both for the patrons who would like to legally use 3D designs developed by others, and for designers who are looking to remuneration for their patterns. In this legally uncertain situation, it is vital that citizens are thoroughly informed about the actual regulations concerning intellectual property rights and copyright laws.

4. The practical situation with training on 3D-printing, including copyright issues in the 10 largest academic libraries and 8 major public libraries in Norway

Issues of copyright training in Norwegian libraries was researched in 2015 as part of the international study "Information professionals and copyright literacy: a multinational study", and the results showed that among the international peers, Norwegian librarians seemed to be feeling less confident when it came to understanding and explaining copyright issues (Todorova et al, 2017). When LIS students' perceptions were investigated in 2018, the majority of the students did not remember that they had been thought about the issue, even though the curricula and schedules showed copyright as a subject in the teaching (Gastinger and Landoy, 2018)
Norwegian copyright law has a focus on paper based and printing issues. It does not mention 3D printing as such. An area of interest for this research is how academic and public libraries are teaching or mentoring copyright issues to patrons and students as part of training on 3D printing equipment.
Not all libraries in Norway offer training or equipment for 3D printing. The authors chose the to investigate the largest libraries both among public and academic libraries, and looked at their websites, to find out whether they had 3D printing equipment, and if they did, whether training material was accessible and mentioned copyright.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

31

Table 4: 3D printing in the largest municipal and academic libraries in Norway

Library	Training / CR	Comments	URL
Norwegian University of Technology and Science	Yes/No	Student organisation	https://drive.google.com/file /d/1eU_jJxcn_SYe4PslskZkZ5YizjQRSIk1/view
Univ of Stavanger	Yes/?	Not access to course	
Deichman municipal library, Oslo	Yes/No		https://deichman.no/vi-tilbyr/3d-skriver_d704d648-f703-46f5-959f-a2219f8feaff
Bergen municipal library	No		Bærekraftslaben — Bergen Offentlige Bibliotek (bergenbibliotek.no)
Trondheim municipal library	No/No		https://biblioteket.trondheim.kommune.no/innhold/om-biblioteket/tilbud/#heading-h2-6
Sølvberget, Stavanger municipal library	No/No		https://www.xn--slvberget-l8a.no/Nyhetsarkiv/Bruk-3D-printer-paa-Soelvberget/(language)/nor-NO
These academic libraries do not have 3D-printing		Oslo University, University of Bergen, Agder University, The Arctic University, Univ of South East Norway, Inland College, Volda College. Western Norway College	
These municipal libraries in larger cities do not have 3D-printing		Tromsø, Bodø, Kristiansand, Ålesund	

As may be seen from table 4, 3D printing as a service in Norwegian libraries, both scholarly and municipal, is not widely developed. This is a pity, both for students with design ideas or innovations that need a flexible and available space for testing, and for citizens.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

32

Whereas a digital file of a book, a scan of a book, and a physical copy of a book are usually all considered equivocal copies under Copyright law, the same cannot always be said for 3D printing. In various ways, copyright can protect the design of a 3D object, the file that the printer and programme use to create the object, and the final object.

5. Conclusions

Regarding the library policy for 3D printing, various cases from different libraries around the world have been studied as the perspective offered by the American Library Association, which also includes samples from different libraries in the United States (https://www.ala.org/advocacy/intfreedom/3d printer policy).
Libraries that provide 3D printing services should implement written policies governing the use of these technologies, equipment, and know-how. It is recommended that the following topics be included and explained:
- Determine and recommend which users are eligible to use the library's 3D printer.
- Provide specific rules and regulations regarding user access, fees, and training requirements, including details about printing capacity (printer specifications!);
- Clearly explain which activities are NOT acceptable to be developed using the library's 3D printing facilities (forbidden and illegal);
- Define a STATEMENT (to be signed by the user) informing the user that all other library policies apply when using the library's 3D printer or printing services, including policies addressing user behaviour, acceptable use, cybersecurity, copyright, intellectual freedom, and user privacy;
- Mention the area (real or virtual) where users can access 3D printing educational resources and literacy. https://www.inno3d.eu/module1

Finally, library policy should provide users and librarians with guidance on how to implement policies and manage makerspaces and 3D printing services in libraries (Draghici et al 2021).

6. References

3D Printing and Copyright - Copyright - LibGuides at University of South Florida Libraries, n.d.
The Copyright Act https://lovdata.no/dokument/NL/lov/2018-06-15-40 (in Norwegian)

Draghici A., Lovasz A. & Bursasiu S. (2021). *A Debate on Re-engineering the University Library System*, In Proceedings of the 11th International Conference on Information Science and Information Literacy (ICISIL 2021)

Hou, J., Kim, D,, Ahn, W., and Lee, H: (2018) *Copyright Protections of Digital Content in the Age of 3D Printer: Emerging Issues and Survey*. IEEEAccess
Gastinger, A. and Landoy, A. (2018): *Copyright Literacy Skills of LIS Students in Norway* Microsoft Word - ECIL2018_234-dm-edited (002).docx (uib.no)

Mæhlum, L.: *3D printing* in Store norske leksikon at snl.no. Retrieved 24 July 2022 from https://snl.no/3D-printing

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

33

Todorova, T.Y.,Kurbanoglu, S.,Boustany, J.,Dogan, G.,Saunders, L.,Horvat, A.,Terra, A.L., Landøy, A.,Repanovici, A.,Morrison, C.,Vanderkast, E.J.S.,Secker, J., Rudzioniene, J.,Kortelainen, T. and Koltay, T. (2017), *Information professionals and copyright literacy: a multinational study*, Library Management, Vol. 38 No. 6/7, pp. 323-344. https://doi.org/10.1108/LM-01-2017-0007

Van Wiele, B. (2019). Intellectual Property and Consumer 3D Printing University of Cape Town.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

34

From Traditional Librarian to Scholar in the Field of Information and Documentation Sciences: On the Necessity for Training in an Ever-Changing Profession

Ivona Olariu
PhD
"Mihai Eminescu" Central University Library, Iaşi
Email ivona@uaic.ro

Adriana Szekely
PhD
"Lucian Blaga" Central University Library, Cluj-Napoca
Email adrianasz2003@yahoo.fr

Abstract

The paper presents the synthesis of the updated preferences for professional training of the members of the Association of Librarians in Romania (ALR). The professional development avenues have been emphasized following a study performed during September-November 2022, on a national, representative sample.

The professionals in the field have been consulted regarding the motivation to participate in training programs, and the importance given to professional training, their expectations upon completing them, their involvement in such programs in the last 3 years (financial resources, alloted time). The training topics chosen by respondents were analyzed, together with the criteria on which choosing the programs is based, difficulties encountered etc.

In order to have a complete image of the evolution of ALR members' preferences, the paper compares the current results with those from 2016, obtained from a similar study. The differences introduced by the pandemic are analyzed, difference which brought the necessity for new approaches in how the profession is conducted and, thus, the gaining of new competences and abilities.

Conclusions help guide the association in its role as the primary provider of training programmes for the community, in selecting the topics to be covered in the future. In addition to the choices expressed by the respondents, the paper also presents the studies conducted by the association regarding the new development directions for this profession which is continuously redefined in relation to the new informational environment.

Keywords: professional training, Association of Librarians in Romania, library science, survey, questionnaire, informational environment.

1. Introduction

The aim of the study was to identify the training needs of librarians, starting from the problems faced by these professionals and continuing with the design of specific objectives and actions taken to solve them.

The results of this survey highlighted the directions of professional training of infodocumentary specialists needed to be developed in the next period, being a benchmark for the organization of programs and study plans in the organization of specialization courses.

The study initiated in 2016 was repeated in 2022. The answers from 2022 were analyzed compared to those obtained by processing the questionnaire from 2016, underlined the changes in professional training preferences in the context of the pandemic period (2020-2021).

2. Methodology

2.1. Participants

Data was collected from a nationally distributed sample, anonymously and voluntarily, in two waves, six years apart (Annex 1 - 2016, 2022). The survey was distributed through a secured link via Google Forms. The total sample consisted of 1018 respondents; there were 447 responses in 2016 and 571 responses in 2022. Data about respondents from each wave are presented in Table 1.

2.2. Target population: 1200 ALR members, in 2016, respectively 760, in 2022. In both cases it was a representative sample.

2.3. Survey structure:

The first survey included 24 questions (Q_1) and 2022 version includes 25 questions (Q_2), about:

1. Motivation to complete programs of professional training, importance given to them and expected results ($Q_1 1$, $Q_1 2$, $Q_1 5$, $Q_1 6$, $Q_1 7$), ($Q_2 1$, $Q_2 2$, $Q_2 5$, $Q_2 6$, $Q_2 7$)

2. Involvement in previous programs ($Q_1 3$), ($Q_2 3$)

3. Time and financial resources invested in professional training ($Q_1 4$), ($Q_2 4$)

4. Preferred method of training ($Q_1 8$), ($Q_2 8$)

5. Details regarding the organization, theme and criteria for choosing such a program; difficulties which could limit participation ($Q_1 9$, $Q_1 10$, $Q_1 11$, $Q_1 12$, $Q_1 13$), ($Q_2 9$, $Q_2 10$, $Q_2 11$, $Q_2 12$, $Q_2 13$)

6. A perspective on the necessity for professional training of colleagues ($Q_1 14$), ($Q_2 14$)

7. Demographics and socio-professional environment of origin ($Q_1 15$, $Q_1 16$, $Q_1 17$, $Q_1 18$, $Q_1 21$, $Q_1 22$), ($Q_2 17$, $Q_2 18$, $Q_2 19$, $Q_2 20$, $Q_2 23$, $Q_2 24$)

8. Data regarding professional experience and highest level of studies ($Q_1 19$, $Q_1 20$, $Q_1 23$, $Q_1 24$), ($Q_2 21$, $Q_2 22$, $Q_2 25$).

In 2022, $Q_1 23$ was removed. The question regarded the initial training (higher education in information and documentation science *or* another field, secondary education in information and documentation science *or* secondary education in another field).

Two other questions ($Q_2 15$, $Q_2 16$) have been added, about how the pandemic affected professional training, as well as the main provider of professional training during 2020-2022.

Number of options offered in Q10 increased from 13 ($Q_1 10$) to 18 ($Q_2 10$). In addition, the number of choices for Q12, regarding the difficulties encountered in attending the courses, increased from 5 ($Q_1 12$) to 6 ($Q_2 12$).

Data pre-processing and analysis

The dataset was constructed by merging the data from the 2016 and the 2022 surveys (waves), for questions that matched. All reported statistics were extracted separately for each wave.

For the multiple-choice items (i.e. questions Q1, 5, 7, 8, 9, 11, 12), response categories were coded with 1 each time they were mentioned, missing otherwise and absolute frequencies for each category were extracted.

For the forced-choice items (i.e., questions Q2, 3, 4, 6, $Q_1 15$, $Q_1 16$, $Q_2 17$, $Q_2 18$), we reported relative frequencies for each response category. Ordinal (i.e., questions 13 and 14) and Likert-type (i.e., question Q10) items were reverse coded so that the higher/lower categorical value corresponded to the higher/lower number (e.g., 1 recoded as 5/6 and vice versa).

For such items, we reported relative frequencies for each response category. For the ordinal items, we also reported central tendency and dispersion indicators (median, values of the 25th and 75th quartiles and inter-quartile range).

We also performed cross-tabulations between certain demographic variables (age, education, type of library) and extracted relative frequencies for each item and response category.

Data cleaning was done in Microsoft Excel, with the Power Query module. Data transformation, analysis and visualization were done in R Studio, R version 4.2.1, using packages *dplyr* and *ggplot2* from the *tidyverse* collection (Wickham et al., 2019) and packages *summarytools* (Comtois, 2022) and *likert* (Bryer&Speerschneider, 2016).

3. Results

Table 1: Demographic information, socio-professional environment, data related to professional experiences and level of completed studies

Variable	Values	Wave			
		2016		**2022**	
		Frequency (%)	**Distribution**	**Frequency (%)**	**Distribution**
Gender $Q_1 16, Q_2 18$	Masculine	27 (6.1%)		39 (6.9%)	
	Feminine	417 (93.9%)		529 (93.1%)	
Age $Q_1 15, Q_2 17$	<25	0 (0.0%)		0 (0.0%)	
	26-35	44 (9.9%)		37 (6.5%)	
	36-45	145 (32.6%)		151 (26.5%)	
	46-57	223 (50.1%)		328 (57.6%)	
	58-65	33 (7.4%)		53 (9.3%)	
Residency $Q_1 17, Q_2 19$	Rural	85 (19.0%)		147(25.7%)	
	Urban	362 (81.0%)		424 (74.3%)	

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

37

Variable	Values	2016 Frequency (%)	2016 Distribution	2022 Frequency (%)	2022 Distribution
Place of work $Q_1 18, Q_2 20$	Rural	83 (18.6%)		133(23.3%)	
	Urban	364 (81.4%)		438 (76.7%)	
Length of employment $Q_1 19, Q_2 21$	5 years or less	7 (1.6%)		17 (3.0%)	
	6 to 10 years	31 (6.9%)		36 (6.3%)	
	11 to 15 years	66 (14.8%)		52 (9.1%)	
	16 to 20 years	71 (15.9%)		96 (16.8%)	
	21 to 25 years	92 (20.6%)		113 (19.8%)	
	26 years or more	180 (40.3%)		257 (45.0%)	
Length of employment in the field $Q_1 20, Q_2 22$	5 years or less	49 (11.0%)		77 (13.5%)	
	6 to10 years	85 (19.0%)		79 (13.8%)	
	11 to 15 years	81 (18.1%)		64 (11.2%)	
	16 to 20 years	90 (20.1%)		119 (20.8%)	
	21 to 25 years	82 (18.3%)		107 (18.7%)	
	26 years or more	60 (13.4%)		125 (21.9%)	
Type of library $Q_1 21, Q_2 23$	School/High school	348 (77.9%)		287 (50.3%)	
	Specialized	16 (3.6%)		10 (1.8%)	
	Public	15 (3.4%)		141 (24.7%)	
	National	7 (1.6%)		41 (7.2%)	
	University	61 (13.6%)		92 (16.1%)	
Education $Q_1 24, Q_2 25$	High school graduate	52 (11.6%)		59 (10.3%)	
	Bachelor's degree	155 (34.7%)		174 (30.5%)	
	Postgraduate degree	149 (33.3%)		183 (32.0%)	
	Master's degree	78 (17.4%)		127 (22.2%)	
	PhD	13 (2.9%)		28 (4.9%)	
Position $Q_1 22, Q_2 24$	Other	13 (2.9%)		13 (2.3%)	
	Execution	413 (92.4%)		507 (88.8%)	
	Managerial	21 (4.7%)		51 (8.9%)	

Q1: *The reasons for attending professional training programs* (Fig.1):
The most important factors in the involvement in professional training programs are the need to acquire new professional competences and the development of the personal professional training portfolio.
The respondents, employees of university, national, public, specialized and school libraries, consider having new professional competences a necessity, and are therefore attending such programs: more than 86% in 2016 and over 92% in 2022. The most significant increase occurs for

the university libraries personnel (from ~87% to ~92%), while the public libraries show a decrease (from 100% to ~94%).

The second factor which influences the completion of specialization courses is the *development of the professional training portfolio,* with increasing percentage from 2016 to 2022, for all categories of libraries, except the specialized ones.

Results show that the lowest influence in taking such a decision is the recommendation of the colleagues to attend such courses.
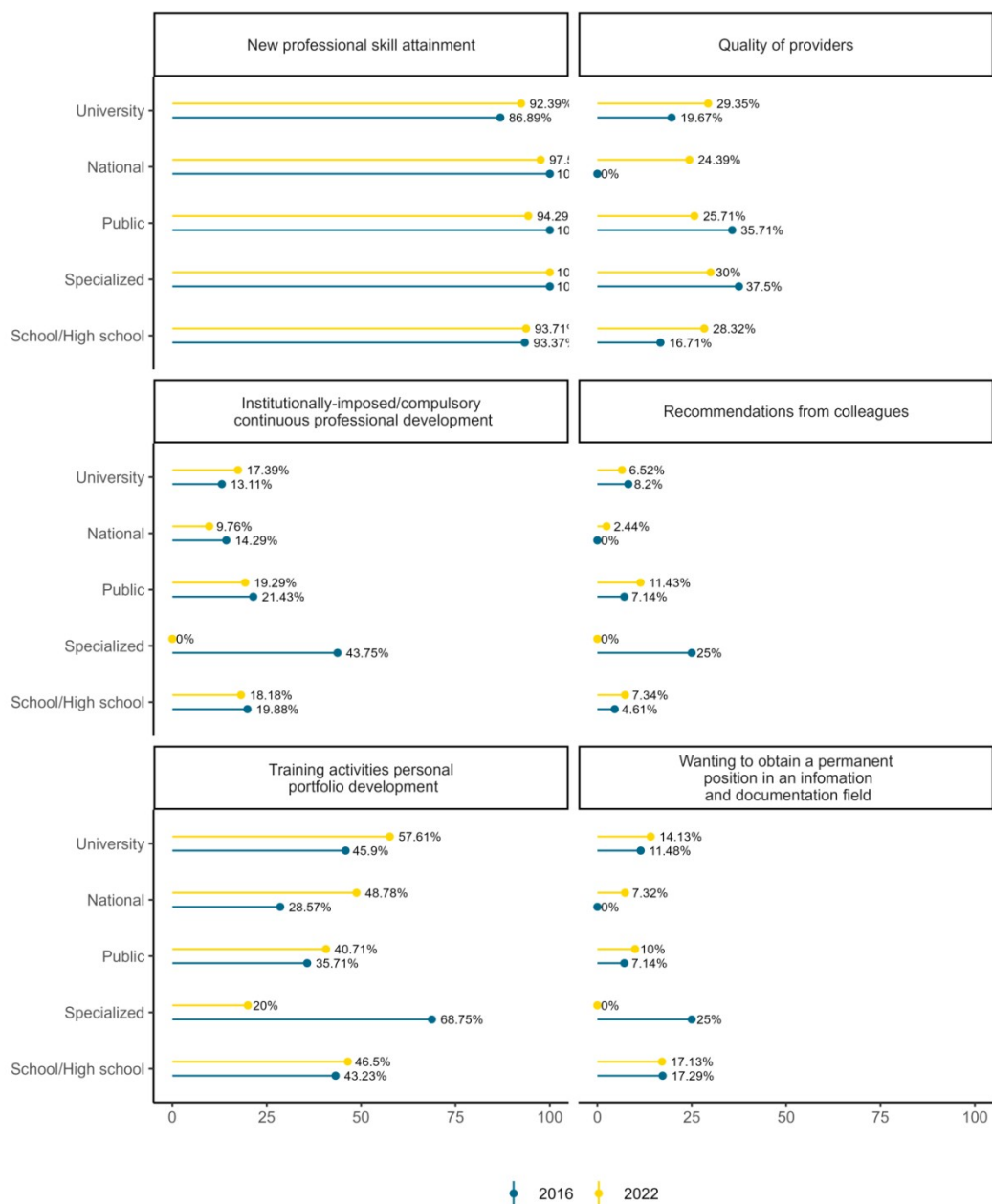
Figure 1

Q2 *For you professional training is*: a.Very important; b. Of medium importance; c. Important; d. Little important; e. No important; I can not appreciate

In 2016: 73,4% chose option a, 20,8% consider professional training, for 5,1% it is of medium importance, and 0,7% declare they cannot evaluate.

The 2016 results are similar to those in 2022: 74,1%, 5,3%, 20,3% and 0,4%.

Q5: When asked about *their biggest expectations from a training program*, in a multiple choice question (Figure 2), results indicate a significant increase in all 4 options, with the highest percentage in the case of new ways to exercise the profession (53,9 in 2016, 86,8 in 2022) and exchange of experience and good practices (from 36% to over 70%).

Question: What do you expect the most from a professional training program?
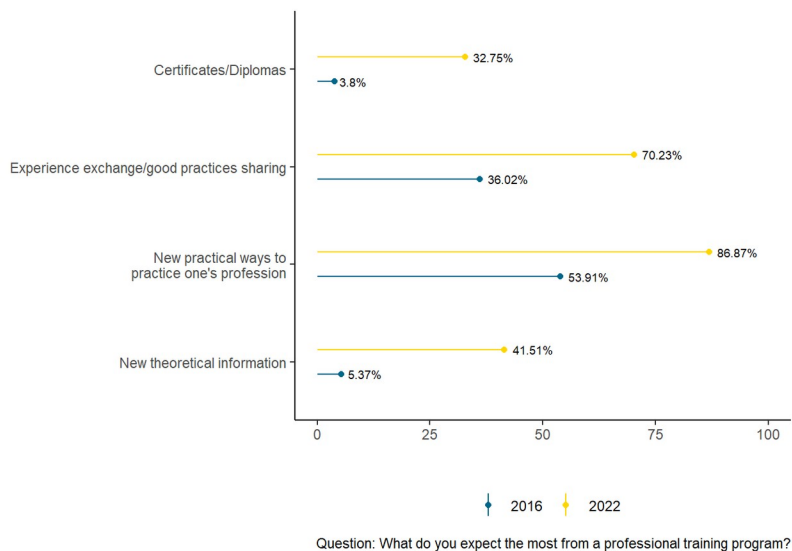
Figure 2

Q6: Regarding the opinion on the *personal level of professional training according to the requirements of the current and prospective positions*, results show that respondents of both surveys consider to a *large* or *very large extent* that they possess professional training corresponding to their job (over 80%) and below 2% declare that their training fulfills to a *small* or *very small extent* the requirements:

	2016	2022
1. To a very small extent	0.4%	0.5%
2. To a small extent	0.9%	1.4%
3. To some extent	17.9%	18.0%
4. To a large extent	58.4%	56.2%
5. To a very large extent	22.4%	23.8%

Q7 Speaking about *attending professional training programs* (Figure 3):

The 3 answer options maintain the same order (in 2022, compared to 2016), such that the *development of professional competences* represents the main motivation for over 89% in the first

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

40

survey, and more than 91% in the second. The second places is taken by the *support in exercising the profession,* with increasing percentage in 2022 (over 51%, from 28%). Below 20% say that professional training ensures the *possibility to advance in the workplace*!

Question: Attending professional training programs assures:
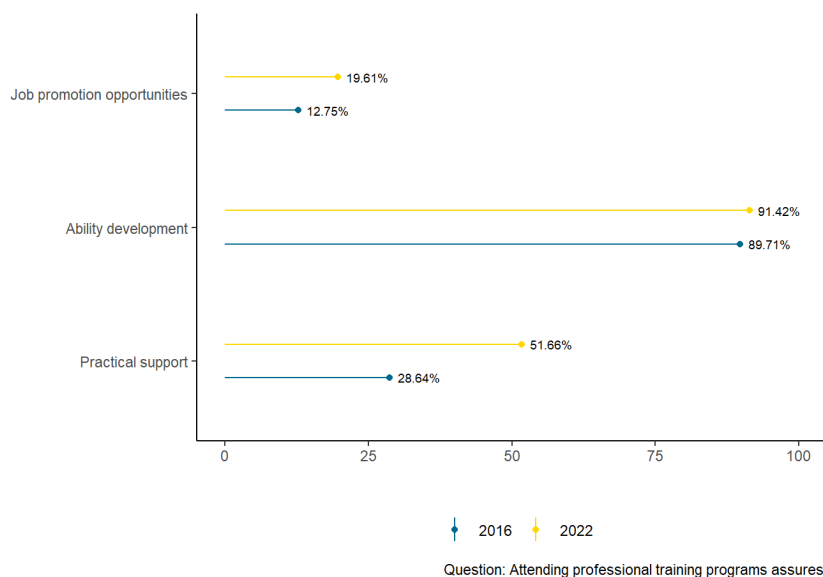
Figure 3

Q3 For the question regarding the number of completed professional training programs, answers are as follows: in 2016, 6,3% were involved in more than 6 programs, 7,8% in 5-6, 25,5% in 3-4 programs, 49,7% in 1-2 and only 10,7% declared they did not get training.

After 6 years, these percentages changed as such: 10,7% – more than 6 programs, 8,1% – joined 5-6 programs, 17,2% – completed 3-4 programs, 35% – only 1-2 programs, while 29,1% have not completed any form of training in the last 5 years!

Q4 Asking about *resources investement (time and money) for professional training* (different types of courses, LIS field bibliography), the respondents' opinions are presented in Table 2:

Table 2:

	2016		2022	
None	3 (0.7%)			5 (0.9%)		
Very little	18 (4.0%)			35 (6.1%)		
Little	33 (7.4%)			48 (8.4%)		
Some	193 (43.2%)			238 (41.7%)		
Many	172 (38.5%)			195 (34.2%)		
A lot	28 (6.3%)			50 (8.8%)		

Q8: *What types of training do you consider adequate?*

Answers to this questions place *practical courses realized with teachers from within ALR* as the top choice, both in 2016 and 2022, with a percentage of 74.4 and 73.6, respectively; the second place choice is the *training with a practical, interactive component – workshops on various specialization topics,* with increasing percentages in 2022 (over 69%) compared to 2016 (about 66%) – Figure 4.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

41

Question: What does attending professional training programs assure for you?

Figure 4

The following questions ask for details about the organization, theme and criteria in choosing such a program, difficulties which might prevent attending: (Q$_1$9, Q$_1$10, Q$_1$11, Q$_1$12, Q$_1$13), (Q$_2$9, Q$_2$10, Q$_2$11, Q$_2$12, Q$_2$13).

Answers to question **Q9**: *What aspect from your professional training would you like to improve?* (Figure 5) place *library and information science competences* as the top choice , in almost equal percentages between 2016 and 2022, the second choice is *ILS competences,* showing a significant increase in the requests for ICT competences (from 40% to over 54%) and *communication and relational competences* (from approximately 42% to about 51%).

Question: What aspect from your training would you like to improve?
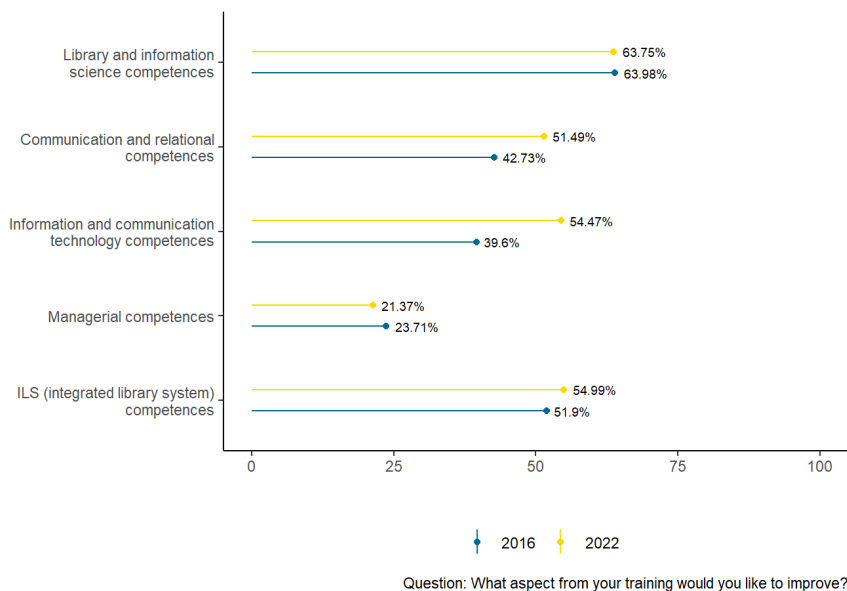
Figure 5

Q10: *Course subject preferences:*

The respondents were asked to grade on a scale of 1 to 5, to what extent they consider important the participation in courses on topics presented below. The results were interpreted according to the Methodology section described previously *(very useful, useful, a little useful, irrelevant, not at all useful)*.

1. *Digital libraries. Institutional repository (licensed resources/archives) vs institutional repository (open access)* is a new subject in the 2022 survey and is considered useful and very useful by more than 72% of respondents, while approximately 12% did not choose any option (in 2022).

2. *Research and publishing in library and information sciences* is also a new topic, the 2022 responses showing that it is useful/very useful for over 60%, while 14.41 consider it not very useful, and over 16% did not choose any option. We will study the options for this topic based on age and the type of library the respondents work at.

3. *Items/documents borrowing & ILL* is a topic with decreasing popularity in 2022 – 58.17% (compared to 2016, when it was considered useful/very useful by 84.27%). 20.56% of respondents did not pick this option at all in their preferences.

4. The topic regarding *Preservation/conservation of the collections* is a top choice *(useful/very useful)* among 72.36% in 2016 and only 56.94% of respondents in 2022. Also, 20.56% of them do not list this answer at any place on the scale.

5. *Information literacy* is one of the favorite topics among professionals, with *useful/very useful* percentages varying between 83.59% (in 2016) and 71.18% (in 2022).

6. Preferences for *Collections development* drop from 79.55% (in 2016) to 65.56% (in 2022), when it was considered useful/very useful, 14.38% and 11.42% respectively see it not very useful. The remaining percentages account for answers of *irrelevant, not at all useful* or when the topic was not selected at all.

7. The *record of library collections* is of interest for approximately 68% of the professionals (in 2016), and slightly lower in 2022 (64%). For over 31% and 19%, the topic was *a little useful* or *not at all useful*, and not selected at all, respectively (over 16% in 2022).

8. The wish to train in *Integrated library systems* stays high (>78% in 2016 and almost 76% in 2022).

9. More specialized and current topics were proposed, such as *Bibliographic references management tools*, and the results prove the necessity to know them by the specialized personnel, as well as the analysis of the origin of the respondents. The topic is useful/very useful for 58.53% of the respondents, and considered *a little useful, irrelevant, not at all useful* by >22% or not selected by over 18% (în 2022).

10. The necessity to organize courses on *Library law* is proven by the answers which consider the topic useful/very useful (86.52% in 2016, 70.13% in 2022), considered *a little useful, irrelevant, not at all useful* by 13.48% and 15.82% of the respondents, respectively. The answers will be detailed based on age, level of studies and type of library of origin for this question as well.

11. Traditional activities like *Documents processing (cataloguing, classification, indexing)* remain among the librarians' preferences, because they are useful both for the construction of the library catalogues, as well as, in a simplified form, of digital repositories. Thus, although the percentage decreased, 87% in 2016 and 67% in 2022 of the respondents would take part in cataloguing training. High percentages were calculated for indexing too, although the level of interest is also decreasing in 2022.

12. The possibility of obtaining additional funding, even though libraries are, depending on their type, not very eligible to apply directly, determined the specialized personnel to orient themselves towards courses on *library project management* (79.11% in 2016 and 76.10% in 2022). Also, the

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

43

percentage of those who consider the topic *a little useful* is decreasing in 2022 (5.45%) compared to 2016 (14.38%), and the *irrelevant* or *not at all useful* opinions are few, and relatively constant (2016 - 6.52% vs 2022 - 6.15%).

13. *Library marketing*, a topic which was successful in the past (88.54%) being considered useful/very useful in 2016, is decreasing in 2022 (68.90%). In 2022, 16.52% of the respondents did not pick this option at all.

14. *Library statistics and evaluation* is a topic perceived as abstract, with data difficult to collect and interpret, and decreased request from ~ 84% to ~ 58%, drop caused by the almost 20% of non-respondents in 2022.

15. *Electronic scientific resources in information & documentation* change from 82.69% to 71.18% in 2022, when the non-respondents percentage is 16.87%.

16. The topics regarding *Research outputs management* and *Access models to electronic scientific literature* are newly introduced in the 2022 version of the survey, and results show the low level of knowledge and/or understanding of new concepts in LIS, and therefore the need for training the specialist who can then teach users how to access the electronic scientific literature, and support the research activities through research output management. The correlation between the reduced level of knowledge of these topics and other factors measured in the survey will be analyzed. 66.66% of respondents say the topic of *access models to electronic scientific literature* is *useful/very useful*, 16.70% did not answer, and the rest consider it *a little useful, irrelevant*, or *not at all useful*. The level of knowledge and application of the concept is even lower in the case of *research outputs management*, a new but niche subject, being useful/very useful for 53.60% of the respondents, with a significant number of non-respondents at over 21%. The results are presented below, in Figure 6.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

44

Access models to electronic scientific literature

2022	23%		67%
2016	100%		0%

Bibliographic references management tools

2022	27%		59%
2016	100%		0%

Collections development

2022	23%		66%
2016	6%		80%

Digital libraries. Institutional repository (licensed resources/archives) vs institutional repository (open access)

2022	20%		72%
2016	100%		0%

Documents processing (cataloguing)

2022	21%		68%
2016	5%		88%

Documents processing (classification, indexing)

2022	21%		70%
2016	3%		86%

Electronic scientific resources in information & documentation

2022	23%		71%
2016	5%		83%

Information literacy

2022	20%		71%
2016	6%		84%

Integrated library systems

2022	17%		76%
2016	7%		79%

Items/documents borrowing & ILL

2022	30%		58%
2016	5%		84%

Library collection inventory

2022	24%		64%
2016	8%		68%

Library law

2022	20%		70%
2016	5%		87%

Library marketing

2022	23%		69%
2016	5%		89%

Library project management

2022	18%		76%
2016	7%		79%

Library statistics and evaluation

2022	27%		58%
2016	4%		84%

Preservation/conservation of the collections

2022	29%		57%
2016	10%		72%

Research and publishing in library and information sciences

2022	25%		60%
2016	100%		0%

Research outputs management

2022	24%		54%

Legend:
- Missing
- Not at all useful
- Irrelevant
- A little useful
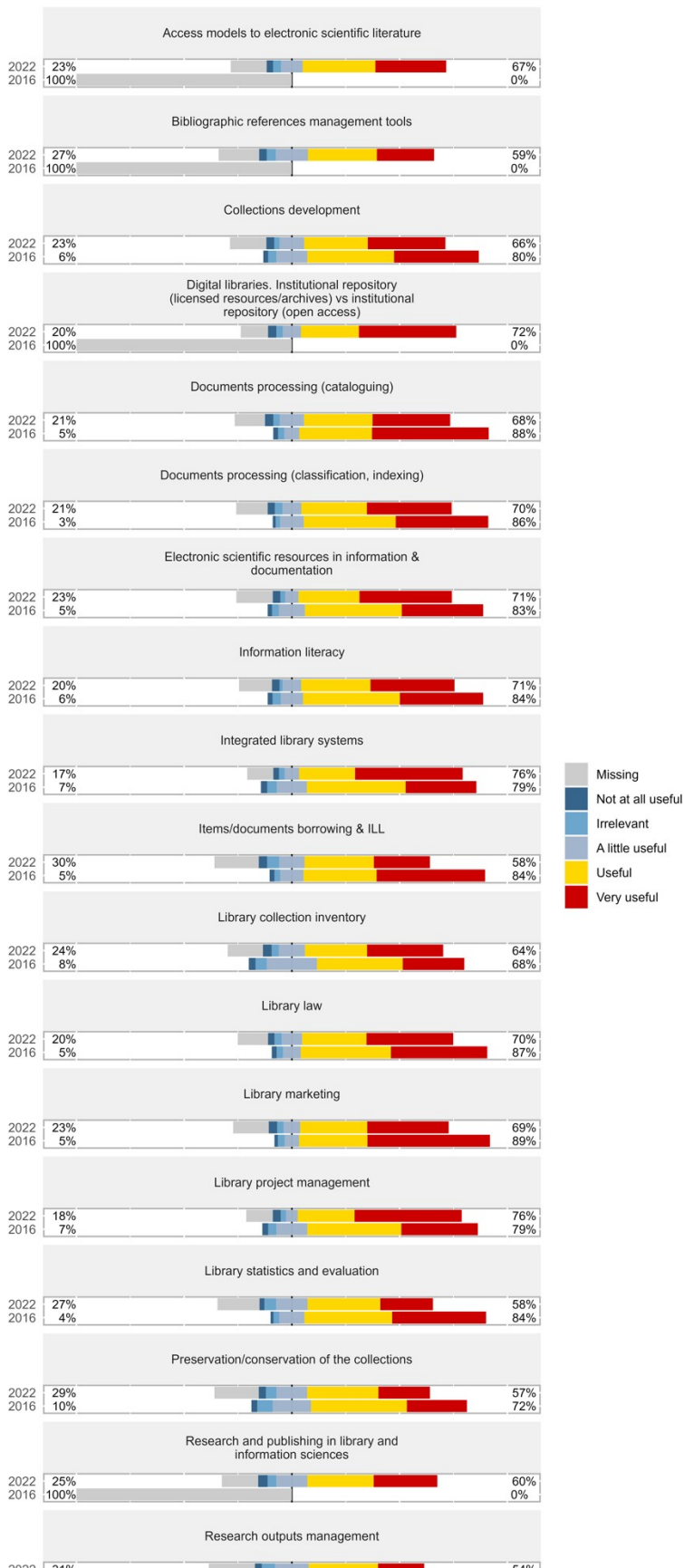- Useful
- Very useful

Figure 6

Q11 *What are the 3 most important criteria you take into accout when choosing a training course/module?* Of the 6 possible options, the top choice is *the addressed topic*, followed by *the training provider/quality of trainers*, and *methodologies of training* in almost equal percentages. Factors which influence the decision less are *costs* and *program duration* (Figure 7).
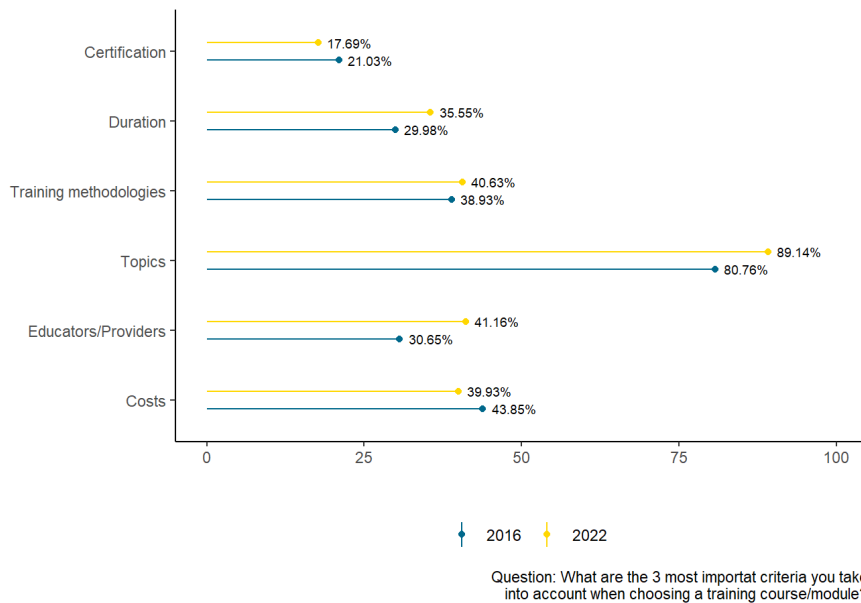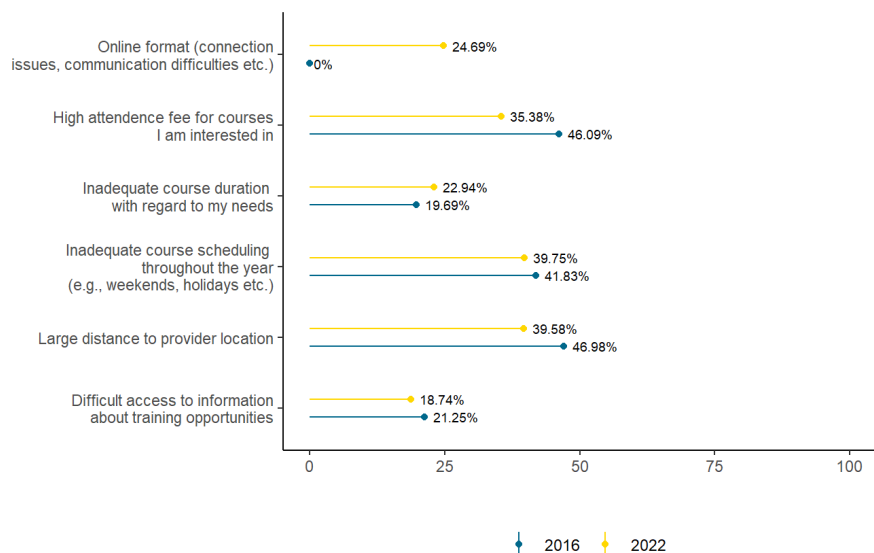

Figure 7

Prin **Q12:** *What are the 3 main difficulties you encountered while taking part in the professional training programs offered by different providers?* Li se cerea respondenţilor să aleagă primele 3, cele mai mari dificultăţi întâmpinate participând la programele de formare oferite de diferiţi furnizori (figure 8).

Q12 - *What are the 3 main difficulties you encountered while taking part in the professional training programs offered by different providers?* (Figure 8)

Question: What are the 3 main difficulties you encountered while taking part
in the professional training programs offered by various providers?

Figure 8

Q13: *Speaking about course format preferences*, the following results have been obtained (Figure 9):
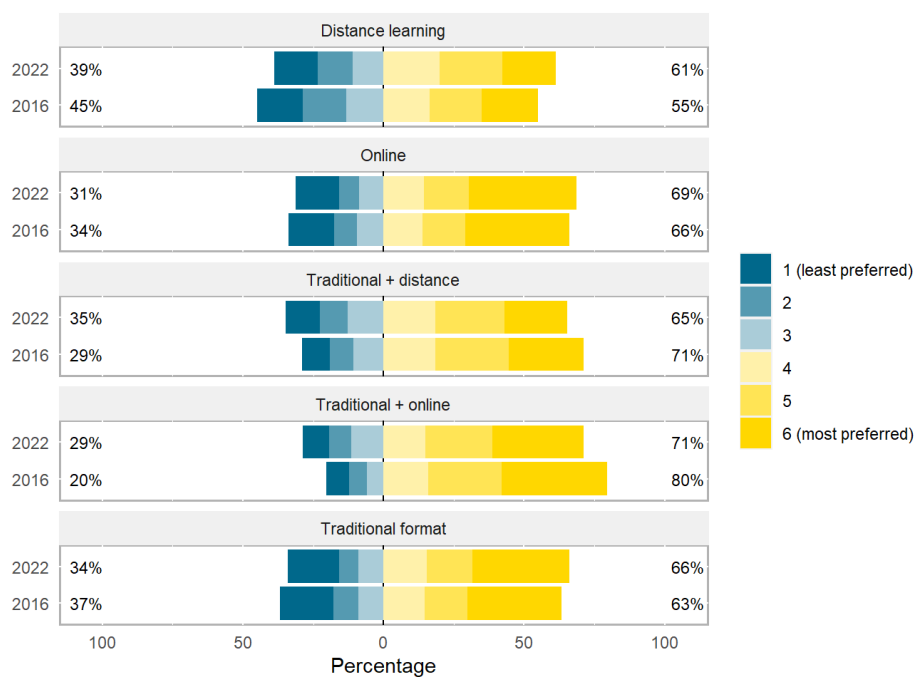

Figure 9

Answer options were *traditional organization* (fully physically present), *remote* (assuming individual work and some meetings with the trainers), *online* (no face to face meetings between participants and trainers), a combination of traditional and remote course, or of the remote and online ones.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

47

Surprisingly, the working program and, implicitly, the training one, during the pandemic, did not influence significantly the preference for a certain type of organization of the trainings. The favorite kind remains the combination of *traditional* and *online* course (80% in 2016, 71% in 2022), the last choice being the *remote* course in both cases. In between lie the *online course* (with 69% in 2022 in second place and 66% in 2016 on third), the *traditional* one (65% in 2022 as 3rd and 63% in 2016 as 4th) and the combination of traditional and remote (65% in 2022 on 4th place and 71% in 2016 in 2nd place). Thus, participants consider the most appropriate organization is combining face to face meetings with online sessions.

Q14: *Speaking about colleagues' training needs* (figure 10), respondents consider the professional training of their colleagues should focus on:
1.Updating specialization competences
2.Development of digital competences
3.Adjusting techniques of providing info-documentary services to the current needs of the users
These training avenues are always considered important (87-88% in 2022), *a necessity of increasing digital competencies* having been highlighted in 2022, compared to 2016 (from 84% to 88%).
The necessity to develop communication abilities with the users and colleagues follows closely, with minimal differences between the two surveys.
In conclusion, one can say the respondents consider all suggested topics as appropriate for the training of their colleagues.
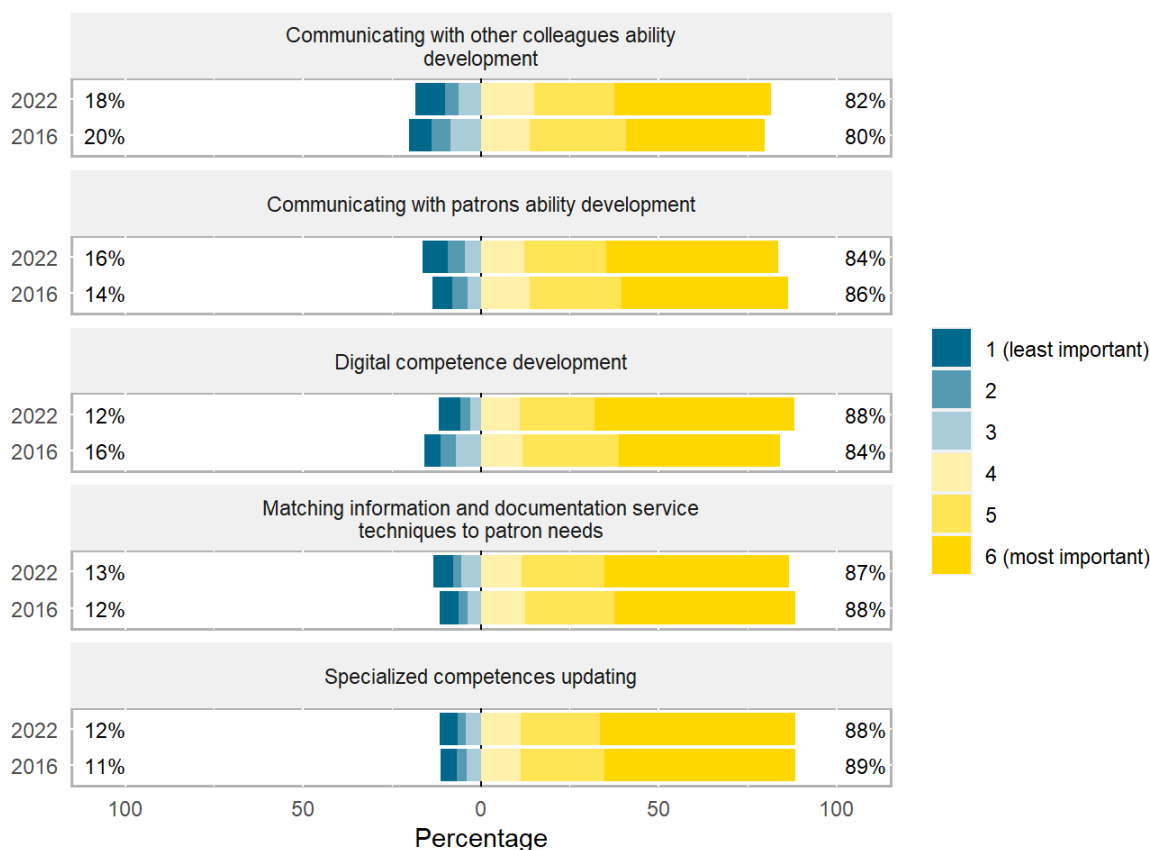

Figure 10

A comparison between their own training priorities and the needs perceived as necessary for the training of the colleagues indicate the same options as the first two choices: LIS competences and ILS competences/digital competences.

The 2 new questions refer to **Q₂15** *(do you consider that the pandemic has affected your professional development - to what extent)* and **Q₂16** *(during 2022-2022, my professional training provider was.....).* The results are illustrated in Table 3.
For almost 48%, the professional association was the most important training provider, on the second place is the institution they work in (>30%), followed by other providers (other info-documentary institutions). Probably one of the most reasons the professional association is a leader of training providers are the free of charges courses.
More than a third of the respondents say the restrictions during the pandemic affected to a large or very large extent their professional development. A quarter perceived it as medium influence, more than a quarter declare a small or inexistent influence, while 1/10 consider the pandmic as a favorable time for professional development. The reason for which 59 respondents say it was a period of professional growth is most likely the possibility to attend these courses online, without considering the disadvantages of this way of teaching.

Table 3

(Q₂15) Training pandemic-related disruptions	Favorable period	59 (10.4%)	
	None	48 (8.5%)	
	Low	104 (18.4%)	
	Mild	143 (25.3%)	
	High	126 (22.3%)	
	Very high	85 (15.0%)	
	Other	0 (0.0%)	
(Q₂16) Training provider (2020 – 2022)	Professional association (as a member)	257 (47.9%)	
	The institution I work in	165 (30.8%)	
	Other info-documentary structure	114 (21.3%)	

4. Discussions and conclusions

The topics of the courses influence significantly the attendance (Q11) and therefore they will be chosen taking this criterion into account. We estimate there are important differences in choosing the topic, based on the type of library the respondents work at. It is to be expected that specialized personnel in school libraries to opt for topics such as *library collection inventory, documents borrowing, documents processing, integrated library systems,* while that from university libraries to prefer *bibliographic references management tools, research outputs management, access models to electronic scientific literature*. There is an overlap, however, like *information literacy* or *library project management.*

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

49

Regardless of the topic, the digital competences are a priority.

This study will be followed by a more detailed analysis, with special attention being paid to obtaining results such as: the variation of subject depending on the year (wave), the variation of preferences on the subject according to respondents' age, the variation of preferences on the subject according to level of education and the variation of preferences on the subject according to type of library the respondent works in.

The analysis of the influence of the pandemic on professional development indicate that more than 37% of the respondents have been *highly* or *very highly* affected, more than 25% chose the *mild* option, 27% have been affected *to a small extent* or *not at all*, and about 10% considered it a *favorable period*. Judging by these answers, we consider appropriate an increase in number of programs offered, as well as the diversification of their topics.

Regardless of the results of the future study, it is recommended:

-To organize courses in the preferred form by the respondents – a combination of traditional (face to face) and online; this way can partially reduce the issues cited as difficulties in choosing a course (*large distance to provider location);*

-To include as many practical aspects as possible (Q8), which can provide new practical ways to exercise one's profession (Q5);

-To involve trainers from the professional association (Q8), which can partially mitigate another issue which arises when choosing a course (*high attendance fee for courses);* for the topics newly introduced due to the development of the field, the training of some of the best specialists in the country to become trainers themselves is necessary.

-To mainly discuss topics from the field of LIS, in a digital context, but also topics which support the application of specialty knowledge (i.e. *communication skills*).

When asked what they expect from a training program (Q5/Q11), respondents value the least the options obtaining certificates/diplomas (4% vs 33%), though the percentages significantly increased in 2022. Additionally, when asked *what are the 3 most importat criteria you take into accout when choosing a training course/module?,* the certification for obtaining a higher score in various evaluations is the least important factor. Correlating these answers with the experience so far in ALR, and considering the evaluation environment which very much values this kind of documents, it appears the motivation to obtain them is greater than that indicated by the surveys.

Specialists in a library must learn to use statistical data and performance indicators to support the library in front of the stakeholders, to prove the utility of the offered services and resources, and to conceive advocacy campaigns in order to allocate resources.

Considering the assumed role of ALR as main provider of professional development for its members and the influence of the financial factor in the decision to attend the courses, it is necessary that the Association offers authorized training courses as well. These could be organized in collaboration with large university libraries with methodologic purpose, which are also trainining providers.

5. References

BABBIE, Earl. *The practice of social research*. 11th ed., Belmont: Thomson Wadsworth, 2007.

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

50

BECK, Susan E.; MANUEL, Kate. *Practical research methods for librarians and information professionals*. New York: Neal-Schuman Publishers, 2008.

BRYER, J, SPEERSCHNEIDER, K. Likert: Analysis and Visualization Likert Items. R package version 1.3.5, 2016 [Accesat la 1.12.2022]. Disponibil la: https://CRAN.R-project.org/package=likert.

COMTOIS, D. Summarytools: Tools to Quickly and Neatly Summarize Data. R package version 1.0.1., 2022 [Accesat la 30.1212022]. Disponibil la: https://CRAN.R-project.org/package=summarytools.

McBURNEY, Donald H.; WHITE, Theresa L. *Research methods*, 7th ed., Belmont: Thomson Wadsworth, 2007.

WICKHAM, H.; AVERICK, M.; BRYAN, J.; CHANG, W.; McGOWAN, LD.; FRANCOIS, R.; GROLEMUND, G.; HAYES, A.; HENRY, L; HESTER, J; KUHN, M; PEDERSEN, T.L.; MILLER, E.; BACHE, S.M.; MULLER, K; OOMS, J.; ROBINSON, D.; SEIDEL, D.P.; SPINU, V.; TAKAHASHI, K., VAUGHAN, D.; WILKE, C.; WOO K.; YUTANI, H. Welcome to the tidyverse. In: *Journal of Open Source Software,* 2019, 4(43), 1686. doi:10.21105/joss.01686.

Annex 1

2016 (Q_1), 2022 (Q_2)	
$Q_1$1 $Q_2$1	What are your reasons for attending professional training programs? (6 options)
$Q_1$2 $Q_2$2	For you, professional training is…(as importance, 6 options)
$Q_1$3 $Q_2$3	In how many training programs have you benefited from in the last 5 years? (5 options) In how many training programs have you benefited from in 2020-2022? (5 options)
$Q_1$4 $Q_2$4	Do you constantly allocate time and financial resources to professional training (courses, specialty literature etc)? (6 options)
$Q_1$5 $Q_2$5	What do you expect most from a training program? (4 options)
$Q_1$6 $Q_2$6	Do you think your professional training corresponds to the requirements of your current and prospective job? (5 options)
$Q_1$7 $Q_2$7	Attending training programs offer you... (3 options)
$Q_1$8 $Q_2$8	What training method do you think appropriate? (4 options)
$Q_1$9 $Q_2$9	What aspect of your training do you want to improve? (5 options)
$Q_1$10	On a scale of 1 to 5, select from the suggested topics courses which you consider

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

51

Q$_2$10	useful for your professional training. (13 options) (18 options)
Q$_1$11 Q$_2$11	What are your most important criteria in choosing a module/training course? (6 options)
Q$_1$12 Q$_2$12	What difficulties have you encountered while attending training programs offered by various providers? (5 options)
Q$_1$13 Q$_2$13	Regarding the organization of the training, what type of program would you prefer to follow? (5 options)
Q$_1$14 Q$_2$14	What do you think your collegues need most? (6 options)
Q$_2$15	To what degree do you consider the pandemic affected your professional training? (6 options)
Q$_2$16	My provider of professional training was, in 2020-2022 (3 options)
Q$_1$15 Q$_2$17	Age
Q$_1$16 Q$_2$18	Gender (M, F, prefer not to say)
Q$_1$17 Q$_2$19	Residency (rural, uban)
Q$_1$18 Q$_2$20	Place of work (rural, urban)
Q$_1$19 Q$_2$21	Length of employment
Q$_1$20 Q$_2$22	Length of employment in the field
Q$_1$21 Q$_2$23	Type of library you work in (5 options)
Q$_1$22 Q$_2$24	Position (execution, managerial)
Q$_1$23	Initial education
Q$_1$24 Q$_2$25	Level of last completed studies/education (5 options)

Revista Română de Biblioteconomie şi Ştiinţa Informării = Romanian Journal of Library and Information Science
ISSN 2559-5490, ISSN-L 1841-1940 Volume 18 Issue 2 2022
This work is licensed under Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License

52