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Digital Competences of Elementary School Teachers in the Republic of Srpska (Bosnia and Herzegovina)[1]

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Abstract

Digital competences are essential for developing key skills in the modern digital age, including communication, content creation, and participation. These competences significantly influence teachers' ability to integrate technology into their teaching. This paper examines the digital competences of elementary school teachers in the Republic of Srpska, Bosnia and Herzegovina. The study highlights the need for ongoing education in digital literacy, enabling educators to effectively impart necessary knowledge to their students. Survey results indicate that elementary school teachers possess a basic understanding of media and information literacy (MIL), but their overall digital skills remain underdeveloped. Teachers also express awareness of this gap and a desire for further education.

Keywords: digital competence, elementary school teachers, digital literacy, teacher education

[1] The results presented in the empirical part of the study were collected within the project "Through the digital world to digital competencies" which was carried out by the Faculty of Philosophy of the University of Banja Luka in cooperation with the Faculty of Political Sciences of the University of Banja Luka and the Republican Pedagogical Institute of the Republic of Srpska, with the consent of the Ministry of Education and culture of the Republic of Srpska. The project is part of a wider project called "Building trust in the media in Southeast Europe and Turkey - phase 2" funded by UNESCO. Project number: 1251320.

Introduction

The development of information and communication technologies (ICT), the mode of communication in all spheres of society, modern methods of information dissemination and education have influenced the perception of digital literacy as a crucial skill of the 21st century. Considering the rapid development of ICT, which reflects on the daily activities of individuals, new demands regarding skills are emerging. In this context, the Council of the European Union adopted Recommendations on Key Competences for Lifelong Learning, aiming to expedite the process of digitalization and the development of compatible skills (Council of the European Union, 2006). As an annex, the European Framework of Key competences for Lifelong Learning was added (European Commission, 2007).

This was the starting point for the creation of the Digital Competence Framework (DCF) is based on the European Digital Competence Framework for Citizens (also known as Dig Comp), which is developed by the European Commission and is the main tool for the measuring of digital literacy in Europe and beyond (Carretero, Vuorikari & Punie, 2017). The first version of the framework (DigComp 1.0) was published in 2013 by the Institute for Prospective Technology Studies of the European Commission's Joint Research Centre. This framework consists of five competence areas that represent a group of skills: information and data literacy, communication and collaboration, digital content creation, safety and problem solving. Within these areas, competences are individually defined according to the group they belong to.

In the line with the development of ICT and market demands for new digital skills, updated versions emerged DigComp 2.0 and DigComp 2.1, published in 2016 and 2017 respectively (Carretero, Vuorikari & Punie, 2017). The version published in March 2022 is DigComp 2.2 and "includes new examples to take into account the impact of the new technological and social developments such as AI, datification, misinformation and disinformation, Internet of Things, Telework, security and safety and sustainability" (Vuorikari, Kluzer & Punie, 2022, p. 2). DigComp 2.2, like previous versions, contains 21 skills divided into five areas of digital competence. Following the introduction of DigComp, new frameworks of digital competence emerged, based on it, such as the Digital Competence Framework for the European Schools (Schola Europaea, 2020). Another significant document in this field is the European Framework for the Digital Competence of Educators (DigCompEdu), which “provides a general reference frame to support the development of educator-specific digital competences in Europe” (Punie & Redecker, 2017, p. 7). DigCompEdu describes 22 skills divided into six areas.

Digital competences involve the use of a wide range of digital technologies for collecting, processing and disseminating information, communicating, as well as solving various problems in all aspects of life. Additionally, digital competences contribute to the development of other significant skills for the modern, digital age, such as communication, content creation and participation. The UNESCO MIL Curriculum and Competency Framework integrates media, information and digital literacy within the same domain - media-information literacy, although each of them has a separate role and importance. Information literacy focuses on the process of information gathering, from access, evaluation to the ethics of information processing, while media literacy focuses on understanding the function of the media and taking a critical approach to media content. Digital literacy complements the traditional competences of information and

media literacy with technical skills, highlighting the use of digital tools for creating text, images and videos (Grizzle et al., 2021).

Research related to teachers' digital competences mostly indicate their limited abilities to integrate technology into the teaching process, apart from the sporadic use of digital tools (Lund & Aagaard, 2020; Novella-García & Cloquell-Lozano, 2021; Sanders & George, 2017; Skantz -Åberg et al., 2022). Studies on this topic conducted in Bosnia and Herzegovina have given similar results, pointing to insufficiently developed digital competences of teachers and the need for additional education of teaching staff in this area (Trninić, 2017; Vajzović et. al., 2019; Vučetić, 2020; Trninić & Bokan, 2022; Sivrić & Čarapina, Zovko, 2023).

In the Republic of Srpska, according to available research, the level of digital literacy among teachers who teach in primary schools is low. The results presented in this paper, based on publicly available data so far, are the first to address the level of digital literacy among primary school teachers who teach the subject Digital World. Teachers who were teaching Digital World during the school year in which the research was conducted had received training in digital literacy organized by the Republic Pedagogical Institute. On the other hand, teachers who were scheduled to teach the same subject in the following school year had not previously had the opportunity to receive training in this area. Given that the research measured the level of knowledge and skills in digital literacy before and after the training, the results obtained, in addition to demonstrating the effectiveness of the specific training, highlight the need to provide additional training for teachers who teach Digital World. The results showed that teachers who underwent digital literacy training and were already teaching this subject did not have a higher level of knowledge in this area compared to teachers who had not received training and were yet to begin teaching Digital World. In this context, the results presented in this paper can serve as a basis for planning additional training for primary school teachers who teach digital literacy in the Republic of Srpska, as well as in the region. The aim of this paper is to highlight the necessity of continuous education for educators in the field of digital literacy, given the dynamic and rapid development of digital technologies. The main hypothesis of the study is that primary school teachers in the Republic of Srpska lack sufficient knowledge and skills in digital literacy, which are essential for imparting to students the knowledge and skills required for the digital age.

The role and significance of digital literacy in education

The digital competences of elementary school teachers are crucial considering they educate generations born and growing up with digital technologies and for whom the virtual world is equally or more important than the physical one (Twengi, 2019). Their education during primary school should correspond to their needs for skills in the digital environment. The research literature identifies the specific competences preservice teachers should possess in order to embed digital media and MIL in their classroom (Kovalik, Jensen, Schloman & Tipton, 2011; Schieble 2010; Thompson, Schmidt-Crawford & Lindstrom 2015; Wiseman, 2012). In this context, it is also important "to create awareness and develop positive attitude among school teachers so they can use technology effectively in the classroom to facilitate young minds for development of nation" (Rani & Gandhi, 2022, p. 50).

In this context, an increasing number of educational research studies are focusing on digital competences (Søby, 2015). The literature attempts to conceptualize the term digital competences, especially for teachers and students (Erstad & Voogt, 2018). Students' digital literacy is fairly clearly defined in policy documents from this field, but the digital competences of teachers who prepare students for a digital society are not clearly defined (Skantz-Åberg et al., 2022). It is believed that the teaching profession should entail a significantly higher level of digital competences compared to other professions, given that teachers prepare students for specific circumstances in a digital environment (Carpenter et al., 2020; Howard et al., 2021; Novella-García & Cloquell-Lozano, 2021). Based on insights from various empirical studies, Ilomäki et al. propose that digital competences be defined as a set of skills related to: technical competences, using digital technologies in a meaningful way for work, learning, and everyday life, critical evaluation, and motivation for participating in and learning about digital culture (Ilomäki et al., 2016). Research in the field of digital literacy points to a number of shortcomings in the digital competences of teachers working at various levels within the school education system (Skantz-Åberg et al., 2022), with a particular focus on results indicating limited capabilities of teachers to integrate technology into their teaching in a way that goes beyond sporadic use of digital tools (Lund & Aagaard, 2020; Novella-García & Cloquell-Lozano, 2021).

Teachers' digital literacy is especially important, as they are expected to adequately prepare students for everyday functioning in a digital environment and to assist them in using digital tools (Hatlevik, 2017). This primarily involves operational skills such as word processing, editing digital photos, skills for using social media, as well as safe and responsible internet use (Wastiau et al., 2013). Teachers' digital literacy also entails the integration of information and communication technologies into teaching, the use of various devices, applications, and tools in the educational process, along with critical thinking about technology (Tomczyk, 2019). However, many educational institutions that prepare teachers to work with children have not yet integrated digital competences into their curricula, while some teachers are likely not applying digital competences in their teaching. Teacher education in the area of digital literacy is crucial, as it enables the operationalization of the concept of digital competences (Ottestad, Kelentrić & Guðmundsdóttir, 2014). An important aspect of digital literacy is the critical approach that involves the critical competence of teachers when choosing appropriate digital technology for teaching (Ouma et al., 2013), as well as teachers' individual opinions about technology and its application in teaching (Vodopivec, 2011). Digital literacy is important for both teachers and students, but the continuity of teacher education in this area is crucial for enabling students to tackle the challenges they may encounter in the digital environment, which is as important for them as the physical environment (Twengi, 2019).

Education of Elementary School Teachers in the Republic of Srpska on Digital Skills

To continuously foster the development of digital competences in children, a new subject called Digital World, has been introduced into the Curriculum of Primary Education of the Republic of

Srpska (RS) (Bosnia and Herzegovina (BaH))2, taught from the second to the fifth grade. In the 2021/2022 school year this subject began to be taught in the second grade. The Republican Pedagogical Institute of the Republic of Srpska (RPI RS) initiated educational activities in the field of digital literacy, focused on teaching the subject Digital world, in September 2021. Since then, intensive work has been done on educating teachers about new curriculum for this subject, as well as on the implementation of teaching in the second, third, fourth and fifth grade of elementary school (Jerinić, et. al., 2021).

The Ministry of Education and Culture in the Government of the Republic of Srpska recognized the importance of developing the digital competences of children and youth. In this context, the Strategy for the Development of Preschool, Primary and Secondary Education and Education of the Republic of Srpska for the period 2022-2030 was adopted, emphasizing the significance of developing digital literacy and digital competences of teachers (Ministry of Education and Culture in the Government of the Republic of Srpska, 2021). When drafting this strategy, international documents significant for the field of education were also taken into account, including the Digital Education Action Plan 2021-2027 (European Commission, 2020), which sets forth the vision of the European Commission for high-quality, inclusive and accessible digital education in Europe.

The Action Plan for the Implementation of Reform Processes in the Field of Preschool, Primary and Secondary Education in the Republic of Srpska (Ministry of Education and Culture in the Government of the Republic of Srpska, 2019) envisaged training of the both students and teachers to learn and teach in a digital context.

Methods

Research on the digital competences of elementary school teachers in the schools of the Republic of Srpska was conducted from November 9 to 24, 2022. Survey-based investigations were carried out with the members of the mentioned groups, using an online questionnaire method. Given that the data collection was carried out as a project that also involved educating the target group about media and information literacy and digital literacy, the survey was conducted in physical contact with the teachers immediately before the education session. Participants were provided with a QR code to scan, leading them to the Google Forms questionnaire link. The study is part of a broader project, and the obtained results will serve as the basis for the development of a plan and structure for the upcoming training of elementary school teachers in the field of digital literacy.

The selection of participants was conducted through cluster sampling based on their geographic location. The starting point for sampling was the regionalization of the Republic of Srpska stated in the Amendments and Supplements to the Spatial Plan of the Republic of Srpska until 2025 (National Assembly of the Republic of Srpska, 2015). According to this document, the Republic of Srpska consists of six regions: Prijedor, Banja Luka, Doboj, Bijeljina, East Sarajevo and Trebinje. The research was carried out at the level of each of these regions in one selected school (the exception was the Banja Luka region, where, due to the size of the mentioned region, research activities were carried out in two schools). Communication with schools and contact with teachers were

[2] Bosnia and Herzegovina is comprised of two socio-political entities, the Republic of Srpska and the Federation of Bosnia and Herzegovina, and the Brcko District.

facilitated by the Republican Pedagogical Institute of the Republic of Srpska (RPI RS). In each region, a school was selected that is technically best equipped to conduct research and education, which does not mean that only teachers from that school participated in the research, but that all participants from a region gathered in one school. The Republic Pedagogical Institute chose the school based on its insight into the equipment of all schools in the area. From each school in a given region, one or two teachers from the primary education department (depending on the number of teachers in the school) could participate in the education and research, voluntarily applying to the Republic Pedagogical Institute based on the letter sent by the Institute to all primary schools in the Republic. Participation in the research was not mandatory for schools or teachers, so not all schools responded3.

The sample (N = 180) comprised teachers who taught during the 2022/2023 school year at the second and third grade levels. They were selected from those who had undergone continuous training organized by the Republican Pedagogical Institute of the Republic of Srpska during 2021 and 2022. Additionally, teachers who were teaching at the first, fourth and fifth grade levels at that time, and who had not undergone RPI training were included in the sample.

The questionnaire, aimed at assessing the level of digital literacy (digital competence) of classroom teachers in primary schools of the Republic of Srpska, consisted of three parts: an introductory part, a general part and the main part. The introductory part provided an overview study and instructions on how to fill out the questionnaire. The general part collected demographic data, while the main part was divided into five areas of digital competences (information and data literacy, communication and interaction/collaboration, digital content creation, safety, problem solving). The questionnaire contained a total of 27 questions (five questions in the demographic section and 22 questions in the main part of the questionnaire). The questions were closed-ended with pre-defined answers prepared according to the Program for the Training of Teachers and Students in the Field of Media and Information Literacy (Unesco, 2021), as well as the Digital Competence Framework for European Schools (Schola Europaea, 2020) whose areas of digital competences were easiest to adapt to the method and framework of education in the Republic of Srpska.

Results

The results of the research on the level of digital competences among elementary school teachers are summarized in five categories: information and data literacy, communication and collaboration, digital content creation, safety, and problem solving.

Information and Data Literacy

In the segment on digital competences related to information literacy and data literacy, the level of knowledge and competences related to information literacy was examined, with a special emphasis on the use of data and information from various sources.

[3] In the Republic of Srpska, according to data from the Ministry of Education and Culture of the Republic of Srpska, there are 187 registered primary schools (Ministry of Education and Culture in the Government of the Republic of Srpska, 2020).

The results show that the majority of respondents (66.1%) were able to accurately identify the definition of information literacy, while less than a third of respondents (28.9%) could recognize the basic functions of the media and other sources of information. Content was considered the most critical aspect of media and other sources of information presentation by 88.9% of respondents. Additionally, 97.2% of respondents considered efficient transmission, storage, search, handling, and mutual compatibility as advantages of having information in digital form.

Table 1:

Information Literacy Elements Utilized by Teachers in Teaching

Please select the elements of information literacy that you apply in teaching (Multiple answers are possible) N=180	f	%
Observing/recognizing the need for information	63	35
Determining the source of information	44	24,4
Finding and searching for information	137	76,1
Analysis and evaluation of information quality	62	34,4
Organizing, storing or archiving information	90	50
Using information in an ethical, effective and efficient way	82	45,6
Creating and communicating new knowledge	102	56,7
None of the above	0	0

Table 1 shows which elements of information literacy teachers most commonly apply in teaching. Topping the list is finding and searching for information (76.1%), followed by creating and communicating new knowledge (56.7%) and then organizing, storing or archiving information (50%). Teachers least apply the element of information literacy that refers to determining the source of information (24.4%).

Communication and Collaboration

In the part of the research focused on communication and interaction, the level of knowledge of the participants was examined regarding: interaction, sharing, participation and collaboration via digital technologies and digital identity management. Table 2 presents the results related to the ranking of the usefulness of the use of interactive multimedia in teaching.

Table 2:

Ranking of the Usefulness of Using Interactive Multimedia in Teaching

Rank from 1 to 5 the impact on teaching and learning results of using interactive multimedia in teaching (1 = least useful, 5 = most useful) N = 180	1 (f)	2 (f)	3 (f)	4 (f)	5 (f)
Interactive websites	**9**	**27**	**59**	**45**	**40**
Presentations	**0**	**7**	**45**	**50**	**78**
Online discussions	**31**	**37**	**65**	**34**	**13**
Blogs	**35**	**49**	**55**	**33**	**8**
Wikis	**43**	**42**	**57**	**30**	**8**
Wikipedia	**4**	**21**	**47**	**58**	**50**
Digital libraries	**9**	**29**	**42**	**50**	**50**
E-books	**7**	**21**	**45**	**55**	**52**
Digital files with audio and video recordings	**5**	**14**	**36**	**54**	**71**
Electronic games for learning and teaching	**9**	**15**	**36**	**55**	**65**

The respondents rated presentations as the most effective interactive multimedia for use in teaching (78 respondents), followed by digital files with audio and video recordings (71 respondents) and electronic games for learning and teaching (65 respondents). They consider wikis, blogs and online experiences to be the least effective. When it comes to the activities through which the most digital traces are left, only 21.7% of the respondents answered correctly (via social networks and connected devices), while 39.4% believed that we leave digital traces mostly through the IP address when accessing a website.

Digital Content Creation

The part of the research related to the creation of digital content included questions aimed at assessing knowledge about: the creation of digital content, copyright and programming. *Table 3* shows the results related to the most frequently used tools from the Office 365 suite for creating digital content.

Table 3:

The Most frequently Used Tools from the Office 365 Suite for Creating Digital Content

Which of the listed tools from the Office 365 suite do you most frequently use to create digital content? (Multiple answers are possible) N = 180	f	%
OneDrive	31	17,2
Class Notebook	10	5,6
OneNote	7	3,9
Sway	1	0,6
Teams	83	46,1
Forms	7	3,9
Planner	3	1,7
SharePoint	2	1,1
Yammer	0	0
PowerPoint	136	75,6
Word	160	88,9
Excel	90	50
Calendar	37	20,6
Outlook	33	18,3
None of the above	3	1,7

For creating digital content, respondents most often use Word (88.9%), then PowerPoint (75.6%), Excel (50%) and Teams (46.1%), while the least they use Forms (3.9%), Planner (1.7%), SharePoint (1.1%), Yammer (0%), Class Notebook (5.6%), OneNote (3.9%), Sway (0.6%).

Regarding copyright infringement when using digital content, 171 respondents are aware that downloading and using someone else's text without citing and/or obtaining permission from the author is a copyright infringement, while 42 respondents know that downloading and using information in the public domain without citing and/or obtaining permission from the author does not constitute copyright infringement. Also, majority of the respondents (67.2%) know what an algorithm is.

Safety

Part of the research on security on the Internet was related to the examination of the level of knowledge of the participants about the protection of personal data and privacy with a special focus on the mechanisms of privacy protection on the Internet. The results showed that the majority of respondents are familiar with the options for reporting sexual exploitation and abuse of children in the digital environment in Bosnia and Herzegovina (BaH), as well as the rights related to the storage, sharing, deletion and management of personal data. Respondents mostly educate themselves about the safe use of the Internet through the media (60.6%), on websites intended

for that (51.1%), as well as from conversations with friends (50.6%), while for this purpose they least use educational literature (30.6%). *Table 4* shows the privacy protection mechanisms on the Internet that respondents use the most.

Table 4:

Internet Privacy Protection Mechanisms

How do you protect your privacy online? (Multiple answers are possible) N = 180	f	%
I log out of all accounts before browsing the Internet	88	48,9
I have antivirus programs installed on the devices I use to access the Internet	101	56,1
I use programs to hide my IP address	14	7,8
I do not enable location on my mobile device	95	52,8
I do not leave personal information whenever possible	152	84,4
When downloading an app, I check the settings (what can be restricted and turned off)	58	32,2
I regularly delete apps I do not use	95	52,8
I filter my content on social networks	45	25
I do not accept cookies, unless it is necessary to access certain content	114	63,3
I only download files from trusted sources	77	42,8
I delete my account immediately after an online purchase	22	12,2
None of the above	0	0

As a mechanism for protecting privacy on the Internet, respondents mostly use the option not to leave personal data whenever possible (84.4%), then not to accept cookies, unless it is necessary to access certain content (63.3%), as well as installing an antivirus program on the devices they use to access the Internet (56.1%). They use programs to hide IP addresses (7.8%), delete accounts immediately after online shopping (12.2%) and filter their content on social networks (25%).

Problem solving

The last segment of the examination of the digital competences of elementary school teachers was related to problem-solving and aimed at measuring the level of knowledge about: solving technical problems, creative use of digital technologies and identifying deficiencies in digital competences.

The results showed that the majority of respondents were not ready to use modern equipment for work in the classroom (laptop and interactive whiteboards) without prior training (68.3%), and that the majority (57.2%) believed that the level of their digital competence was not sufficiently developed and needed improvement. For additional lesson preparation, they most commonly use the Internet (88.3%), while archives (6.7%) and museums (4.4%) use the least for this purpose. *Table 5* shows the results related to the role of encouraging algorithmic thinking in students.

Table 5:

Algorithmic Thinking

We do not encourage algorithmic thinking among students to foster: N =180	f	%
Digital communication	58	32,2
Easier resolution of problem situations from the environment	76	42,2
Digital dexterity, efficiency and automation	46	25,6

Two thirds (67.8%) of respondents are not familiar with the role of encouraging algorithmic thinking among students and believe that it does not encourage easier solving of problem situations and digital dexterity.

Discussion

The respondents showed a high level of knowledge when it comes to defining terms and recognizing the basic elements of media and information literacy, as well as a positive attitude towards MIL, but the results indicate a lack of knowledge about the basic functions of media and other sources of information, about determining information sources, critical access to information and its evaluation, as well as recognizing the need for information. Similar results were found in a study on the attitudes of preservice teachers about teaching media literacy, where the participants expressed a positive attitude about media literacy and MIL skills (Gretter & Yadav, 2018).

Furthermore, within our study, the respondents showed a high level of knowledge when it comes to choosing interactive multimedia for use in teaching, in the context of their effectiveness. However, the results indicate a low level of knowledge among elementary school teachers when it comes to managing digital identity and creating digital footprints, which could affect the teaching and support of students' digital competences given the assumption that teachers' belief and trust in digital technologies can influence students 'attitudes (Hatlevik, 2017). "Teachers must be able to use technology in their own teaching so that they can help students to manage the digital competence aims in the curriculum" (Hatlevik, 2017, p. 558). Similar results are those of the research in Croatia (Ciboci, Osmančević, 2015), which showed that Croatian language teachers themselves who implement media culture in primary schools point out that they need additional training on media because technology is developing so quickly, that they need constant improvement. Another study conducted in Croatia with teachers from two primary schools showed that the majority of teachers use ICT in their teaching and private lives on a daily basis, citing numerous training sessions they attended in this field as the reason (Kolić-Vehovec et al., 2015). A study conducted at the El Serallo public school in Spain also highlights the importance of teacher education, as the results indicated that the level of digital competences among teachers developed through their experiences in professional development (Gisbert Cervera & Lázaro Cantabrana, 2015).

Furthermore, the results showed that respondents most often use tools for creating digital content that do not require a high level of knowledge and that already exist in the classic Office package, so creating content using them is easier for users. When it comes to the use of more complex, more specific tools, there is a low percentage of use, which may also indicate a low level of digital

competence of the respondents for creating digital content. Only Teams stands out as a tool used by almost half of the respondents, and it belongs to more complex tools. The reason for this may be that its application was encouraged during online classes amid the COVID-19 pandemic and that many teacher trainings were held with the help of this application. According to the research by Aznar and González, teachers should develop 'the interactive tools and the innovative strategies that make this learning process easier for the students' (Aznar & González, 2010, p. 181) in order to support student development while following the curriculum. Respondents showed a high level of knowledge when it comes to knowledge of copyright related to the use of digital content, except for the segment related to the use of information from the public domain. A study conducted in Malta among 118 primary schools also showed that the majority of teachers feel confident using the internet in schools, and several teachers referred to how they taught students about copyright and citing sources from the internet. The study concluded with the need for ongoing professional development for teachers (Spiteri & Chang-Rundgren, 2017).

The results also showed that the respondents have a high level of knowledge about the rights related to personal data, as well as the mechanisms of protection of personal data at the primary level. They lack a higher level of knowledge about specific mechanisms of personal data protection (during online shopping, publishing content on social networks and settings on the various applications they use). On the other hand, the results indicate a low level of knowledge and competence of the respondents in the segment of problem -solving. They mostly rely on classic, common solutions (they use the Internet and the library as sources of information, they wait for organized education, they do not educate themselves through the application of modern technology and they themselves believe that the level of their digital competence is not sufficiently developed and should be improved). A study conducted among school owners, school directors, teachers, student organizations, and students suggests that digitally competent teachers who integrate the use of information and communication technologies (ICT) into the learning process 'are better equipped to communicate educational purposes and clear expectations about ICT use in different contexts (classroom management)' (Moltudal et al., 2019, p. 94). Research from Republic of Serbia showed similar results and teachers' desire for additional education on the application of digital technologies in teaching (Cvetković, Stošić & Belousova, 2018; Maksimović, Osmanović & Mamutović, 2020) A study from Israel concerning the examination of changes in primary schools following the introduction of the National ICT program indicates that time is needed for everyone to adapt to changes within the school system (such as the introduction of a new subject or a new method of teaching). Specifically, 'the results indicated that between the 3rd and 4th years of ICT integration, significant changes still occur in the general school ICT culture and most of its components' (Blau & Shamir-Inbal, 2017, p. 769).

Conclusion

This study has shown that primary school teachers in the Republic of Srpska (BaH) possess basic knowledge of media and information literacy (MIL). However, their digital skills are underdeveloped, particularly in areas such as digital identity management, digital footprint creation, use of complex digital tools, accessing public domain information, personal data protection, and problem-solving. Teachers acknowledge that their digital competences require improvement, indicating their potential for developing digital literacy skills and the need for ongoing education in this area.

A limitation of the study is its non-representative sample, suggesting that research based on a nationally representative sample may yield different results. Additionally, the study employed a quantitative research model, which restricts deeper analysis. Future research using qualitative methods could provide more concrete answers, proposals, and suggestions from teachers.

The study confirmed its main hypothesis and achieved its goal of assessing the knowledge and skills in digital literacy among primary school teachers who teach the subject *Digital World*. The results presented here are the first publicly available data on digital literacy levels among educators in this field in primary schools in the Republic of Srpska. These findings will serve as a foundation for further training of primary school teachers in digital literacy and highlight the importance of continuous education in this area.

Notably, primary school teachers in the Republic of Srpska do not study digital literacy during their university education, as the recent changes to the primary education curriculum —specifically the introduction of the *Digital World* subject for grades two to five — were not accompanied by updates to the teacher education curriculum. Before teaching *Digital World*, teachers participate in multi-hour training organized by the Republic Pedagogical Institute, where they learn about the subject's content and teaching methods. However, the relevant ministry and the Republic Pedagogical Institute do not offer additional training for teachers in this area. This study emphasizes the necessity and continuity of additional training for teachers, given the constant evolution of digital technologies and the advanced knowledge that students already possess and apply.

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