European Training Foundation

DIGITAL COMPETENCES OF TEACHERS IN SERBIA

Pilot of the Digital Needs Analysis Tool for Teachers (DNATT) 2020

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ABBREVIATIONS LIST

COVID19 – Corona Virus Disease 2019

CPD – Continuous Professional Development (of teachers)

DigCompEdu - Digital Competence Framework for Educators

DNATT - Digital Needs Analysis Tool for Teachers

ERI SEE – Education Reform Initiative of South East Europe

ETF – European Training Foundation

EU – European Union

IEQE - Institute for Education Quality and Evaluation

IIE - Institute for Improvement of Education (

JRC - Joint Research Council

MoESTED - Ministry of Education, Science and Technological Development of the Republic Serbia

MOOC - Massive open online course

OER - Open educational resources

PD – Professional Development

SEE - South East Europe

SELFIE - Self-reflection tool

TET – Teachers' Education and Training

VET – Vocational Education and training

INTRODUCTION

Purpose of the project

This national report is part of a project to develop and test a self-assessment process to identify and analyse the digital competences of teachers in five countries[1], to analyse relevant current CPD provision and to identify CPD needs. It builds upon the European Digital Competence Framework for Educators (DigCompEdu)[2] that defines 22 digital competences organised in 6 Areas[3]. The focus of the DigCompEdu framework is not on technologies, but rather on how educators can use digital technologies to enhance all parts of teaching and learning.

The first phase of this research, led by ERI SEE,[4] was concerned to describe, analyse and evaluate the processes for needs analysis with respect to in-service teacher training in South East Europe. The current phase of the research is concerned to develop a Digital Needs Analysis Tool for Teachers (DNATT) that makes it possible to assess the adequacy of the CPD offer in relation to teachers' digital competence needs and to help schools, countries and donors to improve quantity and quality of training for educators.

The survey questionnaire incorporates the EU's Joint Research Council's 'Check-In' self-assessment tool[5] to map the digital competences of a sample of teachers and to audit provision of digital competences for teachers. In addition, this survey includes other questions – with the intention of helping actors at school, national and regional levels to analyse and exploit the data collected.

This report sets out the findings and conclusions for Serbia. As part of the pilot, two schools received detailed analysis that broke down the findings for their own staff. The other national reports and a comparative report that explores the findings across the five countries, together with a report that evaluates the methodology, can all be found at https://openspace.etf.europa.eu/resources/pilot-needs-analysis-tool-digital-competences-2020.

[1] Albania, Montenegro, Moldova, North Macedonia and Serbia

[2] https://ec.europa.eu/jrc/en/digcompedu

[3] A new version of the DigCompEdu's self-reflection tool called SELFIE for teachers is under development as a key initiative of the new European Commission's Digital Education Action Plan 2021-27. The new version will preserve principles, aims and structure (3 axis, 6 areas, 22 competences), incorporating revised items based on the emerging pedagogical need and challenges for blended learning. The new version is being piloted (11/20 – 2/21) with its launch planned in September/October 2021.

[4] https://openspace.etf.europa.eu/wikis/network-school-based-cpd-coordinators

[5] https://ec.europa.eu/jrc/en/digcompedu/self-assessment

National system for needs analysis for teachers (ERISEE Report)

According to the *Regulation on Continuing Professional Development and Title Acquisition of Teachers, Preschool Teachers and Professional Associates*(Official Gazette, no. 81/2017and no.48/2018, art. 24)[6], teachers, preschool teachers and associates are required to earn 100TET/CPD points (hours) during a five-year period, out of which at least 80 points should be earned for attending programmes and for participating in professional gatherings(e.g. one day of conference is equal to one point) approved by the Institute for Improvement of Education (IIE). The accredited programs are presented in an online catalogue (there are currently more than 1000 programmes in the catalogue).

The needs of teachers for TET/CPDs in Serbia are identified through the process of self-evaluation (individual and school level) and external evaluation (individual and school level), as well as through conducting research (school, regional and state level).

At the individual level, teachers identify their need for TET/CPD by using the *Questionnaire for individual self-evaluation of teacher competences* (26 items assessed on the 5 point Likert' scale).This questionnaire is designed by the Institute for Improvement of Education (IIE)[7]in accordance with the *Competency Standards for the teaching profession in Serbia* in order to help teachers in self-assessment of their own strengths and weaknesses regarding professional competences. Based on the results obtained by this self-assessment instrument teachers creates an individual annual professional development plan in four competence areas: C1 - competences for teaching area, subject, and didactics; C2 – competences for teaching and learning; C3 - competences for supporting students' personal development; C4 - competences for communication and cooperation. If a teacher was subject to professional-pedagogical supervision (due to a complaint about their work or as a part of regular external evaluation of the school), the teacher should include the measures or recommendations requested by the pedagogical advisor in their professional development plan. The data is analysed by the teacher himself/herself, and teachers can be assisted in doing so by professional associates (school psychologist or pedagogue) or a coordinator of the CPD team (which every school is obliged to compose and appoint).

[6]*Regulation on Continuing Professional Development and Title Acquisition of Teachers, Preschool Teachers and Professional Associates*

[7]See at: http://www.zuov.rs/programi1/Kompetencije/Anketa.aspx

At the school level, the teachers' TET/CPD needs are identified on the basis of teachers' personal plans for professional development, the results of the school's self-evaluation and the external evaluation of the quality of work, as well as the results of the realization of standards of achievement and other indicators of the quality of educational work. As a part of the self-evaluation process, schools could conduct research related to teachers' needs for the TET/CPD. Data about teachers' needs for the TET/CPD at school level are analyzed by the CPD team.

In some cases, teachers' TET/CPD needs are identified by research conducted and analyzed by Regional Centres for Professional Development which have the authority to plan and coordinate the CPDs at regional level, as well as, to develop of training programs and to monitor their implementation. In Serbia, there are 12 such centres.

At the state level, the needs are identified in accordance with the state education/reform priorities, the priority areas identified by the Minister responsible for education (the Minister determines priority areas for a period of 3 years) and are based on the consideration of the level of development of competences requested for the teaching profession. From 2018 to 2021priority areas are[8]: P1 -improving digital competences of students and teachers and the use of ICT in the implementation of the educational process; P2 -methods of working with children/students in need of additional educational support (children from vulnerable groups, children with disabilities, migrants, etc.); P3 - improving teacher's competences in the area of planning and delivering learning-oriented teaching; P4 - strengthening the educational role of the educational institution through the development of programs for the prevention of violence, discrimination, abuse and neglect.

Periodically, teachers' needs for TET/CPD are identified by national and/or international research. For example, following the introduction of inclusive education in Serbia in 2009, the Institute for Education Quality and Evaluation (IEQE) conducted a survey that identified, among other things, teachers' professional development needs in the field of inclusive education[9].Similarly, in 2017, before starting the reform of secondary general education, the IEQE conducted a survey on attitudes of Grammar school teachers which included the examination of their needs for support and CPD[10]. In 2013, the teachers' TET/CPD needs at the state level were identified under the framework of the Teaching and Learning International Study

[8]https://zuov-katalog.rs/index.php?action=page/catalog

[9]Institute for Evaluation of Quality of Education, and Teachers Society of Serbia(2010). Empirical study – Assessment of capacity and needs of teachers for developmentof inclusive education. Retrieved fromhttps://ceo.edu.rs/wp-content/uploads/Empirijsko%20istrazivanje.pdf

[10]Ministry of Education and Institute for Evaluation of Quality in Education (2017). What is good in our Gymnasiums, and what to change? Retrieved from https://ceo.edu.rs/wp-content/uploads/2017/10/Brosura-o-stavovima-zaposlenih-u-gimnazijama.pdf

(TALIS) (Petrović & Kuzmanović, 2017)[11]. In 2015 and 2018, Serbia participated in ETF International Survey of Vocational Teachers and Trainers which among other examined the extent, relevance and impact of professional development, as well as reviewed the state of policy development and provision with respect to CPD for VET teachers (ETF, 2018)[12].

METHODOLOGY

Questionnaire

The questionnaire was based upon the European Digital Competence Framework for Educators (DigCompEdu)[13] and incorporates the CheckIn self-assessment tool[14] to map the digital competences of a sample of teachers and to audit a provision of digital competences for teachers. DigCompEdu details 22 competences organised in six Areas. Each of the 22 competences is addressed by one question. An additional 15 questions were designed to explore the use of digital technologies and continuous professional development of teachers in the time of COVID-19 lockdown.

The English master version of the questionnaire was translated into Serbian directly on the EUsurvey tool. Three teachers filled in the questionnaire to provide the researcher with feedback about the quality of the translation, comprehensibility of questions and the duration of the questionnaire. Corrections of the translation were carried out based on the teachers' feedback. Questions from Area: Teaching and Learning were revised together with representatives from the Ministry of Education Science and Technological Development (MoESTD), in order to improve their quality (e.g. to stress teacher's role as facilitator of the learning process) and to align them with the national *Framework for digital competence – Teachers for digital age 2019*[15].

Sample

The schools that were included in the sample were selected by random selection of general and vocational school ordinal numbers in the DOSITEJ database with data on secondary schools. In Serbia there are 334 vocational schools (with 22.111

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[11]Petrović, D.S.&Kuzmanović, D. (2017). Kako nastavnici iz Srbije procenjuju svoje potrebe za stručnim usavršavanjem? – Rezultati međunarodne studije OECD/TALIS 2013 [How do Serbian teachers assess their needs for professional development? - Results of the OECD / TALIS 2013 international study*, Naučna konferencija po pozivu „Dijalozi u obrazovanju 2017",* Београд, 27. - 27. Apr, 2017.

[12]ETF. (2018). Continuing Professional Development for Vocational Teachers and Principals in Serbia. Retrieved from https://openspace.etf.europa.eu/sites/default/files/2020-01/Serbia%20CPD%20survey%202018_rev.pdf

[13]https://ec.europa.eu/jrc/en/digcompedu

[14]https://ec.europa.eu/jrc/en/digcompedu/self-assessment

[15]http://www.mpn.gov.rs/wp-content/uploads/2019/08/2019_ODK_Nastavnik-za-digitalno-doba.pdf

teachers), 104 general schools (with 6.928 teachers), and 8 mixed schools (with 305 teachers). In total, teachers' workforce in Serbia is 28.714 teachers (see Table 1).

Based on the DOSTIEJ database, a random cluster sample of general and vocational schools was created according to school size (small - less than 50 teachers and large – more than 50 teachers) forming four subsamples - General Small Schools (6 schools), General Large Schools (6 schools), Vocational Small Schools (6 schools) and Vocational Large Schools (6 schools). Each sampled school was assigned two replacement schools which were also randomly selected.

After consulting with the representatives from the Ministry of Education Science and Technological Development (MoESTD), the initial school sample was revised in order to avoid an overlap with secondary schools which were participating in the *State Exam Piloting* at the same time. The new schools (main and replacement schools) were also chosen by random selection.

27 schools participated in the survey – 15 vocational[16] and 12 general schools[17]. Response rate for teachers from both types of schools was 46% while response rate in relation to workforce were 1.8% and 4.7% respectively (for more details see Table 1).

Table 1. Composition of Serbian sample and respond rate

	Vocational Schools	General Schools	Combined or mixed schools	Total
Number of Schools in country	334	104	8	446
Number of Teachers in country	22111	6298	305	28714
Number of schools in sample	15	12	/	27
Number of teachers in	869	645	/	1514

[16] Nikola Tesla vocational school, Batocina; MilevaMarić Technical Vocational School, Titel; Vocational school Vasa Pelagić, Kovin; Vocationa school Mali Zvornik, Mali Zvornik; VukKaradžić vocational school, LJubovija; Technical school, Žagubica; School of Chemistry and Medicine, Vrsac; Mechanical and electrical engineering school, Bor; Dental school, Belgrade; Mechanical and electrical engineering school Gosa, SmederevskaPalanka; Technical school, Mladenovac; Technical school, Tutin; Economics and trade school, Kraljevo; Vocational school, Nis and Economics and trade school, Bor.

[17] Mile Arsenijević Bandera general school, Majdanpek; Genaral school, Paracin; General school, Priboj; BrankoRadičević general school, StaraPazova; Genaeral school Sveti Sava, Pozega, General school October 20, BackaPalanka; First general school StevanSremac, Nis; Mitrovica general school, Sremska Mitrovica, Fourth Belgrade general school, Belgrade; Seventh Belgrade general school, Belgrade; General scholl, Cacak and Pozarevac general school, Pozarevac.

sampled schools				
Responses: Teachers of general subjects	239	199	/	438
Responses: Teachers of professional subjects	118	63	/	181
Responses: other teachers	38	32	/	70
Response rates for sample	Responses as percentage of total number of teachers in VET schools that could have responded **45.45%**	Responses as percentage of total number of teachers in general schools that could have responded **45.58%**	**/**	Total response rate **45.51%**
Response rate in relation to workforce	Responses as percentage of total number of teachers in VET schools **1.79%**	Responses as percentage of total number of teachers in general schools **4.67%**	**/**	Responses as percentage of total number of teachers in all schools **2.4%**

Survey

The implementation of the survey ran for two weeks from the 2nd of November. The researcher contacted the selected schools through an email which explained the goals, duration and the procedure of the research. The principals were also asked to state whether they would like their school to participate in the research and to inform the researcher of their decision. In the letter, the researcher asked the principals to forward the questionnaire to all the teachers in the school and to motivate them to participate in the research. Additionally, during this initial contact, a letter of support from the MoESTD was delivered to the schools. Those schools which did not reply before the stated deadline were additionally contacted through telephone.

Challenges

The biggest challenge for carrying out the research was the workload upon principals and the teachers due to the situation caused by the COVID-19 virus (most schools in Serbia employed a so-called combined method of teaching which involved both direct and online teaching during a week), which slowed down and lowered their participation in the research. For example, a school principal would agree to participate in the research, but due to work overload would not immediately forward the questionnaire to the teachers. Because of this, on several occasions it was necessary to remind the principals to forward the questionnaires to the teachers and

ask them to participate in the research. Additionally, the research was halted on the 13th of November because new EUsurvey version (version 1.5.1.) was released. The problem related to the questionnaire access was resolved on the 18th of November and consequently the research in Serbia was prolonged until the 23rd of November.

FINDINGS

Composition of Sample

In total, 689 teachers from Serbia participated in the research - 294 teachers from general schools and 395 teachers from vocational schools. The majority of the teachers (575 teachers) who participated were experienced teachers (more than five years of teaching experience). Almost two third (427) of respondents teach general academic subjects. Additionally, the largest age group for teachers was 40-49 (253 teachers). For more details regarding the sample characteristics see Table 2.

Table 2.Serbian sample.

Country	Serbia
Number of teachers	689
Age range (years)	
Under 25	1
25-29	44
30-39	180
40-49	253
50-59	168
60 or more	33
Prefer not to say	10
Teaching experience	
1-3	73
4-5	41
6-9	85
10-14	120
15-19	129
20 or more	232
Prefer not to say	9
Type of subject mainly taught	
General academic	427
Vocational or professional	192
Other	70
Teacher of computer science, information technology or programming	72

Proficiency Score

The DigCompEdu framework distinguishes 6 different, progressively advancing competence levels - Newcomers (A1), Explorers (A2), Integrators (B1), Experts (B2), Leaders (C1) and Pioneers (C2). Within the framework these levels are designed to describe typical stages and roles educators pass through when integrating digital technologies into their professional practices.

Regarding the self-assessed level of digital competence, more than one third of Serbian teachers (35.6%) reach level B1– Integrator. This means that every third teacher who participated in this research considers that they experiment with digital technologies in a variety of contexts and for a range of purposes, integrate them into many of their practices, creatively use them to enhance diverse aspects of their professional engagement and that they are eager to expand their repertoire of practices (see Figure 1).

Based on the self-assessment, more than one third of teachers in Serbia (37%) reach level B2 – Expert, which means that they use a range of digital technologies confidently, creatively and critically to enhance their professional activities; purposefully select digital technologies for particular situations, and try to understand the benefits and drawbacks of different digital strategies and that they are curious and open to new ideas, etc.

Proficiency scores and levels

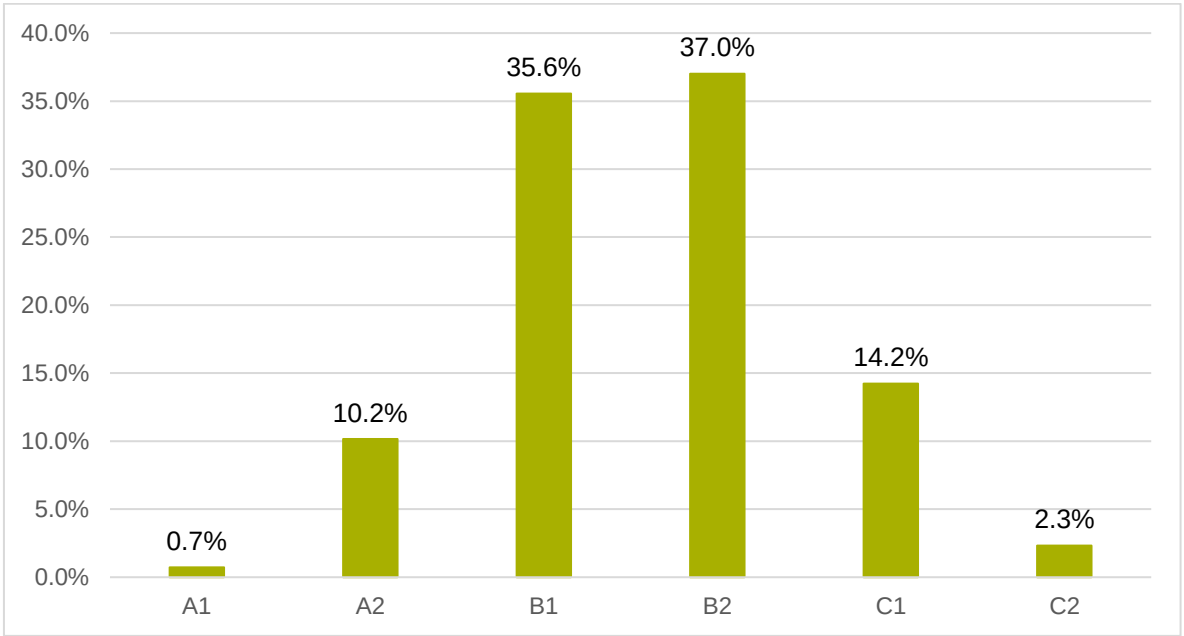


Figure 1. Percentage of Serbian teachers in each proficiency level

Additionally, 14.2% of teachers report, based on the self-assessment, that they have reached level C1 – Leader, in the development of their digital competences. This means that every tenth teacher in Serbia believes that they have a consistent and comprehensive approach to using digital technologies to enhance pedagogic and professional practices; relies on a broad repertoire of digital strategies from which they know how to choose the most appropriate one for any given situation; continuously reflect on and further develop their practices. Furthermore, teachers at the C1 level keep up-to-date on new developments and ideas by exchanging with peers and help their colleagues to seize the potential of digital technologies for enhancing teaching and learning.

Based on the self-assessment, a smaller number of teachers in Serbia (10.2%) are on the A2 – Explorer level. These teachers are aware of the potential of digital technologies and are interested in exploring them to enhance pedagogical and professional practice. They started using digital technologies in some areas but they will benefit from more consistent practice.

Additionally, a very small number of teachers belong to levels A1 - Newcomers and C2 – Pioneers (0.7% and 2.3% respectively) which is in accordance with the expectations of the DigCompEdu framework.

The average proficiency score for teachers in Serbia is 51.1 which is a slightly higher than the Regional average – 49.8.

Proficiency Levels

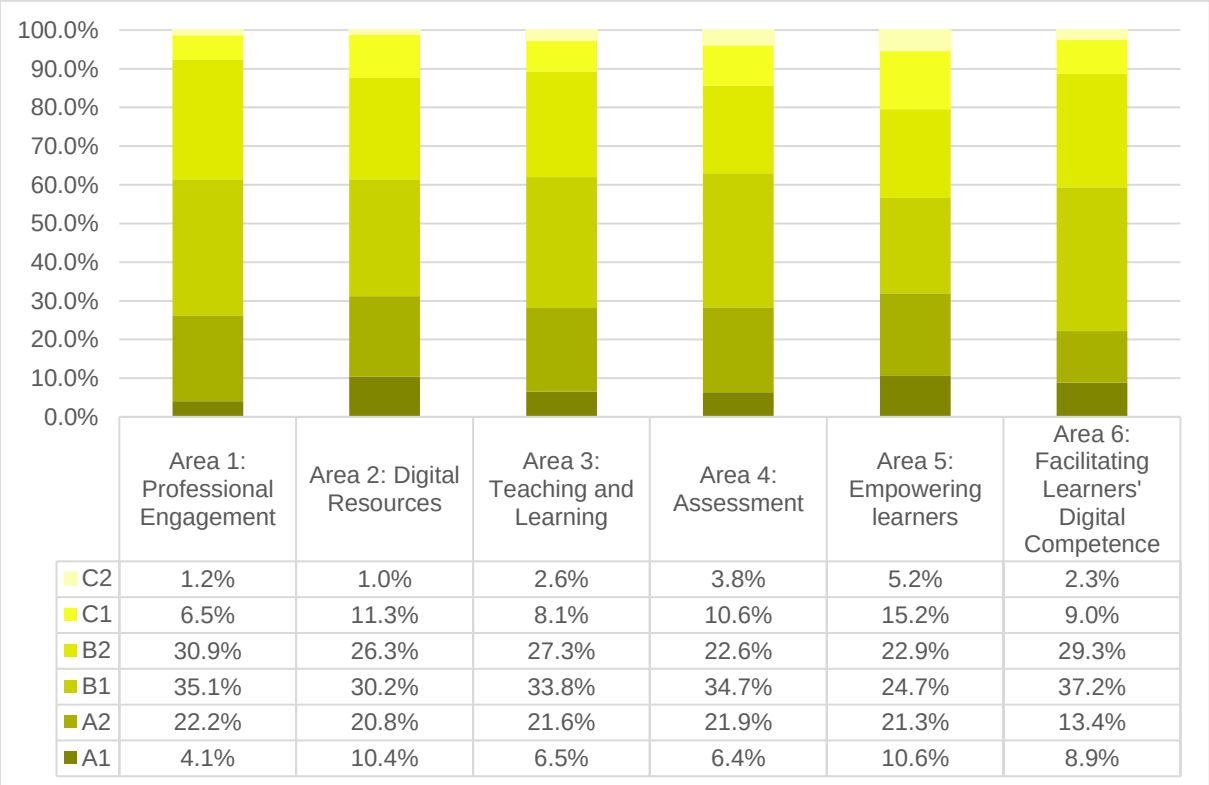
Based on teachers' self-evaluation, the DigCompEdu framework distinguishes 6 competence areas in which teachers can reach different proficiency levels.

Area 1: Professional Engagement expresses teachers' ability to use digital technologies not only to enhance teaching, but also for their professional interactions with colleagues, students, parents, the scientific community and other interested parties. This area of competence is important both for individual professional development and for the collective good in terms of continuous innovation in the organisation and the teaching profession. The results obtained from the Serbian sample show that in Area 1 (Professional Engagement) the largest number of teachers reaches level B1 - Integrators (35.1%). The advanced level of digital competence (B2 and up), based on the self-assessment, was reached by 38.6% of Serbian teachers while 23.6% still are on the low level of digital competence (A1 and A2 level).

Results obtained in Serbia show a similar trend in other three areas - Area 2, 3 and 4 (see Figure 2). *Area 2: Digital Resources* refers to the teachers' competence to identify good educational resources and to modify, create and share digital resources

that fit their learning objectives, teaching style and students' needs, while *Area 3: Teaching and Learning* demonstrates teachers' competence to design, plan and implement the use of digital technologies in different stages of the teaching and learning process. In addition, *Area 4: Assessment* addresses the shift from existing, traditional assessment strategies to assessment strategies based on digital technologies (e.g. analysing the amount of (digital) data available for each student in order to provide more targeted feedback and support). In all three areas (Area 2, 3 and 4) the largest numbers of teachers consider they reached level B1 - Integrators (30.2%, 33.8% and 34.7% respectively). Additionally, a similar number of teachers reached the advanced levels of digital competence (B2-C2 level) (38.6%, 38% and 37% respectively) or assessed their digital competence as low (A1-A2 level) (31.2%, 28.1% and 28.3% respectively).

Proficiency levels by competence area



	Area 1: Professional Engagement	Area 2: Digital Resources	Area 3: Teaching and Learning	Area 4: Assessment	Area 5: Empowering learners	Area 6: Facilitating Learners' Digital Competence
C2	1.2%	1.0%	2.6%	3.8%	5.2%	2.3%
C1	6.5%	11.3%	8.1%	10.6%	15.2%	9.0%
B2	30.9%	26.3%	27.3%	22.6%	22.9%	29.3%
B1	35.1%	30.2%	33.8%	34.7%	24.7%	37.2%
A2	22.2%	20.8%	21.6%	21.9%	21.3%	13.4%
A1	4.1%	10.4%	6.5%	6.4%	10.6%	8.9%

Figure 2.Percentage of Serbian teachers by proficiency level and competence area.

Area 5: Empowering learners refers to teachers' capability to use the potential of digital technologies in education for boosting the active involvement of students in the learning process and their ownership of it, as well as to offer learning activities adapted to the students' level of competence, their interests and learning needs. The results show that in this area the advanced level of digital competence (B2 and

upward level) was reached by 43.3% of Serbian teachers while 31.9% are still on the lower levels of digital competence (A1 and A2 level).

The ability to foster students' digital competence is an integral part of teachers' digital competence. In *Area 6 - Facilitating learner digital competence*, the largest percent of Serbian teachers belongs to levels B1 – Integrators (37.2%). Based on the self-assessment, 40.6% of Serbian teachers reach the advanced levels of digital competence (B2 and up), while 22.3% are still on the lower levels of digital competence (A1 and A2 level).

Focusing on the areas with strong performance (B2 upward), we can conclude that the highest percent of teachers reaches these levels in Area 5 (43%) and Area 6 (41%) followed by Areas 1 – 4 (39%, 39%, 38% and 37% respectively).

If we focus on the areas with relatively weak performance (A1 and A2), it is noticeable that a low number of teachers believes their competences are at the A1 level – under 11% for all areas, the lowest being Area 1 (4.1%). Regarding the A2 level, the smallest number of teachers self-assessed this competence level in Area 6 (13.4%). In the other areas the percentage is around 20%. However, every fourth teacher who participated in this research is at the low level of digital competence (A1 and A2) especially in Areas 2 and 4 (31.2 and 31.9% respectively).

Figure 3 shows the percentage of Serbian teachers regarding different proficiency levels (A1-C2) in two educational sectors – general and vocational. More teachers from general schools have reached advance levels of digital competence (B2-C2) those form vocational schools (61.6% versus 47.6%). Thus, teachers working in general schools have a higher average performance score than those in vocational schools.

Differences among large and small schools, regarding proficiency levels, are less pronounced (see Figure 4). However, when comparing the numbers of teachers who reached the advance level of digital competence (B2 and upward), a slightly higher number of teachers large schools accomplish these levels (55.3% versus 51.3%).Thus, on average teachers in large schools score a slightly better than those in small schools.

Proficiency levels by competence area and by educational sector

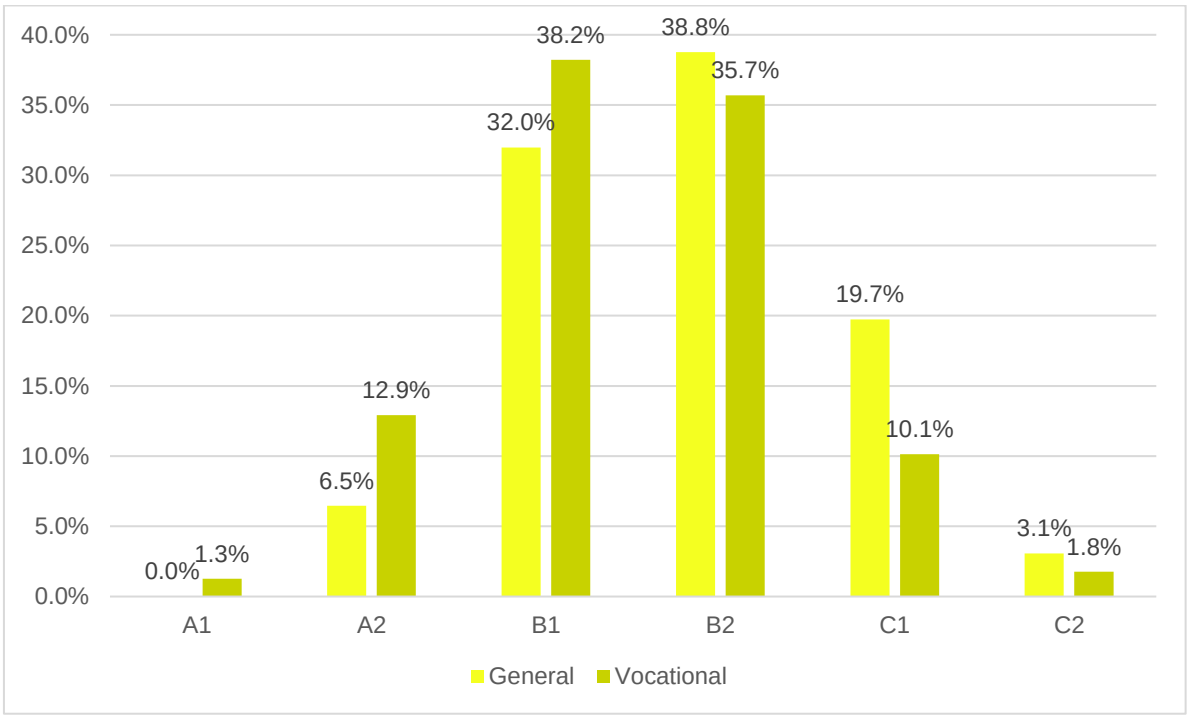


Figure 3.Percentage of Serbian teachers in each proficiency level by educational sector

Proficiency levels by competence area and by school size

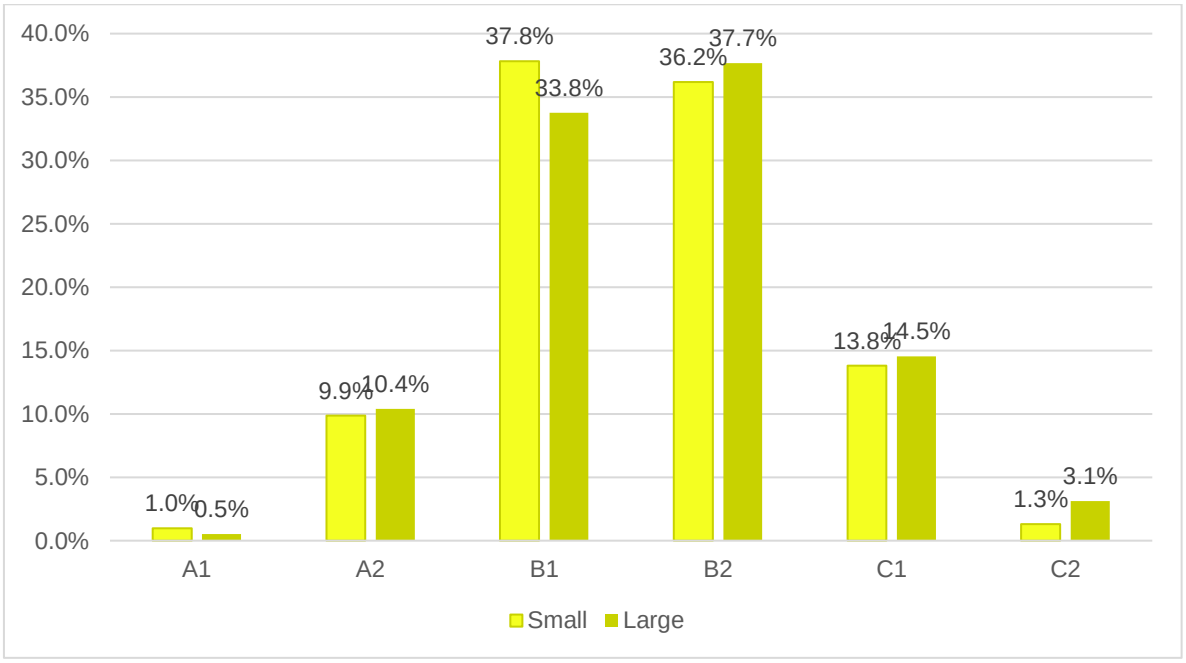


Figure 4.Percentage of Serbian teachers in each proficiency level by school size.

Use of different digital tools/activities during the COVID 19 lockdown

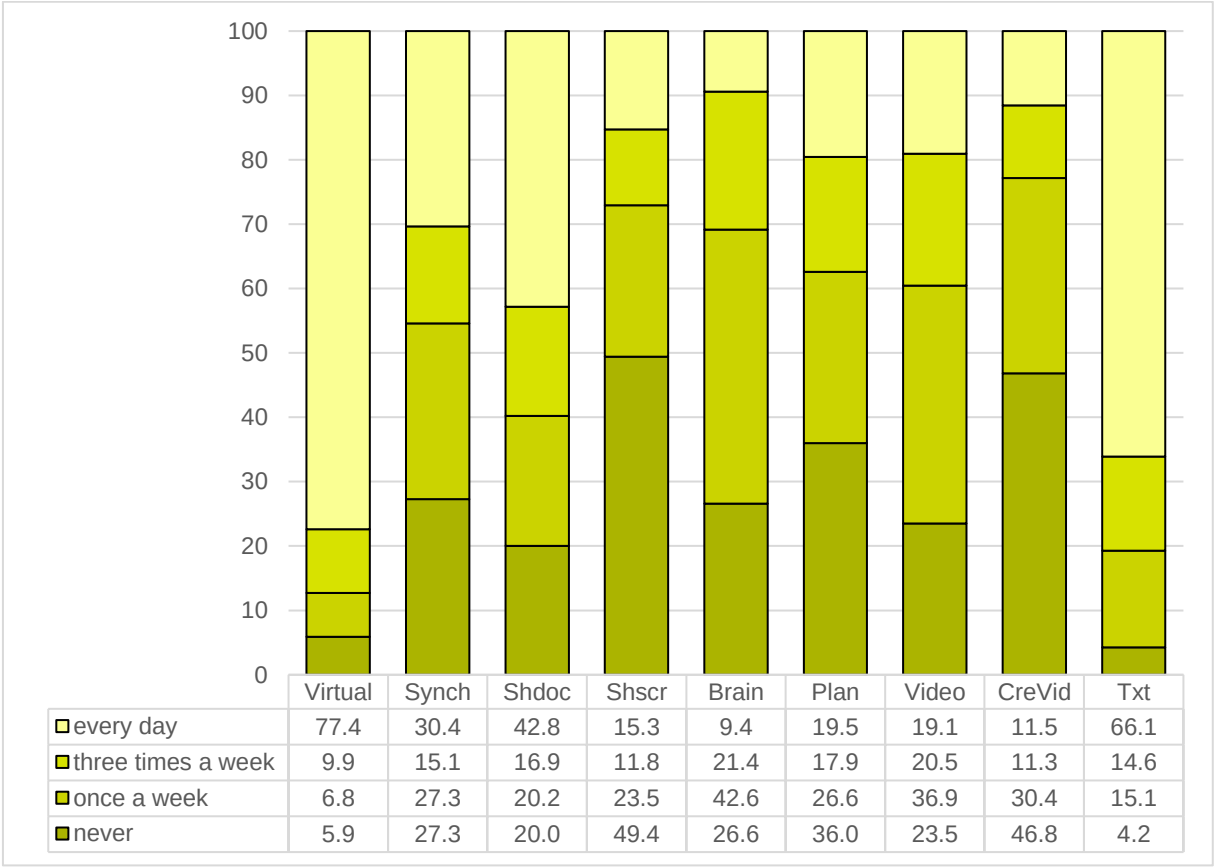
When it comes to the frequency of use of different digital tools/activities (see Codes Key) during the COVID19 lockdown, the results show that most teachers from Serbia used virtual classroom software (Virtual.) (e.g. Ms Teams, Google Classroom, Moodle) every day and were engaged in daily sharing and exchanging of documents and text messages (Txt.) by email or social media (77% and 66% respectively). Also, a significant number of teachers (43%) were every day engaged in sharing and exchanging documents on a daily basis using "cloud services" (Shdoc) or used, at least once a week, brainstorming, quizzes or polls (Brain).

	Codes Key
Virtual	Virtual classroom software (e.g. Ms Teams, Google Classroom, Moodle)
Synch	Synchronous video-communication tools (e.g. Zoom, Skype, WhatsApp, Facebook live
Shdoc	Sharing and exchanging of documents (“cloud services” e.g. Basecamp Dropbox, Google Drive, online editors for collaborative artefacts)
Shscr	Sharing your (the teacher’s) screen (screen casting), for example, to make presentations or set tasks
Brain	Brainstorming, quizzes or polls (e.g. mind-map, multiple-choice questionnaires for (self-assessment)
Plan	Planning and organisational tools (e.g. Mail and Calendar, education management systems to communicate with schools, pupils and parents)
Video	Watching instructional videos and/or audios (e.g. online library)
CreVid	Creating and broadcasting videos and/or audios (e.g. YouTube)
Txt	Sharing and exchanging of documents and text messages, for example, by email or websites or social media (e.g. Facebook, Whatsapp)

In Serbia, the use of synchronous video for teaching (e.g. Zoom) was markedly less frequent than the use of virtual classroom technology. Feedback from two schools suggests that during the COVID19 lockdown the majority of Serbian teachers used Google Classroom just to send students homework and instructions. Very few teachers used Google Meet for teaching and learning (this requires that both teachers and students have stable internet and computers with web camera and microphone). Less digitally competent teachers and teachers without adequate equipment used Viber on their smart phones (they formed the Viber groups for their classes). In order to overcome the lack of equipment, the usual practice was that students did homework in their exercise book then took a picture of it which they sent to their teachers via Google Classroom or Viber. Some teachers even wrote the assignment by hand and then made a picture to send to the students.

A significant number of teachers who participated in the research never used screen sharing (screen casting) (Shscr) nor were engaged in creating and broadcasting videos and/or audios (CreVid) (49% and 47% respectively). For more details see Figure 5.This implies that the teachers' main focus during COVID19 lockdown was the use of digital tools/activities that enabled them to communicate with students, distribute learning tasks, share teaching materials, and to evaluate students' activities. However, during this period, teachers were not focused on creating new digital resources.

Use of different digital tools/activities during the COVID19 lockdown



	Virtual	Synch	Shdoc	Shscr	Brain	Plan	Video	CreVid	Txt
every day	77.4	30.4	42.8	15.3	9.4	19.5	19.1	11.5	66.1
three times a week	9.9	15.1	16.9	11.8	21.4	17.9	20.5	11.3	14.6
once a week	6.8	27.3	20.2	23.5	42.6	26.6	36.9	30.4	15.1
never	5.9	27.3	20.0	49.4	26.6	36.0	23.5	46.8	4.2

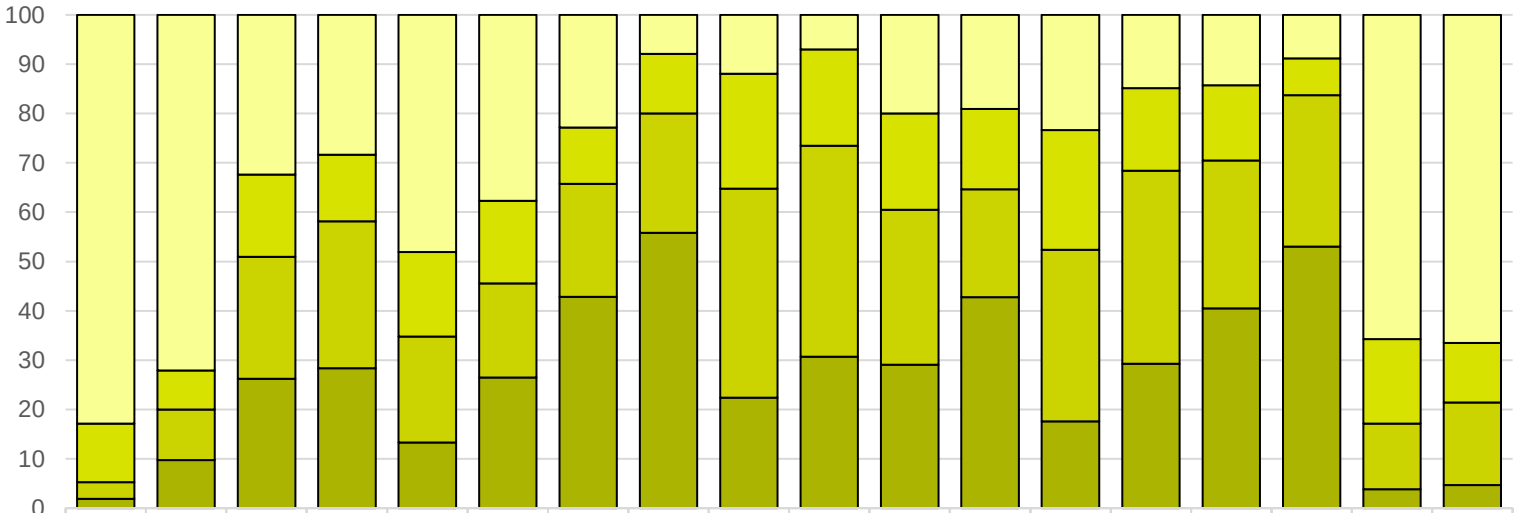
Figure 5.Frequency of use of different digital tools/activities during the COVID19 lockdown by the total Serbian sample.

A higher number of teachers from general schools than those from vocational schools reported daily usage of digital tools/activities during the COVID19 lockdown, such as virtual classroom software (Virtual), cloud services (Shdoc), brainstorming, quizzes and polls (Brain), instructional videos and/or audios (Video), etc. (see Figure 6). There are no differences between teachers from these two types of schools in the everyday use of digital tools for planning (Plan), as well as, exchanging documents and text messages (Txt). Additionally, more teachers from general schools state that

during the COVID19 lockdown they used different digital tools/activities three times a week, except screen sharing (Shscr) (see Figure 6). These differences in take up of digital technologies are associated with differences in proficiency levels (see Figure 3). It follows that more support and incentives are needed to motivate the teachers from vocational schools to use various kinds of digital tools/activities. Additionally, these differences may be partially explained by differences in the availability of digital resources and the extent to which learners from vocational schools could access virtual lessons or in the demands of the vocational curriculum.

Figure 7 explores the extent to which academic, vocational and other subject teachers made use of different educational technologies – whatever school they were teaching in. It seems that there was no one unique pattern of difference regarding the extent to which general academic teachers, vocational teachers and 'other subject teachers' such as art and sports teachers used various educational technologies (every day and three times a week). For example, general academic teachers were somewhat more likely to use virtual classroom technology (e.g. Ms Teams, Google Classroom, Moodle) than vocational teachers (85% versus 75%) while vocational teacher more often used synchronous video-communication tools (e.g. Zoom, Skype, WhatsApp, Facebook live) (49% versus 43.8%). Additionally, the highest percent of general subject teachers, in comparison to the other two groups, use tools for sharing and exchanging of documents (e.g. "cloud services" such Basecamp, Dropbox, Google Drive, online editors for collaborative artefacts) (57.6%, 49.5% and 38.6%) and tools for sharing and exchanging of documents and text messages (e.g. Facebook, Whatsapp, etc.) (79.6%, 77.6% end 60% respectively). On the other hand, a higher percentage of vocational teachers than general academics teachers and "other" teachers used planning and organisational tools (e.g. Mail and Calendar, education management systems to communicate with schools, pupils and parents) (33.7%, 32.3% and 28.6% respectively). The implications of these findings should be considered in relation to the nature of the subject curriculum and the number of classes that teachers of various subject types have during the week.

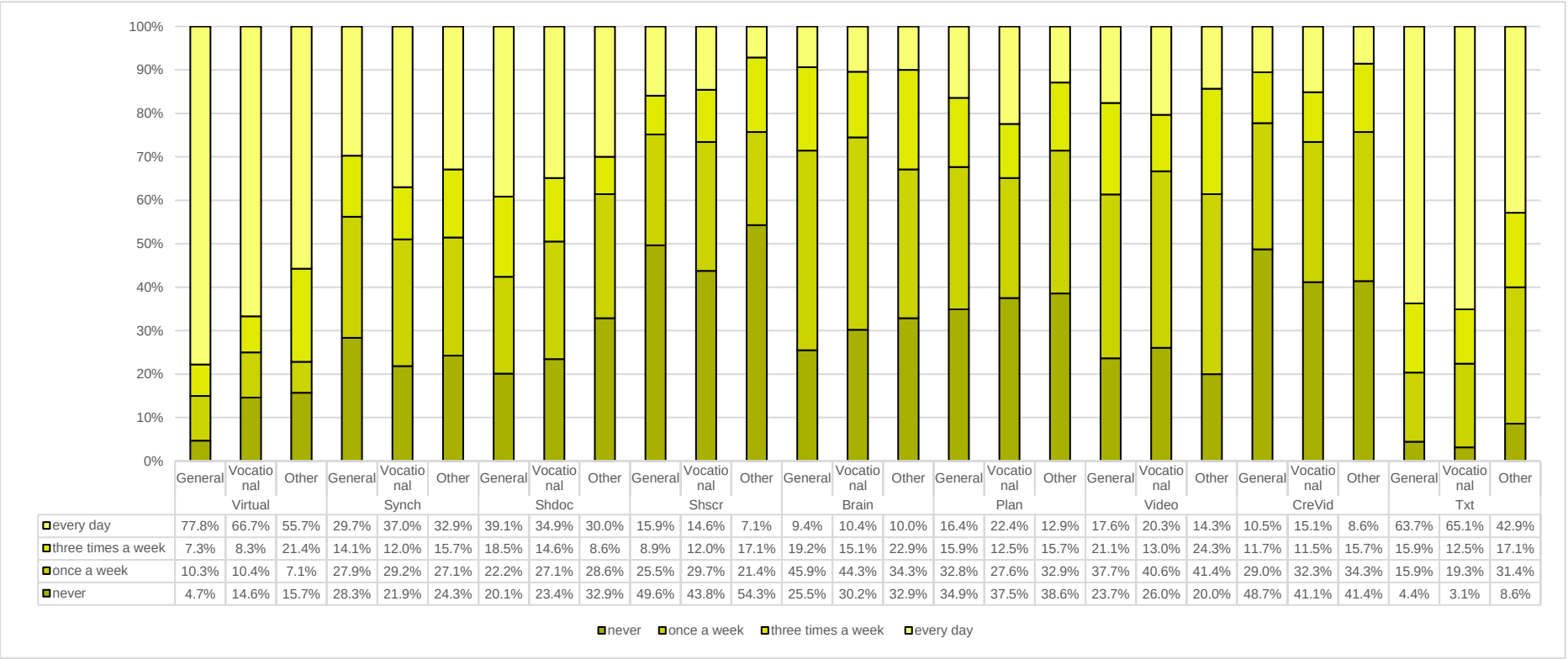
Frequency of use of different digital tools/activities by educational sector



	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational
	Virtual		Synch		Shdoc		Shscr		Brain		Plan		Video		CreVid		Txt	
every day	82.9	72.1	32.4	28.4	48.1	37.7	22.9	7.9	11.9	7.0	20.0	19.1	23.3	14.9	14.3	8.8	65.7	66.5
three times a week	11.9	7.9	16.7	13.5	17.1	16.7	11.4	12.1	23.3	19.5	19.5	16.3	24.3	16.7	15.2	7.4	17.1	12.1
once a week	3.3	10.2	24.8	29.8	21.4	19.1	22.9	24.2	42.4	42.8	31.4	21.9	34.8	39.1	30.0	30.7	13.3	16.7
never	1.9	9.8	26.2	28.4	13.3	26.5	42.9	55.8	22.4	30.7	29.0	42.8	17.6	29.3	40.5	53.0	3.8	4.7

Figure 6.Frequency of use of different digital tools/activities during the COVID19 lockdown by educational sector in Serbia.

Frequency of use of different digital tools/activities by type of subject



	General	Vocational	Other	General	Vocational	Other	General	Vocational	Other	General	Vocational	Other	General	Vocational	Other	General	Vocational	Other	General	Vocational	Other	General	Vocational	Other	General	Vocational	Other
	Virtual			Synch			Shdoc			Shscr			Brain			Plan			Video			CreVid			Txt		
every day	77.8%	66.7%	55.7%	29.7%	37.0%	32.9%	39.1%	34.9%	30.0%	15.9%	14.6%	7.1%	9.4%	10.4%	10.0%	16.4%	22.4%	12.9%	17.6%	20.3%	14.3%	10.5%	15.1%	8.6%	63.7%	65.1%	42.9%
three times a week	7.3%	8.3%	21.4%	14.1%	12.0%	15.7%	18.5%	14.6%	8.6%	8.9%	12.0%	17.1%	19.2%	15.1%	22.9%	15.9%	12.5%	15.7%	21.1%	13.0%	24.3%	11.7%	11.5%	15.7%	15.9%	12.5%	17.1%
once a week	10.3%	10.4%	7.1%	27.9%	29.2%	27.1%	22.2%	27.1%	28.6%	25.5%	29.7%	21.4%	45.9%	44.3%	34.3%	32.8%	27.6%	32.9%	37.7%	40.6%	41.4%	29.0%	32.3%	34.3%	15.9%	19.3%	31.4%
never	4.7%	14.6%	15.7%	28.3%	21.9%	24.3%	20.1%	23.4%	32.9%	49.6%	43.8%	54.3%	25.5%	30.2%	32.9%	34.9%	37.5%	38.6%	23.7%	26.0%	20.0%	48.7%	41.1%	41.4%	4.4%	3.1%	8.6%

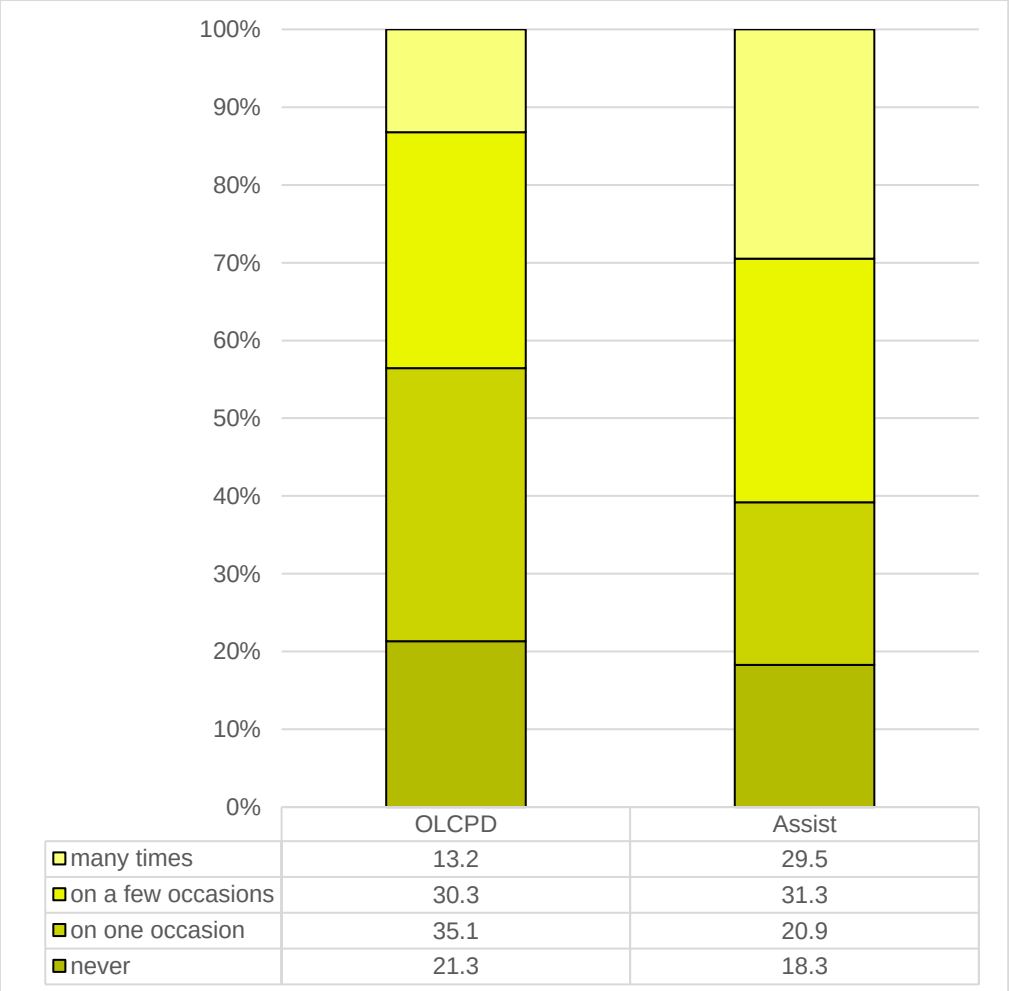
Figure 7.Frequency of use of different digital tools/activities during the COVID19 lockdown by type of subject in Serbia.

Provision of CPD over last 12 months

The COVID19 forced teachers to switch to distance and online teaching and to make use of various digital technologies. This section will report on what CPD (see Codes Key) Serbian teaches had in the last 12 months that developed their digital competences and what impact it had upon their work.

	Codes Key
OLCPD	Over the last 12 months, I have participated in online CPD to develop my digital competences.
Assist	Over the last 12 months, I have been assisted by other teachers or advisors in my school to develop my digital competences.

Provision of CPD in the last 12 months



	OLCPD	Assist
many times	13.2	29.5
on a few occasions	30.3	31.3
on one occasion	35.1	20.9
never	21.3	18.3

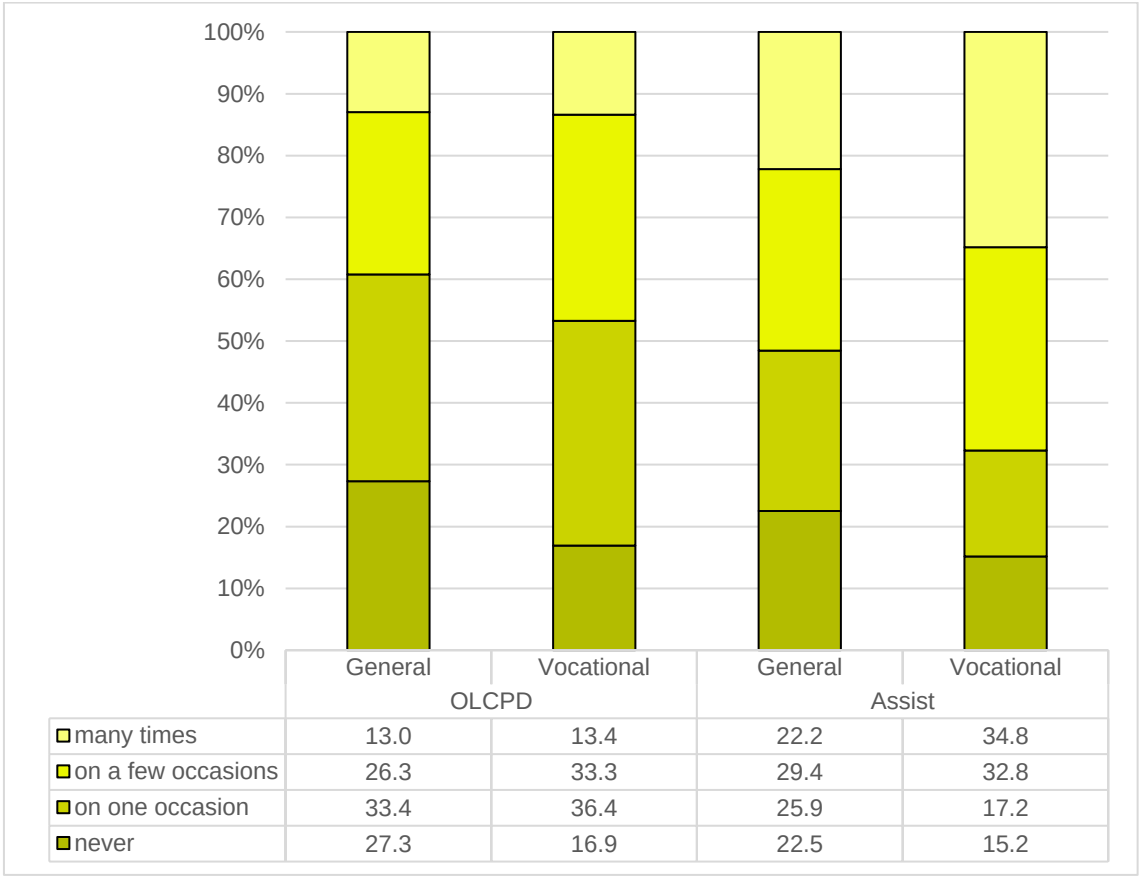
Figure 8.Participation in CPD in the past 12 months by the total Serbian sample.

In the past 12 months, around 79% teachers from Serbia participated at least once, and 43% participated on several or many occasions in online CPD in order to develop their digital competences (see Figure 8). On the other hand, around 82% of teachers from Serbia received at least once, and 61% received on several or many occasions help from colleagues/advisors in order to improve their digital competence.

Approximately 20% of teachers from Serbia did not participate in online CPD trainings, nor did they receive support from other teachers and advisors for the development of their digital competencies, in the past 12 months.

Figure 9 explores what CPD teaches from general and vocational schools had in the last 12 months in order to develop their digital competences. Around 73% of teachers from general schools participated at least once, and 39% participated on several or many occasion in online CPD. On the other hand 83% teachers from vocational schools participated at least once, and 47% participated on several or many occasion in online CPD.

Provision of CPD in the last 12 months by educational sector



	General	Vocational	General	Vocational
	OLCPD		Assist	
many times	13.0	13.4	22.2	34.8
on a few occasions	26.3	33.3	29.4	32.8
on one occasion	33.4	36.4	25.9	17.2
never	27.3	16.9	22.5	15.2

Figure 9.Participation in CPD in the past 12 months by educational sector in Serbia.

Additionally, around of 77% teachers from general schools received at least once, and around 52% received on several or many occasions help from colleagues/advisors in order to improve their digital competence. In the same period, 85% teachers from vocational schools received at least once and 68% received on several or many occasion help from colleagues/advisors in order to improve their digital competence (see Figure 9).

A larger number of teachers from general schools (27% versus 17%) claimed that they did not participate in the online CPD for a period of 12 months or that they have never received assistance from their colleagues and advisors to develop digital competences (22% versus 15 %) (see Figure 9).

It seems that general teachers make more use of some digital technologies and have a slightly better proficiency score than vocational teachers but have had somewhat less support and training in the last 12 months. It is possible that teachers working in general schools had received more training in digital competences already and that is why they have needed less support in the last 12 months. This assumption should be further verified.

Provision of CPD in the last 12 months by school size

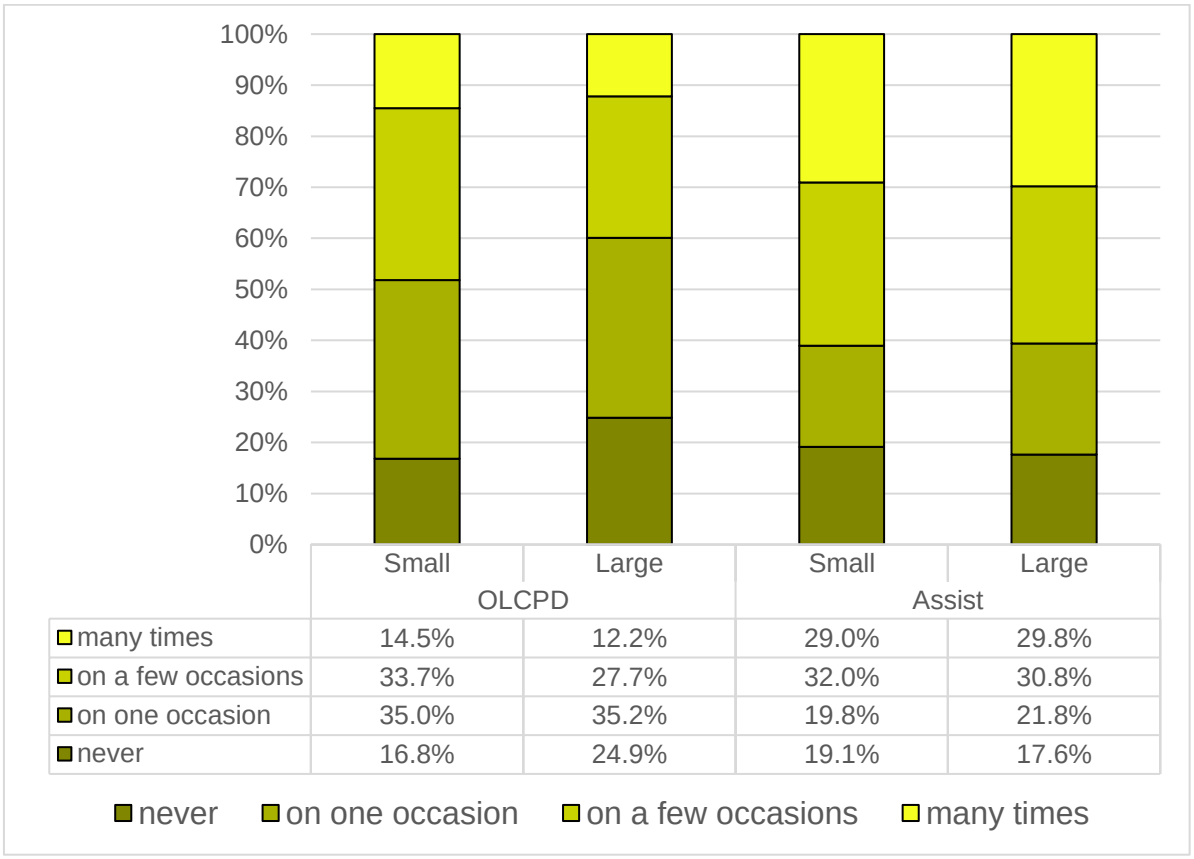


Figure 10.Participation in CPD in the past 12 months by school size in Serbia.

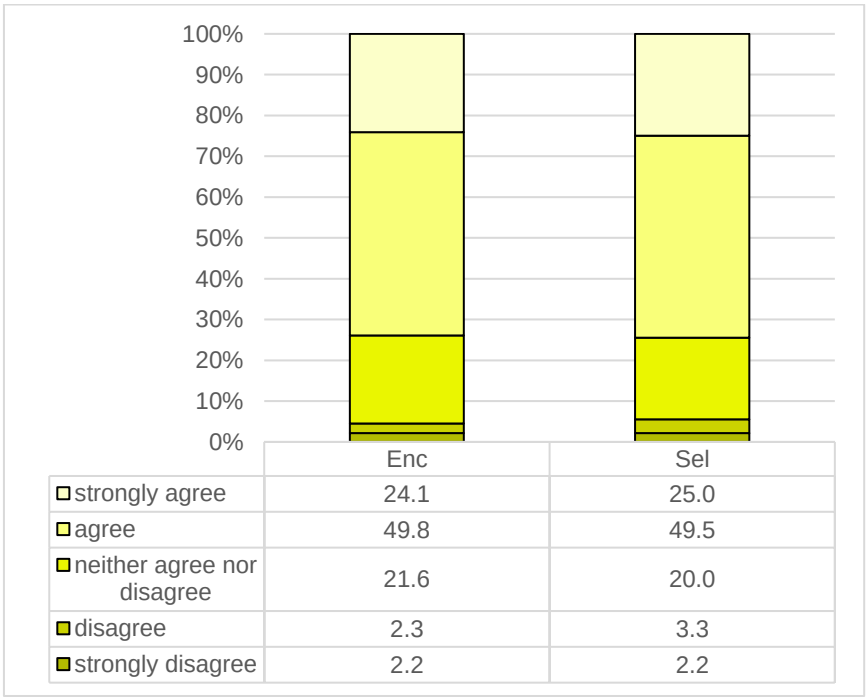
Teachers from large and small schools do not differ in terms of the assistance they received from their colleagues/advisors in order to develop their digital competencies (see Figure 10). However, slight differences were expressed regarding the attendance of online CPD. For example, a higher number of teachers from large schools did not attend online CPD (25% versus 17%), while more teachers from small schools attended online CPD on a few occasion (34% versus 28%).

These results imply that every fifth teacher from Serbia (especially teachers from general schools and teachers from large schools) missed out on training or support. Further research would be required to understand why this happened and whether or not they have unmet needs.

In Serbia, almost 75% of all teachers agree or strongly agree that they were encouraged by their schools to participate in CPD over the last 12 months (see Codes Key above). The same percentage report that they were able to select CPD based on their personal needs (see Figure 11). However, a significant minority of teachers (around 20%) chose not to answer these questions.

	Codes Key
ENC	I was encouraged by my school to participate in CPD
SEL	I selected the CPD based on my personal development needs

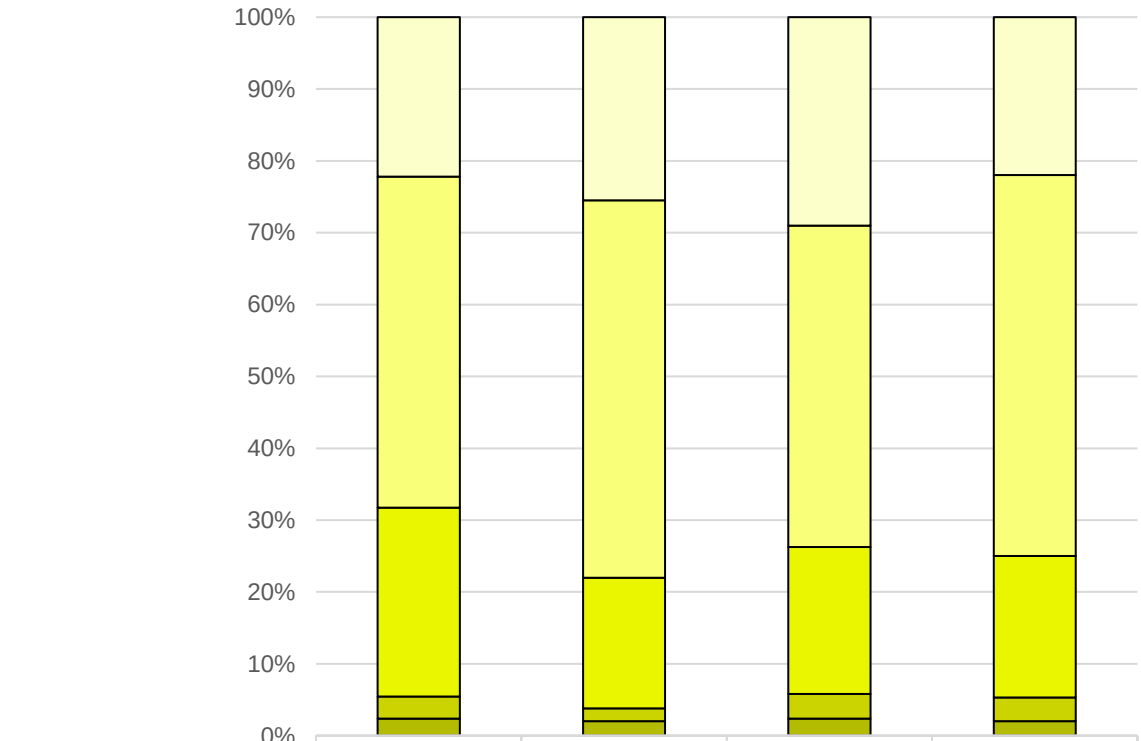
Perception of the experience of CPD



	Enc	Sel
strongly agree	24.1	25.0
agree	49.8	49.5
neither agree nor disagree	21.6	20.0
disagree	2.3	3.3
strongly disagree	2.2	2.2

Figure 11.Perception of the experience of CPD undertaken in the past 12 months by the total Serbian sample.

Perception of the experience of CPD by educational sector



	General	Vocational	General	Vocational
	Enc		Sel	
strongly agree	22.2	25.5	29.0	22.0
agree	46.1	52.5	44.7	53.0
neither agree nor disagree	26.3	18.2	20.5	19.7
disagree	3.1	1.8	3.4	3.3
strongly disagree	2.4	2.0	2.4	2.0

Figure12. Perception of the experience of CPD undertaken in the past 12 months by educational sector in Serbia.

More teachers from vocational schools report agreeing or strongly agreeing with the statement that they were encouraged by their school to participate in CPD (78% versus 68%). On the other hand, in both types of schools around 75% of teachers report that they agree or strongly agree with the statements that they selected CPD based on their personal development needs. However, a significant minority of teachers (especially from general schools – 26% and 21%) chose not to answer these questions (see Figure 12).

The results imply that teachers from Serbia are motivated to participate in CPD both intrinsically and extrinsically as well as, that extrinsic motivation is a little bit higher amongst vocational school teachers. It seems that general teachers feel that their needs are better met than vocational teachers. Perhaps the digital training does not

address vocational as much as general subjects. This assumption should be further verified.

Training Needs

This section will present how Serbian teaches evaluate their need for CPD (see Codes Key) that address various kinds of digital competence based on their actual level of digital competence, as well as, previous experience and that of the last 6 months. The teachers were asked to express the degree of their need for CPD for each kind of digital competence on the following scale: No need; Low need; High need; Very high need.

	CODES KEY
N1	Communicating digitally with students and parents
N2	Collaborating digitally with colleagues
N3	Finding, adapting and creating digital resources that serve different learning tasks and different learners
N4	Managing and protecting sensitive data and content
N5	Making greater and more effective use of different digital technologies
N6	Enabling students to use digital technologies for group work
N7	Making use of digital technologies to assess student work and to provide them with feedback
N8	Making use of digital technologies to monitor and analyse students' digital activity
N9	Making use digital technologies to engage students actively in learning
N10	Making use of digital technologies to address individual learning needs
N11	Planning digital learning that will overcome potential digital problems, e.g. lack of access to devices or data
N12	Teaching students how to work and learn digitally
N13	Teaching students to make responsible and critical use of digital technologies
N14	Teaching and assessing at a distance during a COVID19 lockdown

The data given in Figure 13 shows that every fourth teacher in Serbia has a very high need for CPD related to Teaching and assessing at a distance during the COVID19 lockdown (25%). Additionally, every fifth teacher in Serbia considers their need for CPD to be very high when it comes to the following aspects of digital competence: Managing and protecting sensitive data and content (24%) A2; Teaching students to make responsible and critical use of digital technologies (23%) A6; Enabling students to use digital technologies for group work (20%) A3; Planning digital

learning that will overcome potential digital problems, e.g. lack of access to devices or data (20%); Teaching students how to work and learn digitally (20%).

Furthermore, an additional 50% or more of the teachers expressed a high need for CPD for the following competences: Making greater and more effective use of different digital technologies (54%); Enabling students to use digital technologies for group work (53%); Making use of digital technologies to actively engage students in learning (53%); Finding, adapting and creating digital resources that serve different learning tasks and different learners (51%); Teaching students how to work and learn digitally (51%); Teaching students to make responsible and critical use of digital technologies (50%);

Putting together the teachers who express the highest and high need for CPD the following "top five" kinds of digital competence are as follows: Teaching students to make responsible and critical use of digital technologies (73%); Enabling students to use digital technologies for group work (72%); Making greater and more effective use of different digital technologies (71%); Teaching students how to work and learn digitally (71 A6%); Teaching and assessing at a distance during the COVID19 lockdown (71%).

Teachers' CPD needs are mainly related to *Area 2: Digital Resources*, *Area 3: Teaching and Learning*, and *Area 5: Empowering learners* for which around 30% of Serbian teachers express low levels of digital competence (A1 or A2 level). In addition, teachers want more professional development in *Area 6: Facilitating learners' digital competence* although in this area a significant number of teachers (around 40%) reaches more advanced levels in the development of digital competence (B2 upward).

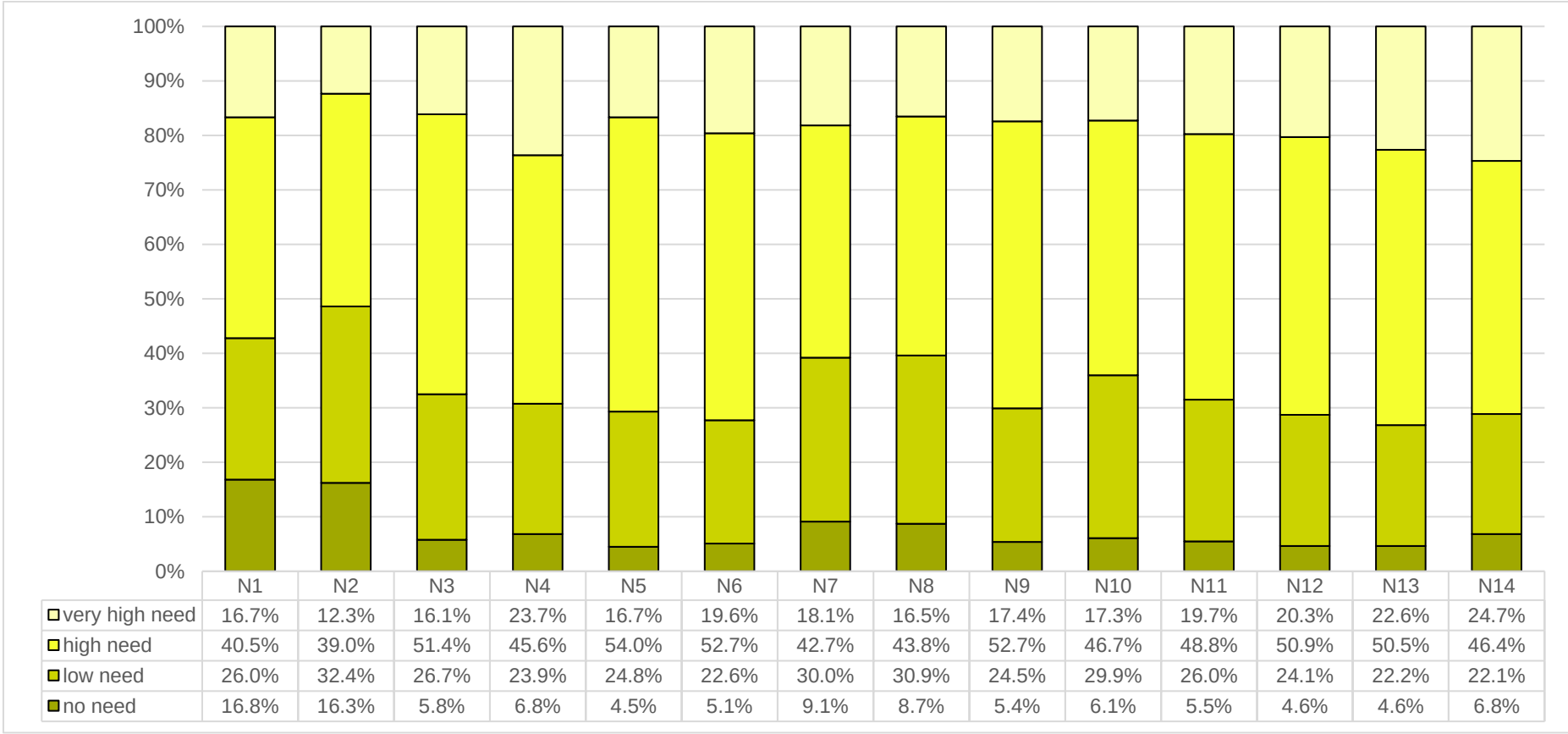
There is little difference between teachers from general and vocational schools (see Figure 14) regarding their needs for CPD related to various kinds of digital competence. Only a higher number of teachers from general schools than from vocational schools believe that they do not have a need for CPD related to digital communication with students and parents (22% versus 12%), as well as, digital collaboration with colleagues (21% versus 13%).

Also, the difference in the perceived needs for CPD is minimal between teachers who teach various types of subjects (see Figure 15). A slightly larger number of general subject teachers (21% versus 10% and 11%) believe that they do not have a need for CPD related to digital communication with students and parent (N1), while more teachers of 'other subjects' consider they have a high need (50% versus 39% and 41%) for the same type of digital competence. This is in line with the finding that the use of digital technologies by teachers of "other" subjects was relatively low. A similar trend can be observed when it comes to the need for CPD related to digital

collaboration with colleagues (N2). For example, more teachers of professional subjects, in comparison to teachers of general and other subjects express the highest need for CPD related to N7 - making use of digital technologies to assess student work and to provide them with feedback (27% versus 15% and 11%) and N14 - teaching and assessing at a distance during the COVID19 lockdown (32% versus 22% and 23%).

The results imply that teachers in general schools have a lesser need for CPD which addresses communication with parents and teachers than professional or other teachers. On the other hand, all teachers agree that they need CPD for teaching students how to work and learn digitally (71%), enabling students to use digital technologies for group work (72%), and teaching students to make responsible and critical use of digital technologies (73%).

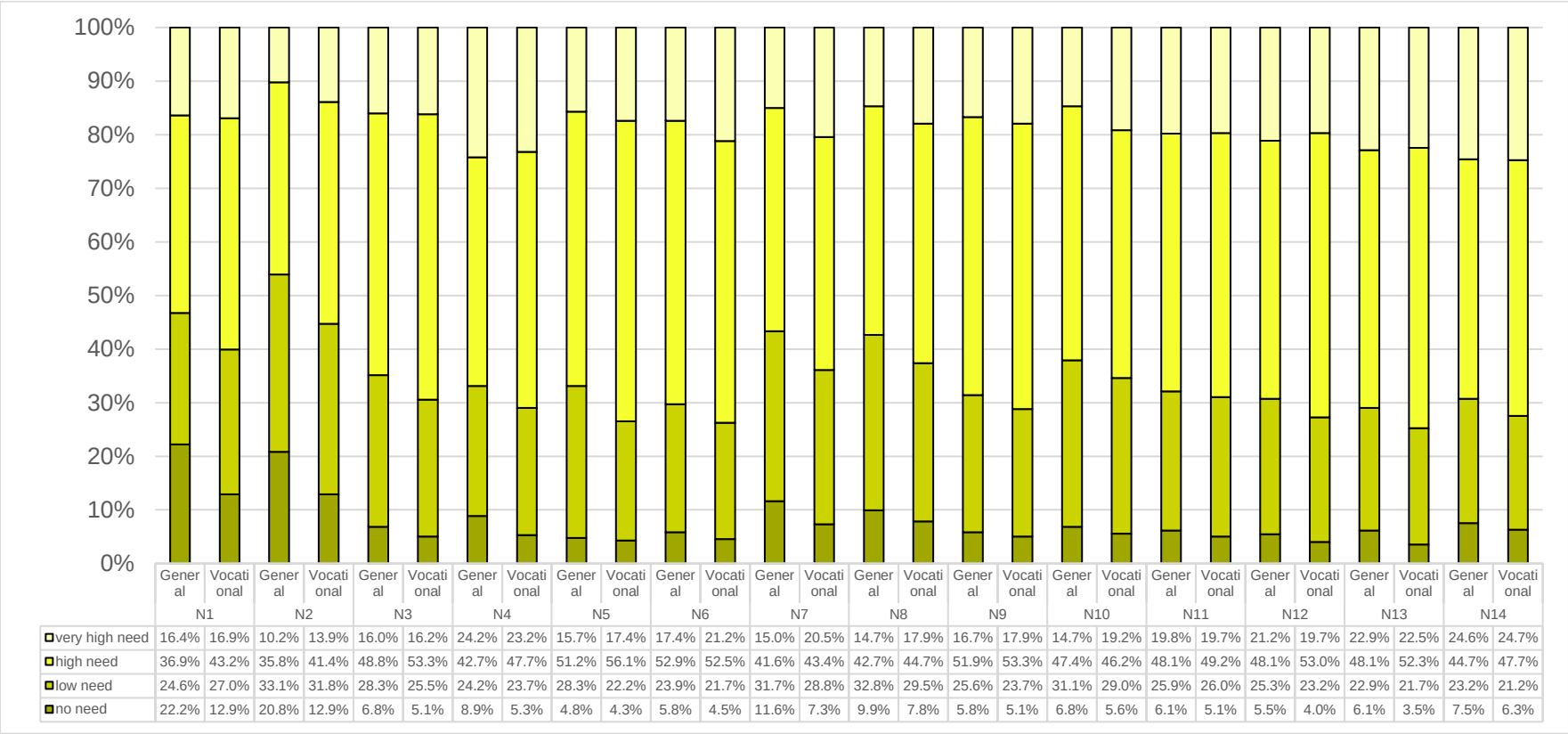
Needs of CPD



	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14
very high need	16.7%	12.3%	16.1%	23.7%	16.7%	19.6%	18.1%	16.5%	17.4%	17.3%	19.7%	20.3%	22.6%	24.7%
high need	40.5%	39.0%	51.4%	45.6%	54.0%	52.7%	42.7%	43.8%	52.7%	46.7%	48.8%	50.9%	50.5%	46.4%
low need	26.0%	32.4%	26.7%	23.9%	24.8%	22.6%	30.0%	30.9%	24.5%	29.9%	26.0%	24.1%	22.2%	22.1%
no need	16.8%	16.3%	5.8%	6.8%	4.5%	5.1%	9.1%	8.7%	5.4%	6.1%	5.5%	4.6%	4.6%	6.8%

Figure 13.Perception of needs for CPD that addresses digital competences by the total Serbian sample.

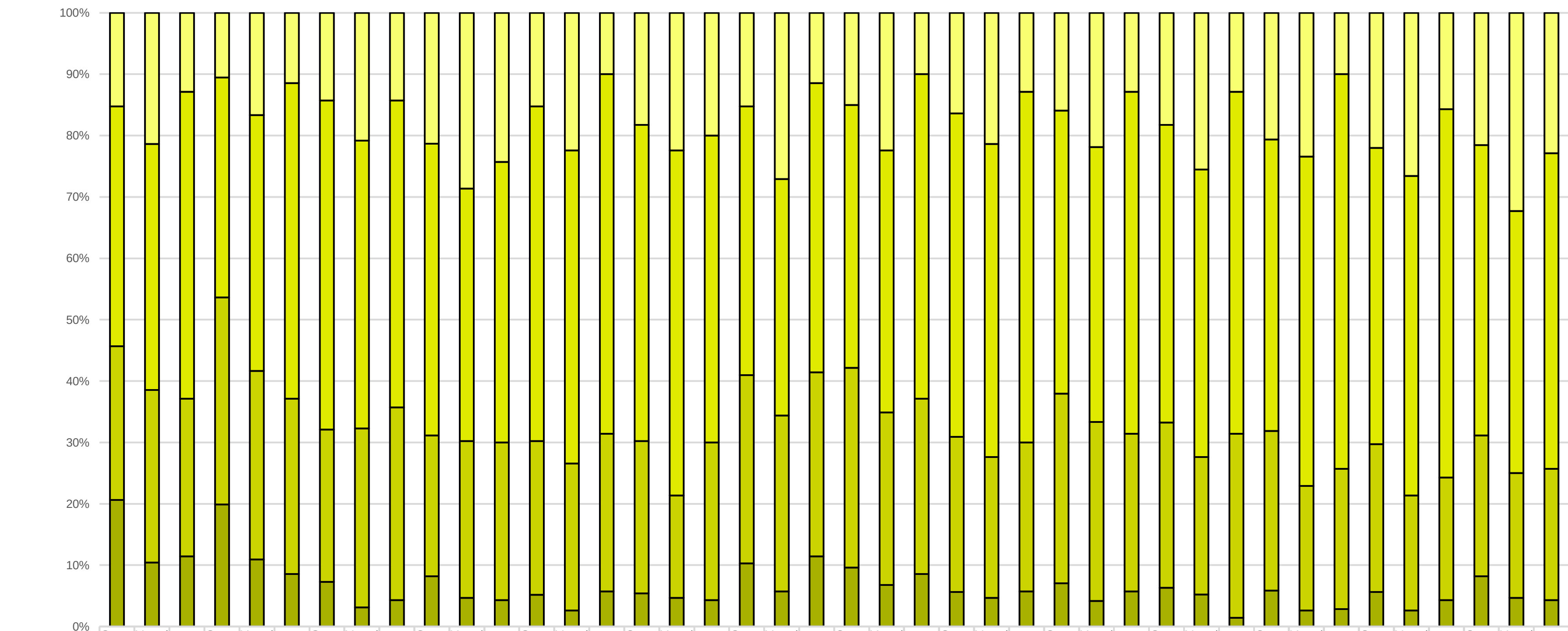
Needs of CPD by educational sector



	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational
	N1		N2		N3		N4		N5		N6		N7		N8		N9		N10		N11		N12		N13		N14	
very high need	16.4%	16.9%	10.2%	13.9%	16.0%	16.2%	24.2%	23.2%	15.7%	17.4%	17.4%	21.2%	15.0%	20.5%	14.7%	17.9%	16.7%	17.9%	14.7%	19.2%	19.8%	19.7%	21.2%	19.7%	22.9%	22.5%	24.6%	24.7%
high need	36.9%	43.2%	35.8%	41.4%	48.8%	53.3%	42.7%	47.7%	51.2%	56.1%	52.9%	52.5%	41.6%	43.4%	42.7%	44.7%	51.9%	53.3%	47.4%	46.2%	48.1%	49.2%	48.1%	53.0%	48.1%	52.3%	44.7%	47.7%
low need	24.6%	27.0%	33.1%	31.8%	28.3%	25.5%	24.2%	23.7%	28.3%	22.2%	23.9%	21.7%	31.7%	28.8%	32.8%	29.5%	25.6%	23.7%	31.1%	29.0%	25.9%	26.0%	25.3%	23.2%	22.9%	21.7%	23.2%	21.2%
no need	22.2%	12.9%	20.8%	12.9%	6.8%	5.1%	8.9%	5.3%	4.8%	4.3%	5.8%	4.5%	11.6%	7.3%	9.9%	7.8%	5.8%	5.1%	6.8%	5.6%	6.1%	5.1%	5.5%	4.0%	6.1%	3.5%	7.5%	6.3%

Figure 14.Perception o needs for CPD that addresses digital competences by educational sector in Serbia.

Needs of CPD by school size



	N1 General	N1 Vocational	N1 Other	N2 General	N2 Vocational	N2 Other	N3 General	N3 Vocational	N3 Other	N4 General	N4 Vocational	N4 Other	N5 General	N5 Vocational	N5 Other	N6 General	N6 Vocational	N6 Other	N7 General	N7 Vocational	N7 Other
very high need	15.22	21.35	12.86	10.54	16.67	11.43	14.29	20.83	14.29	21.31	28.65	24.29	15.22	22.40	10.00	18.27	22.40	20.00	15.22	27.08	11.43
high need	39.11	40.10	50.00	35.83	41.67	51.43	53.63	46.88	50.00	47.54	41.15	45.71	54.57	51.04	58.57	51.52	56.25	50.00	43.79	38.54	47.14
low need	25.06	28.13	25.71	33.72	30.73	28.57	24.82	29.17	31.43	22.95	25.52	25.71	25.06	23.96	25.71	24.82	16.67	25.71	30.68	28.65	30.00
no need	20.61	10.42	11.43	19.91	10.94	8.57%	7.26%	3.13%	4.29%	8.20%	4.69%	4.29%	5.15%	2.60%	5.71%	5.39%	4.69%	4.29%	10.30	5.73%	11.43

	N8 General	N8 Vocational	N8 Other	N9 General	N9 Vocational	N9 Other	N10 General	N10 Vocational	N10 Other	N11 General	N11 Vocational	N11 Other	N12 General	N12 Vocational	N12 Other	N13 General	N13 Vocational	N13 Other	N14 General	N14 Vocational	N14 Other
very high need	14.99	22.40	10.00	16.39	21.35	12.86	15.93	21.88	12.86	18.27	25.52	12.86	20.61	23.44	10.00	22.01	26.56	15.71	21.55	32.29	22.86
high need	42.86	42.71	52.86	52.69	51.04	57.14	46.14	44.79	55.71	48.48	46.88	55.71	47.54	53.65	64.29	48.24	52.08	60.00	47.31	42.71	51.43
low need	32.55	28.13	28.57	25.29	22.92	24.29	30.91	29.17	25.71	26.93	22.40	30.00	26.00	20.31	22.86	24.12	18.75	20.00	22.95	20.31	21.43
no need	9.60%	6.77%	8.57%	5.62%	4.69%	5.71%	7.03%	4.17%	5.71%	6.32%	5.21%	1.43%	5.85%	2.60%	2.86%	5.62%	2.60%	4.29%	8.20%	4.69%	4.29%

Figure15. Perception on needs for CPD that addresses digital competences by type of subject in Serbia.

Impact of CPD

In this survey, teachers were asked to describe the impact of CPD (see Codes Key) relating to digital competences that they participated in. Possible answers to each of the statements range from strongly disagree to strongly agree (answers options: strongly disagree; disagree; neither agree, nor disagree; agree; strongly agree).

	CODES KEY
I1	The CPD has helped me to communicate digitally with students and parents
I2	The CPD has helped me to collaborate digitally with colleagues
I3	The CPD has helped me to find, adapt and create digital resources that serve different learning tasks and different learners
I4	The CPD has helped me to manage and protect sensitive data and content
I5	The CPD helped me to make greater and more effective use of different digital technologies
I6	The CPD has helped me to enable students to use digital technologies for group work
I7	The CPD has helped me to make use of digital technologies to assess student work and to provide them with feedback
I8	The CPD has helped me to make use of digital technologies to monitor and analyse students' digital activity
I9	The CPD has helped me to use digital technologies to engage students actively in learning
I10	The CPD has helped me to use digital technologies to address individual learning needs
I11	The CPD has helped me to plan digital learning that will overcome potential digital problems, e.g. lack of access to devices or data
I12	The CPD has helped me to teach students how to work and learn digitally
I13	The CPD has helped me to teach students to make responsible and critical use of digital technologies
I14	The CPD has helped me to teach and assess remotely during the COVID19 lockdown

Teachers were most likely to believe[18] that that CPD had a positive impact in the following five areas: (I1) digital communication with students and parents (67%); (I5) making greater and more effective use of different digital technologies (65%); (I3)

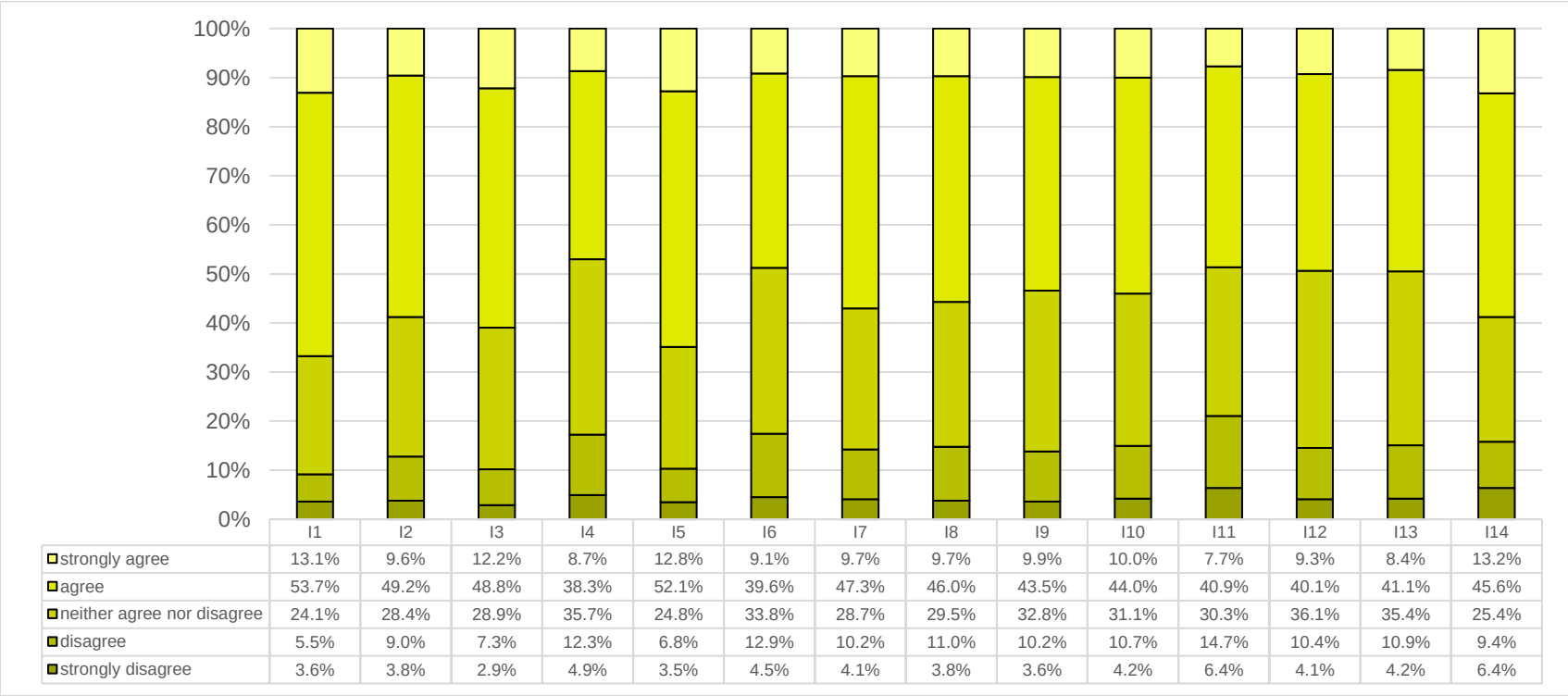
[18]The sum of number of teachers who agree and strongly agree about the CPD impact.

finding, adapting and creating digital resources that serve different learning tasks and different learners (61%); (I2) digital collaboration with colleagues (59%) and (I14) teaching and assessing remotely during the COVID19 lockdown.

Teachers from vocational and general schools do not differ in how they assess the impact of CPD on the development of their digital competences (see Figure 17) - the difference in responses for the most items and for all response levels ranges from 0% to 5% (only in 6 cases of this differences range from 6% to 10%).

The results indicate that most teachers from vocational and general schools (up to 67%) judged that CPD had an impact on their digital competences; however, there are considerable variations in relation to different competences. Teachers judged as particularly effective CPD that targeted their general ability to more effectively use different digital technologies (I5) and to more effectively communicate digitally with students and parents (I1).

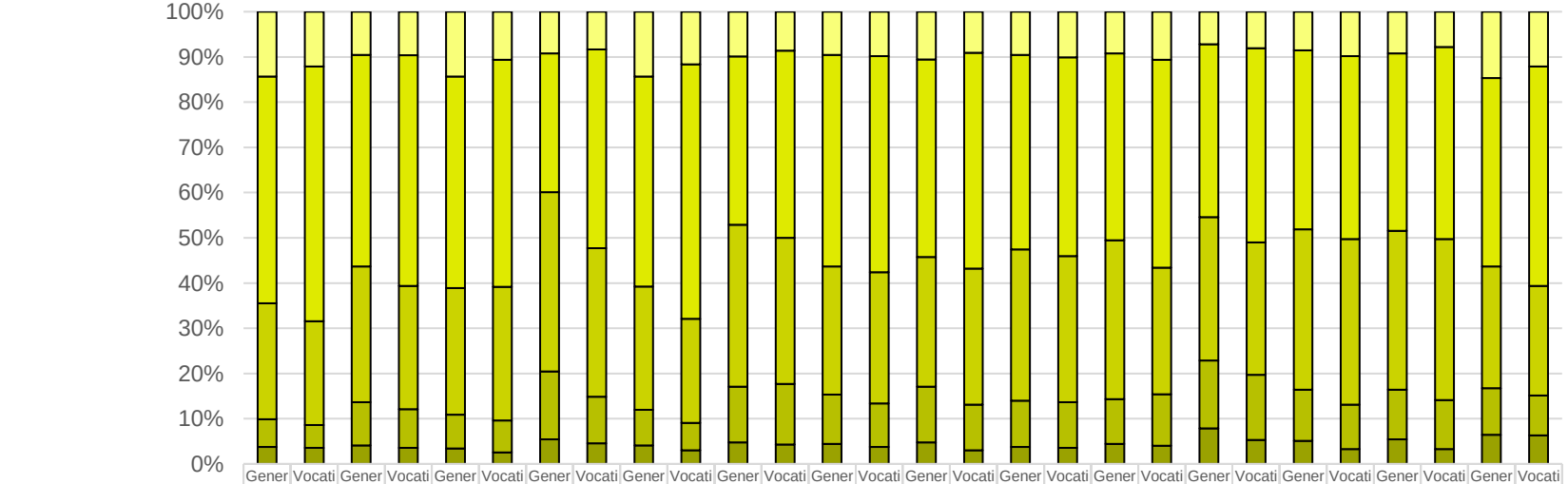
Impact of CPD



	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13	I14
strongly agree	13.1%	9.6%	12.2%	8.7%	12.8%	9.1%	9.7%	9.7%	9.9%	10.0%	7.7%	9.3%	8.4%	13.2%
agree	53.7%	49.2%	48.8%	38.3%	52.1%	39.6%	47.3%	46.0%	43.5%	44.0%	40.9%	40.1%	41.1%	45.6%
neither agree nor disagree	24.1%	28.4%	28.9%	35.7%	24.8%	33.8%	28.7%	29.5%	32.8%	31.1%	30.3%	36.1%	35.4%	25.4%
disagree	5.5%	9.0%	7.3%	12.3%	6.8%	12.9%	10.2%	11.0%	10.2%	10.7%	14.7%	10.4%	10.9%	9.4%
strongly disagree	3.6%	3.8%	2.9%	4.9%	3.5%	4.5%	4.1%	3.8%	3.6%	4.2%	6.4%	4.1%	4.2%	6.4%

Figure 16.Perception of the impact of CPD by the total Serbian sample.

Impact of CPD by educational sector



	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational	General	Vocational
	I1		I2		I3		I4		I5		I6		I7		I8		I9		I10		I11		I12		I13		I14	
strongly agree	14.3%	12.1%	9.6%	9.6%	14.3%	10.6%	9.2%	8.3%	14.3%	11.6%	9.9%	8.6%	9.6%	9.8%	10.6%	9.1%	9.6%	10.1%	9.2%	10.6%	7.2%	8.1%	8.5%	9.8%	9.2%	7.8%	14.7%	12.1%
agree	50.2%	56.3%	46.8%	51.0%	46.8%	50.3%	30.7%	43.9%	46.4%	56.3%	37.2%	41.4%	46.8%	47.7%	43.7%	47.7%	43.0%	43.9%	41.3%	46.0%	38.2%	42.9%	39.6%	40.4%	39.2%	42.4%	41.6%	48.5%
neither agree nor disagree	25.6%	23.0%	30.0%	27.3%	28.0%	29.5%	39.6%	32.8%	27.3%	23.0%	35.8%	32.3%	28.3%	29.0%	28.7%	30.1%	33.4%	32.3%	35.2%	28.0%	31.7%	29.3%	35.5%	36.6%	35.2%	35.6%	27.0%	24.2%
disagree	6.1%	5.1%	9.6%	8.6%	7.5%	7.1%	15.0%	10.4%	7.8%	6.1%	12.3%	13.4%	10.9%	9.6%	12.3%	10.1%	10.2%	10.1%	9.9%	11.4%	15.0%	14.4%	11.3%	9.8%	10.9%	10.9%	10.2%	8.8%
strongly disagree	3.8%	3.5%	4.1%	3.5%	3.4%	2.5%	5.5%	4.5%	4.1%	3.0%	4.8%	4.3%	4.4%	3.8%	4.8%	3.0%	3.8%	3.5%	4.4%	4.0%	7.8%	5.3%	5.1%	3.3%	5.5%	3.3%	6.5%	6.3%

Figure 17.Perception of the impact of CPD by educational sector in Serbia.

What are the preferred modes for CPD?

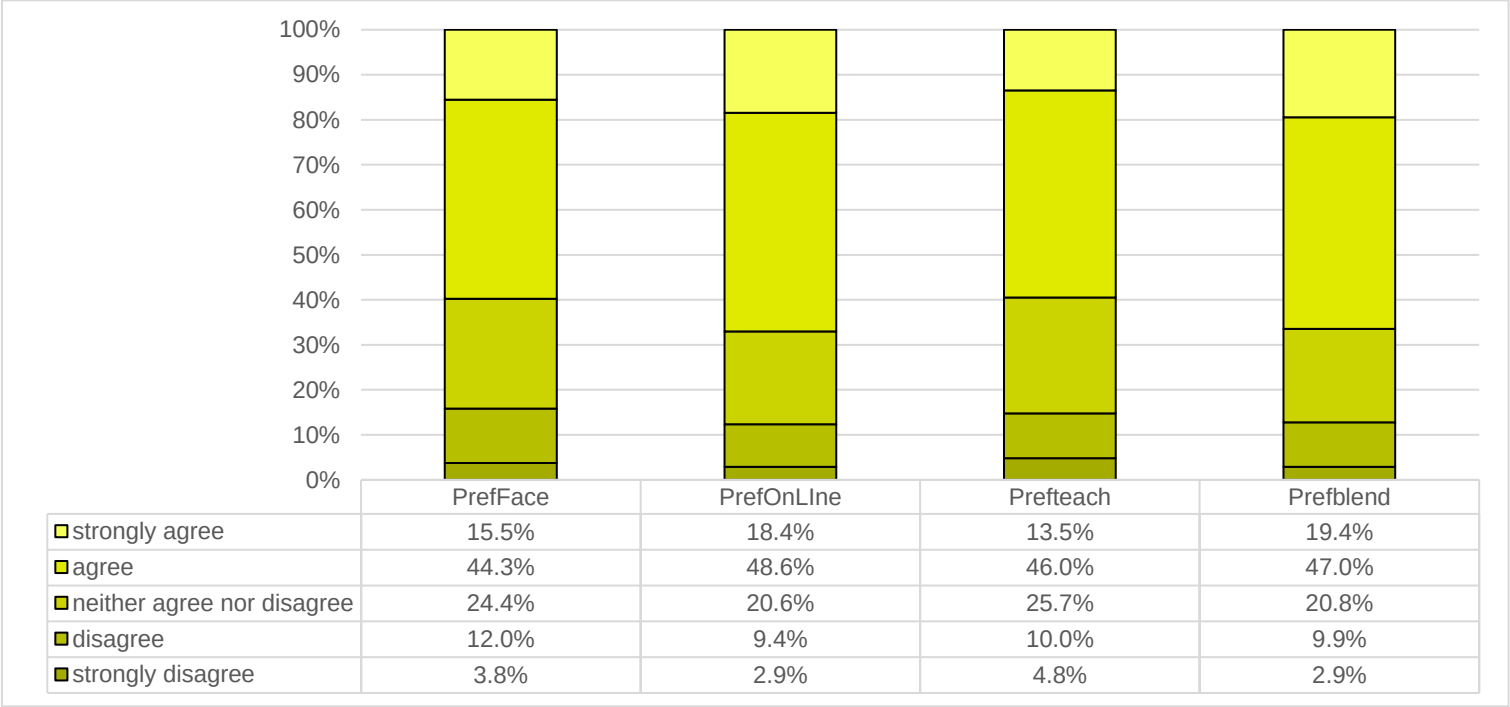
In this survey, teachers were asked to express their preferences regarding four modes of CPD for digital competences (see Codes Key): (1) participation in CPD face to face workshops led by trainers; (2) online CPD; (3) help by other teachers or advisors in their schools and (4) CPD that blends together face-to-face and on-line methods. For each mode of CPD, teachers had the following answer options: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree.

	CODES KEY
PrefFace	I would like to participate in CPD face to face workshops led by trainers to develop my digital competences
PrefOnline	I would like to participate in online CPD to develop my digital competences
PrefTeach	I would like to be helped by other teachers or advisors in my school to develop my digital competences
PrefBlend	I would like to participate in CPD that blends together face-to-face and on-line methods

In the Serbian sample there are no large differences in preference among the four modes of CPD for digital competences. Around 60% of teachers from Serbia were pleased to receive training and support in relation to digital competences in any of the four modes: face to face, on-line, by other teachers or blended (see Figure 18). However, at least during the current COVID-19 crisis teachers in Serbia were slightly more likely to favour both on-line and blended approaches (67%). When it comes to thetypes of schools (see Figure 19), the only diffrence is that more teachers from general schools prefer the blended mode than teachers from vocational schools (53% versus 43% of teachers agreed with this statement).

These results imply that all modes of CPD for development and improvement of digital competence are welcomed by Serbian teachers. It suggests that, in respect to digital competences, Serbian teachers are flexible about the form of CPD and are ready to adapt to the challenges of providing CPD during a crisis. However, some 40% of teachers either expressed some level of dislike for each form of CPD or expressed no preference at all. These figures suggest that some teachers may be experiencing some barriers in relation to CPD.

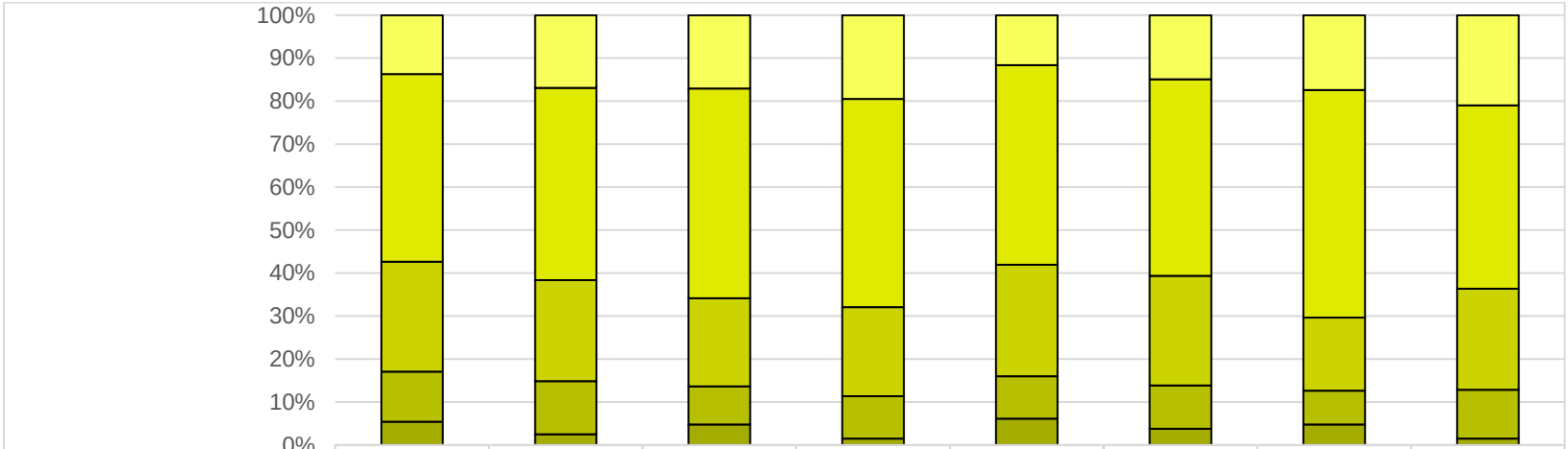
Preferred modes of CPD



	PrefFace	PrefOnLIne	Prefteach	Prefblend
strongly agree	15.5%	18.4%	13.5%	19.4%
agree	44.3%	48.6%	46.0%	47.0%
neither agree nor disagree	24.4%	20.6%	25.7%	20.8%
disagree	12.0%	9.4%	10.0%	9.9%
strongly disagree	3.8%	2.9%	4.8%	2.9%

Figure 18.Preferred modes of CPD by the total Serbian sample.

Preferred modes of CPD by educational sector



	General PrefFace	Vocational PrefFace	General PrefOnLIne	Vocational PrefOnLIne	General Prefteach	Vocational Prefteach	General Prefblend	Vocational Prefblend
strongly agree	13.7%	16.9%	17.1%	19.4%	11.6%	14.9%	17.4%	21.0%
agree	43.7%	44.7%	48.8%	48.5%	46.4%	45.7%	52.9%	42.7%
neither agree nor disagree	25.6%	23.5%	20.5%	20.7%	25.9%	25.5%	17.1%	23.5%
disagree	11.6%	12.4%	8.9%	9.8%	9.9%	10.1%	7.8%	11.4%
strongly disagree	5.5%	2.5%	4.8%	1.5%	6.1%	3.8%	4.8%	1.5%

Figure 1.Preferred modes of CPD by educational sector in Serbia.

CONCLUSION

Learning

- *Digital competences of teachers*

The results obtained based on the self-assessment questionnaire show that 37% of teachers from Serbia reach the B2 proficiency level (Expert) which is characterized by confident, creative and critical use of a variety of digital technologies in a variety of contexts and for a range of purposes. Additionally, 14.2% of the participants reach a C1 proficiency level (Leader level) which means they are able to keep up-to-date on new developments and ideas related to digital technology, exchange information with colleagues and help them to seize the potential of digital technologies for enhancing teaching and learning. The highest, C2 level (Pioneer level), is reached by 2.3% of teachers. This means that in total 53.3% of teachers in Serbia believe that they manifest a strong performance (B2 and upward) regarding their digital competences. Additionally, a larger number of teachers from general schools reached an advanced level of digital competence (B2-C2) than teachers in vocational schools (61.6% versus 47.6%). Furthermore, teachers in large schools scored slightly better on these levels than teachers in small schools (55.3% versus 51.3%).

On the other hand, around a third of Serbian teachers (35.6%) reach the B1 proficiency level (Integrator level) which means that they experiment with digital technologies, use them to enhance diverse aspects of their professional engagement and that they are eager to expand their repertoire of practices.

The survey reveals that about 11% of Serbian teachers, according to their own evaluation, are at the early stages of developing their digital competence. These are the teachers on A1 and A2 level of proficiency (0.7 % and 10.2% respectively).These teachers need additional incentives to start using digital technologies for communication with students, parents and other colleagues form schools, as well as, in their educational practice and will benefit from more consistent practice in using digital technology.

- *Technologies and practices used during COVID19 lockdown*

The teachers' main focus during the COVID19 lockdown was on the use of digital tools/activities that enabled them to communicate with students, distribute learning tasks, share teaching materials, and to evaluate students' activities. Use of synchronous video for teaching was markedly less frequent than the use of virtual classrooms. However, during this period, teachers were not focused on creating new digital resources. The survey reveals that a higher number of teachers from general schools than those from vocational schools used various kinds of digital tools/activities both daily and three times per week during the COVID19 lockdown. On the other hand, there is no clear difference between teachers of vocational and teachers of general and those of "other" subjects with respect to their use of digital tools and activities.. Although the teachers from general and vocational schools do differ in terms of proficiency level, it is likely that some of the differences in usage of digital technologies can be attributed to socioeconomic and school-level factors (e.g. the available resources and the extent to which learners from vocational schools could access virtual lessons) rather than the teachers' competence. Additionally, some of the differences in the usage of digital technologies related to school subjects may be due to the nature of the curriculum or to the number of classes (e.g. teachers of professional subjects usually have less class per week with the same group of students than teachers of academic subjects).

- *CPD experiences and effectiveness*

Approximately 20% of teachers from Serbia did not participate in online CPD trainings, nor did they receive support from other teachers and advisors for the development of their digital competencies, in the past 12 months. Teachers from general and large schools were more likely to report (27% and 25% respectively) that they did not participate in the online CPD for a period of 12 months. On the other hand, teachers from vocational schools have more continuous support from colleagues and participate more often in online CPD. For example, 83% of teachers from vocational schools participated at least once, and 47% participated on several or many occasions in online CPD (in comparison to 73% and 39% of teachers from general schools).

Regarding the effectiveness of CPD, around 50% of teachers in Serbia are satisfied with CPD's effect on the development of all aspects of their digital competences. According to teachers' opinion, CPD was especially effective in enabling them to more effectively communicate digitally with students and parents (67%) and to more

effectively use different digital technologies (65%). This is consistent with the results that the majority of Serbian teachers, during the COVID19 lockdown, used virtual classroom software (e.g. Google Classroom) every day, as well as, were engaged in daily sharing of documents and text messages via social media (77% and 66% respectively). Additionally, CPD helped teachers in finding, adapting and creating digital resources that serve different learning tasks and different learners(61%) which is an area in which teachers are at the early stages of development (31% of the teachers, according to their own evaluation, are at the A level). It can be concluded that teachers mostly benefit from the CPD in *Area 1: Professional Engagemen*t and *Area 2: Digital resources* but also there are teachers (26% and 31% respectively) that still need support to develop competence in these two areas.

- *Training Needs*

More than 70% of teachers report high or very high needs for: CPD related to teaching students to make responsible and critical use of digital technologies; teaching students how to work and learn digitally; enabling students to use digital technologies for group work; making greater and more effective use of different digital technologies, as well as, teaching and assessing at a distance during the COVID19 lockdown. These widely experienced CPD needs are mainly related to *Area 2: Digital Resources* and *Area 5: Empowering learners* in which around 30% of Serbian teachers, according to their own self-evaluation, express low levels of digital competence (A1 or A2 level).

Priorities are similar if we focus only on the 20-25% of teachers that express a very high need for CPD. Every fourth teacher in Serbia has a very high need for CPD related to Teaching and assessing at a distance during the COVID19 lockdown (25%). Additionally, every fifth teacher in Serbia considers their need for CPD to be very high when it comes to the following aspects of digital competence: Managing and protecting sensitive data and content (24%); Teaching students to make responsible and critical use of digital technologies (23%); Enabling students to use digital technologies for group work (20%); Planning digital learning that will overcome potential digital problems, e.g. lack of access to devices or data (20%); Teaching students how to work and learn digitally (20%).

Recommendations

The study has implications for the design, delivery and allocation of CPD intended to develop the digital competences of teachers. It will be of interest to Institute for Improvement of Education (IIE) and to school CPD co-ordinators as well as to providers of CPD. The survey shows clearly that teachers believe that they have different levels of digital competence and that the level of their competence varies by type of competence. This suggests that CPD should be designed and offered to take account of these different needs. Additionally, two school reports show a considerable difference between the schools (e.g. different proficiency score and different digital areas were strong or weak). This finding confirms that schools may need to tailor competence development to their teachers' needs and their goals. Furthermore decision makers at national and school level should be assisted to make smart use of data on needs to inform their decisions.

Further CPD is required to meet the priority needs identified in this study, including training to support distance teaching and learning. Digital competences of two kinds - *Area 2: Digital Resources* and *Area 5: Empowering learners* – should receive particular attention. Steps should be taken to support a greater use of synchronous video for teaching purposes, for example, by increasing connectivity or providing support to teachers.

Teachers from vocational and general schools from Serbia need to be encouraged to use online training opportunities as much as possible, such as webinars, online courses, MOOCs, etc. This can be done by recognising these forms of CPD activities as contributing points to meet formal requirements for in-school professional development. When choosing online training the school' coordinator/team for CPD should assist the teachers, and should also monitor the attendance of online trainings and verify that the online trainings have been successfully completed.

At the school level teachers should be encouraged to assist each other in developing their digital teaching strategies, to discuss with colleagues how to use digital technologies to innovate and improve their educational practice, as well as, to exchange ideas and materials, and jointly create digital resources. Computer science teachers and other more digitally competent teachers, along with the school' coordinator/team for the CPD should play a major role in these activities. If a school lacks a core of digitally competent teachers, then it might explore organising on-line workshops with other schools.

The strong point of the DigComEdu Check-In instrument (which was incorporated into this survey) is that it allows teachers to gain first-hand insight into their level of digital competence and that gives them detailed feedback on how to further enhance their digital competence, considering their current level. This feedback should be used as a starting point when designing and allocating CPD both in schools and national level.

For use in Serbia, further revision of the survey tool is needed in order to harmonize it with the national vision of the role of teachers and the national *Framework for digital competence - Teachers for digital age 2019*. Stakeholders' representatives (e.g. experts for digital technologies, representatives from the Institute for Improvement of Education (IIE), representatives from the Ministry of Education Science and Technological Development (MoESTD), etc.) should be involved and they may want to take into account the emerging new framework of SELFIE for teachers..

Possible additional analysis and future use

Further analysis could be carried out to explore whether the differences registered in relation to the educational sector (vocational versus general schools), school size (large versus small schools), type of subjects (general subjects, professional subjects and other subjects) are statistically significant or not.

When it comes to additional analyses, it would be relevant to explore relations between teachers' digital competence and other variables such as digital technology use, the CPD they had, their need for CPD, etc. Furthermore, it would be interesting to compare the digital competences of teachers by age, experience, by school and by gender. Additionally, a comparison could also be done between teachers of computer science and teachers of other subjects.

Finally, research would be required to understand why some 20% of teachers missed out on CPD related to digital competences last year and whether or not they have unmet needs.

How the Needs Analysis might be used?

The Digital Needs Analysis Tool for Teachers (DNATT) allows each teacher to evaluate their competence level and, based on this, to plan their future individual professional development. Additionally, the detailed feedback which the teachers receive based on their proficiency level can be a significant incentive for the

continuing process of self-reflection which can lead the teachers to higher levels of development of digital competences. Throughout this process teachers should be supported and counselled by school advisors and/or the schools' CPD coordinator.

At school level, the DNATT can also be used for yearly planning of professional development at the school level. Furthermore, the schools can use the DCNAS in conjunction with the SELFIE (*Self-reflection on Effective Learning by Fostering the use of Innovative Educational Technologies)* instrument. Further work is necessary to explore how this should be done in practice.

This pilot has shown how the DNATT generates information based on a representative sample of teachers that is relevant for planning the provision of CPD at the state level.


THE EU AGENCY SUPPORTING COUNTRIES
TO DEVELOP THROUGH LEARNING

Contribution ID: 544e1dff-12af-4ff9-9403-f0c35d9733c1
Date: 17/03/2021 17:41:09

Српска верзија инструмента DigCompEdu за анализу потреба наставника у области дигиталних компетенција

Fields marked with * are mandatory.

Увод

За успешно обављање посла, наставницима су све потребније дигиталне компетенције док су школама и националним агенцијама неопходне информације о потребама наставника за стручним усавршавањем како би креирале одговарајуће обуке за професионални развој.

Сврха овог истраживања јесте да Вам омогући да процените властите дигиталне компетенције и на тај начин помогнете школама и националним агенцијама да планирају професионални развој и изађу у сусрет потребама које наставници имају у погледу стручног усавршавања.

Истраживање подржава Министарство просвете, науке и технолошког равоја Републике Србије, заједно са Европском агенцијом за стручно усавршавање (ETF), Заједничким истраживачким центром Европске уније и Иницијативом за реформу образовања југоисточне Европе (ERI-SEE).

Већина питања заснива се на Европском оквиру дигиталних компетенција за наставнике (DigCompEdu), националном оквиру дититалних компетенција Републике Србије (Оквир дигиталних компетенција – Наставник за дигитално доба 2019.) и инструменту за самовредновање наставника у функцији унапређивања дигиталних компетенција (DigCompEdu Check-In)

Истраживање се спроводи у пет земаља: Албанија, Црна Гора, Молдавија, Северна Македонија и Србија.

Ваши лични подаци су заштићени. Ваши одговори ће се употребљавати искључиво за потребе истраживања и планирања.

Након попуњавања упитника добићете детаљну повратну информацију са корисним практичним саветима за унапређивање Ваших дигиталних компетенција. Уколико желите можете добити и извештај о резултатима након спровођења истраживања.

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Упитник се састоји из три дела: Дигиталне компетенције, Лични подаци и Професионални развој.

* 1 **Одаберите школу у којој предајете.**

- (●) Гимназија Миле Арсенијевић Бандера, Мајданпек
- ( ) Гимназија, Параћин
- ( ) Гимназија Прибој, Прибој
- ( ) Гимназија Бранко Радичевић, Стара Пазова
- ( ) Гимназија Свети Сава, Пожега
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- ( ) Четврта београдска гимназија, Београд
- ( ) Седма београдска гимназија, Београд
- ( ) Гимназија, Чачак
- ( ) Пожаревачка гимназија, Пожаревац
- ( ) Економско-трговинска школа, Бор
- ( ) Средња школа Никола Тесла, Баточина
- ( ) Техничка школа Јован Жујовић, Горњи Милановац
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- ( ) Средња стручна школа Васа Пелагић, Ковин
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- ( ) Средња школа, Гроцка
- ( ) Зуботехничка школа, Београд
- ( ) Машинско-електротехничка школа Гоша, Смедеревска Паланка
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- ( ) Техничка школа, Тутин
- ( ) Економско-трговинска школа, Краљево
- ( ) Средња школа Вук Караџић, Љубовија

- Техничка школа, Жагубица
- Средња стручна школа, Ниш
- Друго

Кликните на дугме "Next" како бисте наставили са попуњавањем упитника. Клините на дугме "Previous" уколико желите да се вратите уназад.

Шта су дигиталне компетенције?

У овом одељку проценићете своје дигиталне компетенције као наставника. Молимо Вас да узмете у обзир 6 различитих области Вашег рада

Кликните на дугме "Next" како бисте наставили са попуњавањем упитника. Клините на дугме "Previous" уколико желите да се вратите назад.

Област 1: Професионални ангажман

Дигиталне компетенцијенаставника испољавају се не само као способност употребе дигиталних технологија за унапређивање наставе, већ и за професионалну интеракцију са колегама, ученицима, родитељима и другим заинтересованим странама, за индивидуални професионални развој наставника, за опште добро и трајну иновацију у школи и наставничкој професији. То је у средишту Области 1.

Одговори су организовани тако да прате повећање нивоа ангажовања са дигиталним технологијама. Одаберите опцију која најбоље одражава вашу тренутну праксу.

*

1 **Систематично употребљавам различите дигиталне алате за побољшање комуникације са ученицима, родитељима и колегама**, нпр. електронска пошта, блогови, веб-сајт школе, апликације, итд.

- **Ретко** користим дигиталне алате за комуникацију
- Користим **основне** дигиталне алате за комуникацију, нпр. електронска пошта
- **Комбинујем** различите дигиталне алате за комуникацију, нпр. електронска пошта и блог одељења или веб-сајт школе
- **Систематично** бирам, прилагођавам и комбинујем различите дигиталне алате **како бих ефикасно комуницирао/ла.**
- **Промишљам и дискутујем** о својим стратегијама употребе дигиталних алата за комуникацију и **практивно их развијам**

* 2 **Употребљавам дигиталне технологије за сарадњу са колегама унутар своје школе и изван ње (нпр. електронска пошта, Moodle, Facebook, ...)**

- **Ретко** имам прилику да употребљавам дигиталне технологије за **сарадњ у** са другим наставницима
- **Понекад** размењујем материјале са колегама, нпр. електронском поштом
- Заједнички радим **са колегама у окружењима за сарадњу** или користећи дискове за дељење података, нпр. Moodle, Ms Teams, Dropbox, Google Drive
- Размењујем идеје и материјале и са наставницима **изван моје школе**, нпр. онлајн мреже наставника, Facebook
- **Заједно** са колегама/колегиницама **креирам** материјале у оквиру онлајн мреже наставика

* 3 **Активно развијам своје дигиталне наставничке вештине**

- **Ретко** имам времена да радим на својим дигиталним наставним вештинама
- Побољшавам своје вештине кроз **рефлексију** и **експериментисање**.
- Користим **низ ресурса** како бих развио/ла своје дигиталне наставне вештине
- **Разговарам са колегама/колегиницама** о томе како употребљавати дигиталне технологије за иновације и побољшање образовне праксе.
-

Помажем колегама/колегиницама у развијању њихових дигиталних вештина и наставних стратегија.

* 4 **Користим могућности за онлајн усвршавање**, нпр. онлајн курсеви, Масивни отворени онлајн курсеви (MOOC), вебинари...

- To је **ново** подручје које још нисам разматрао/ла
- Још нисам, али засигурно ме **занима**
- Учествовао/ла сам у онлајн обукама **једанпут или двапут**
- **Испробао/ла** сам различите могућности за онлајн усавршавање
- **Често** учествујем у **свим врстама** онлајн обука

Кликните на дугме "Next" како бисте наставили са попуњавањем упитника. Клините на дугме "Previous" уколико желите да се вратите назад.

Област 2: Дигитални ресурси

Једна од кључних компетенција коју наставник/ца треба да развије јесте проналажење квалитетних образовних ресурса, као и прилагођавање, кереирање и размена дигиталних ресурса који одговарају њиховим циљевима учења, карактеристикама ученика и стилу подучавања. Истовремено, наставници морају бити свесни како одговорно да употребљавају дигитални садржај и управљају њиме, поштујући прописе о ауторским правима и штитећи личне податке. Ова питања су у средишту Области 2.

Одговори су организовани тако да се повећава ниво ангажовања у погледу дигиталних ресурса. Одаберите опцију која најбоље одражава Вашу тренутну праксу.

*

1 **Користим различите интернет странице и стратегије претраживања како бих пронашао/ла и одабрао/ла низ различитих дигиталних ресурса**

- **Ретко** користим интернет како бих пронашао/ла ресурсе
- Користим **претраживаче** и **образовне платформе** како бих пронашао /ла релевантне ресурсе
- **Процењујем** и бирам ресурсе на основу њихове **прикладности** за групу ученика са којом радим
- **Упоређујем ресурсе** користећи **низ** релевантних **критеријума**, нпр. поузданост, квалитет, прикладност, дизајн, интерактивност, привлачност
- **Саветујем** колеге и колегинице о одговарајућим ресурсима и стратегијама претраживања

* 2 **Стварам сопствене дигиталне ресурсе и мењам постојеће како би их прилагодио /ла својим потребама, нпр. слајдови, видео записи, радни листови**

- **Не стварам** сопствене дигиталне ресурсе
- Израђујем радне листове на рачунару, али **их затим штампам**
- Израђујем дигиталне **презентације**, али не много више од тога
- Стварам и мењам **различите врсте** ресурса
- Постављам и прилагођавам **сложеније, интерактивне** ресурсе (нпр. на форуме)

* 3 **Ефикасно штитим осетљиве садржаје, нпр. тестове, оцене ученика, личне податке**

- То **не морам да радим** јер се школа брине за то
- **Избегавам** електронско чување личних података
- Штитим **неке** личне податке
- **Лозинкама штитим** датотеке с личним подацима
- **Свеобухватно** штитим личне податке, нпр. комбинујем јаке лозинке са шифрирањем и честим ажурирањем софтвера.

Кликните на дугме "Next" како бисте наставили са попуњавањем упитника. Клините на дугме "Previous" уколико желите да се вратите назад.

Област 3: Настава и учење

Најзахтевнија компетенција целокупног оквира DigCompEdu јесте осмишљавање, планирање и примена дигиталних технологија у различитим фазама процеса наставе и учења. Међутим, док се то настоји, неопходно је променити фокус часова са процеса који води наставник на процесе усмерене на ученике. То је стварна снага дигиталних технологија и фокус Области 3.

Одговори су организовни тако да означавају повећање нивоа укључивања дигиталних технологија у наставу и учење. Одаберите одговор која најбоље одражава Вашу тренутну праксу.

* 1 **Користим дигиталне технологије у одељењу**

- Не употребљавам или **ретко** употребљавам дигиталне технологије у одељењу
- Само **основно** користим доступну опрему, нпр интерактивну мултимедијалну таблу или пројектор
- У настави користим **низ** дигиталних алата
- Употребљавам дигиталне алате за **систематично** унапређивање наставе
- Пажљиво разматрам **како, када и зашто** користим дигиталне технологије у настави како бих осигурао/ла да се оне користе са **додатн ом педагошком вредношћу**

* 2 **Пратим и подстичем активности и интеракције својих ученика у сарадничним онлајн окружењима која користимо, нпр. Ms Teams, Google Classroom, Moodle**

- **Не користим** дигитална окружења са својим ученицима
- **Не подстичем** активности ученика у онлајн окружењима која користимо
- **Повремено** постављам активности за ученике и модерирам њихове дискусије

- Редовно **подстичем** и **анализирам** онлајн активности својих ученика
- **Редовно иницирам** смислене интеракције са својим ученицима и између њих

* 3 **Када моји ученици раде у групи или тиму, они користе дигиталне технологије**

- Моји ученици **не раде** у групама
- Није **изводљиво** да интегришем дигиталне технологије у групни рад
- **Охрабрујем** ученике који раде у групама да траже информације онлајн или да презентују резултате у дигиталном формату
- Од ученика који раде у тимовима **тражим** да користе интернет како би пронашли информације и представили своје резултате у дигиталном формату
- Моји ученици често **раде сарадници** (размењују информације и заједнички креирају знање у сарадничком онлајн окружењу)

* 4 **Дигиталне технологије користим како бих оснажио/ла ученике да сами планирају, прате, вреднују своје учење**

Нпр. квизови за самопроцену, е-портфолији за документовање и приказивање случајева, онлајн дневници/блогови за рефлексију ...

- **Није могуће** да ученици промишљају о свом учењу у мом радном окружењу
- Моји ученици промишљају о свом учењу, али **не уз дигиталне технологије**
- **Понекад** користим неки дигитални алат како бих подржао /ла самопроцену ученика (на пример, квизови)
- Охрабрујем ученике да користе **разне** дигиталне алате како би планирали и пратили своје учење, или промишљали о њему
- **Систематично** интегришем различите дигиталне алате како бих подржао/ла ученике да планирају, прате и промишљају о свом напредовању

Кликните на дугме "Next" како бисте наставили са попуњавањем упитника. Клините на дугме "Previous" уколико желите да се вратите назад.

Област 4: Оцењивање

Дигиталне технологије могу побољшати постојеће стратегије процењивања и створити нове и боље методе процењивања ученичких постигнућа. Поред тога, анализом богатства (дигиталних) података доступних о појединачним (интер-)акцијама ученика, наставници могу понудити циљаније повратне информације и подршку. Област 4 се бави овом променом у стратегијама оцењивања.

Одговори су организовани тако да се повећава ниво ангажовања са дигиталним процењивањем. Изаберите одговор која најбоље одражава Вашу тренутну праксу.

* 1 **Употребљавам дигаталне алате за оцењивање како бих пратио/ла напредовање ученика**

- **Не пратим** напредовање ученика
- Редовно **пратим** напредовање ученика, **али не дигиталним** алатима
- **Понекад** користим дигитални алат, нпр. квиз, како бих проверио/ла напредовање ученика
- Користим **разне** дигиталне алате за праћење напредовања ученика, нпр. размена датотека, анкетирање, квизови, "ћаскање"
- **Систематично** користим разне дигиталне алате за праћење напредовања ученика.

* 2

Анализирам све доступне дигиталне податке како бих благовремено идентификовао/ла ученик којима је потребна додатна подршка

„Подаци“ укључују: ангажовање ученика, постигнуће, оцене, присуство; активности и социјалне интеракције у онлајн окружењу; „Ученици којима је потребна додатна подршка“ су: ученици који ризикују да

одустану или не успеју; ученици који имају поремећаје учења или специфичне потребе за учењем, ученици којима недостају међупредметне вештине, нпр. социјалне, вербалне или вештине учења.

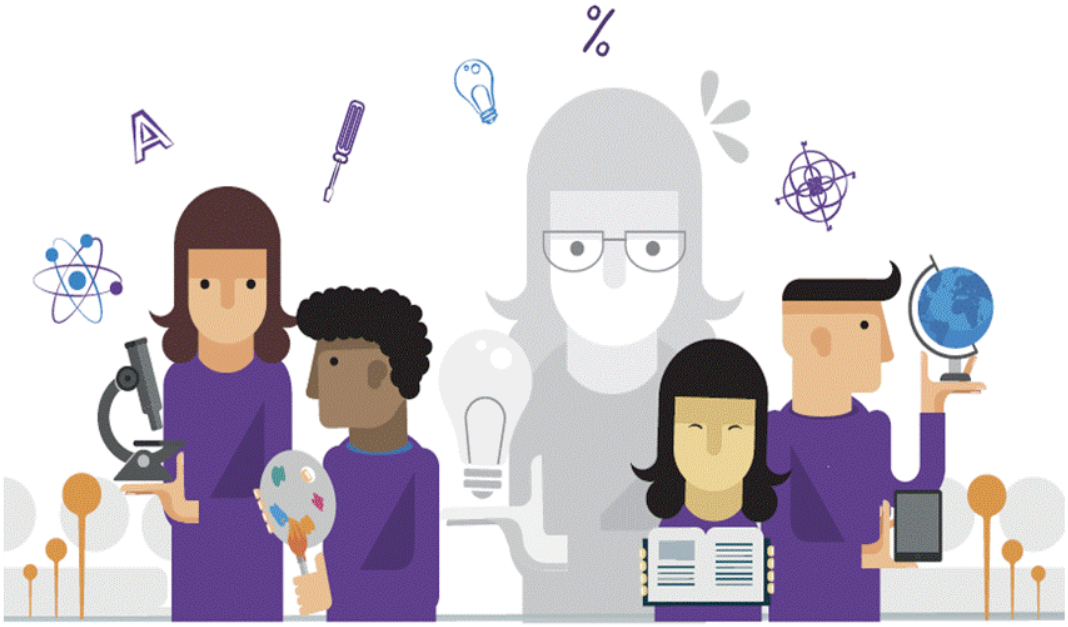
- Ти подаци ми нису доступни и/или **није моја одговорност** да их анализирам
- Анализирам **само академски значајне дигиталне податке,** нпр. постигнуће и оцене
- **Такође** узимам у обзир дигиталне податке о **активностима** и **понашању** ученика како бих идентификовао/ла ученике којима је потребна додатна подршка
- **Редовно** проверавам **све доступне дигиталне податке** како бих идентификовао/ла ученике којима је потребна додатна подршка
- **Систематично** анализирам дигиталне податке и **благовремено интервенишем**

* 3 **Користим дигиталне технологије како бих ученицима пружио/ла ефикасне повратне информације**

- Повратне информације **нису неопходне** у мом радну окружењу
- Пружам повратне информације ученицима, али **не у дигиталном облику**
- Понекад користим **дигиталне технологије** за давања повратних информација, нпр. аутоматски резултати у онлајн квизовима, коментари или „свиђања“ у онлајн окружењима
- Често користим **разне** дигиталне технологије за давање повратних информација
- **Систематично** користим дигиталне технологије да бих пружио/ла повратне информације

Кликните на дугме "Next" како бисте наставили са попуњавањем упитника. Клините на дугме "Previous" уколико желите да се вратите назад.

Област 5: Оснаживање ученика



Једна од кључних снага дигиталних технологија у образовању јесте њихов потенцијал за подршку активног укључивања ученика у процес учења и управљање процесом учења. Дигиталне технологије се могу користити и за прилагођавање активности учења нивоу компетенције сваког ученика, његовим интересовањима и потребама за учењем. Међутим, истовремено се мора водити рачуна да се не погоршају постојеће неједнакости (нпр. у приступу дигиталним технологијама) и да се обезбеди доступност свим ученицима, укључујући и оне којима је потребна додатна подршка. Област 5 се бави овим питањима.

Одговори су организовани тако да се повећава фокус на индивидуалне потребе ученика за учењем. Изаберите одговор који најбоље одражава Вашу тренутну праксу.

* 1 **Када креирам дигиталне задатке за ученике, разматрам и бавим се потенцијалним проблемима у вези са коришћењем дигиталне технологије**

Нпр. једнак приступ дигиталним уређајима и ресурсима; недостатак дигиталних вештина

- **Не креирам** дигиталне задатке
- Моји ученици **немају проблема** са коришћењем дигиталне технологије
- **Задатак прилагођавам** тако да умањим потешкоће при коришћењу дигиталне технологије
- Са ученицима **разговарам** о могућим препрекама и **предлажем решења**
- **Допуштам разноликост**, нпр. прилагођавам задатак, расправљам о решењима и пружам алтернативне начине за извршавање задатка

* 2 **Користим дигиталне технологије како бих ученицима понудио/ла индивидуализоване могућности учења**

Нпр. различитим ученицима дајем различите дигиталне задатке како би уважио/ла њихове индивидуалне потребе, преференције и интересовања

- У мојој учионицу **сви** ученици **раде исте активности**, без обзира на њихов ниво
- Дајем ученицима **препоруке** за додатне ресурсе
- Обезбеђујем **додатне дигиталне активности** за ученике који су напредни или заостају
- **Кад год је то могуће**, користим дигиталне технологије како бих понудио /ла диференциране могућности учења
- **Систематично** прилагођавам своју наставу тако да је повежем са индивидуалним потребама, преференцијама и интересовањима ученика

* 3 **Користим дигиталне технологије како би ученици активно учествовали у настави**

- У мом радном окружењу **није могуће** активно укључити ученике у наставу
- **Активно** укључујем ученике у наставу, **али не са дигиталним** технологијама
- **Када држим наставу** користим мотивационе стимулусе, нпр. видео снимци, анимације, цртани филмови
- На мојим часовима ученици **користе дигиталне технологије,** нпр. електронски радни листови, игре, квизови
- Моји ученици **систематично** користе дигиталне технологије за **истражи вање**, **дискусију** и **стварање** знања

Кликните на дугме "Next" како бисте наставили са попуњавањем упитника. Клините на дугме "Previous" уколико желите да се вратите уназад.

Област 6: Подстицање дигиталних компетенција ученика

Способност подстицања дигиталних компетенција ученика саставни је део дигиталне компетенције наставника и у средишту је Области 6.

Одговори су организовани тако да се повећава ниво ангажовања у подршци развоју дигиталних компетенција ученика. Изаберите одговор која најбоље одражава Вашу тренутну праксу.

* 1 **Учим ученике како да процене поузданост информација и да препознају дезинформације и пристрасност**

- То **није могуће** у мом предмету или радном окружењу
- **Повремено** подсетим ученике да нису све онлајн информације поуздане
- Учим ученике како да **препознају** поуздане и непоуздане **изворе**
- Са ученицима **разговарам** о томе **како да провере** тачност информација
- **Детаљно** разговарамо о томе како се информације генеришу и како се могу искривити

* 2 **Постављам задатке који захтевају од ученика да користе дигиталне технологије за међусобну комуникацију и сарадњу или за комуникацију и сарадњу са особама изван школског окружења**

- То **није могуће** у мом предмету или радном окружњу
- Само у **ретким** приликама моји ученици морају да онлајн комуницирају или сарађују
- Моји ученици **углавном међусобно** користе дигиталну технологију за комуникацију и сарадњу

- Моји ученици користе дигиталне технологије за међусобну комуникацију и сарадњу, као и за комуникацију и **сарадњу са особама изван школског окружења**
- **Систематично** постављам задатке који омогућавају ученицима да полако проширују своје вештине

* 3 **Постављам задатке који захтевају од ученика да креирају дигиталне садржаје**
нпр. видео снимци, аудио снимци, фотографије, дигиталне презентације, блогови, викији ...

- То **није могуће** у мом предмету или радном окружењу
- Ово је **тешко** применити код мојих ученика
- **Понекад**, као забавну активност
- Моји ученици креирају дигиталне садржаје као интегрални део **њиховог учења**
- Ово је саставни део њиховог учења и **систематично повећавам** ниво захтева да бих даље развијао/ла њихове вештине

* 4 **Учим ученике како да се понашају безбедно и одговорно на интернету**

- То **није могуће** у мом предмету или радном окружењу
- **Информишем** их да морају бити опрезни са остављањем личних података на интернету
- **Објашњавам** основна правила за безбедно и одговорно деловање у онлајн окружењу
- **Дискутујемо** и договарамо се о правилима понашања
- **Систематично** подстичем поштовање социјалних правила код својих ученика у различитим дигиталним окружењима које користимо

* 5

Подстичем ученике да креативно користе дигиталне технологије за решавање конкретних проблема

Нпр. за превазилажење препрека или изазова који се јављају током процеса учења

- То **није могуће** код мојих ученика, у мом радном окружењу
- **Ретко** имам прилику да код ученика негујем решавање проблема коришћењем дигиталних алата
- **Повремено**, кад год се појави могућност
-

- **Често** експериментишемо са решавањем проблема коришћењем дигиталних алата
- **Систематично** интегришем могућности за креативно решавање проблема коришћењем дигиталних алата

Кликните на дугме "Next" како бисте наставили са попуњавањем упитника. Клините на дугме "Previous" уколико желите да се вратите назад.

Лични подаци

Овај одељак ће нам помоћи прикупимо опште податке о наставницима. Ваши лични подаци неће бити доступни.

За било каква питања или недоумице, консултујте EUSurvey политику заштите личних података.

* 1 **Колико година имате?**

- мање од 25
- 25-29
- 30-39
- 40-49
- 50-59
- 60 или више
- не желим да наведем

* 2 **Укључујући и ову школску годину, колико година већ предајете?**

1-3
- 4-5
- 6-9
- 10-14
- 15-19
- 20 и више
- Не желим да наведем

* 3 **Коју од следећих врста предмета углавном предајете?**

- Општи академски предмети, нпр. математика, језици
- Стручни предмети, нпр. инжењеринг, пословна администрација
- Остало

* 5 **Да ли предајете информатику или информациону технологију или програмирање?**

- Да
- Не

6 **Колико често сте током COVID-19 забране кретања користили следеће дигиталне алате/активности?**

	Никада	Једанпут недељано	Три пута недељно	Сваки дан
* Софтвер за виртуелне учионице (нпр. Ms Teams, Google Classroom, Moodle)	○	◉	○	○
* Синхрони видео-комуникацијски алати (нпр. Zoom, Skype, WhatsApp, Facebook live)	○	◉	○	○
* Дељење и размена докумената („услуге у облаку“, нпр. Basecamp, Dropbox, Google Drive, онлајн едитори за заједничке продукте)	○	○	◉	○
* Дељење екрана од стране наставника (емитовање екрана), на пример, ради презентација или постављања задатака	◉	○	○	○
* Продуковање идеја, квизови или анкете (нпр. мапа ума, упитници вишеструког избора за самопроцену)	◉	○	○	○
* Алати за планирање и организацију (нпр. пошта и календар, системи управљања образовањем за комуникацију са школама, ученицима и родитељима)	○	◉	○	○

* Гледање снимљених видео и/или аудио снимака (нпр. из онлајн библиотеке)	○	◉	○	○
Прављење и емитовање видео и/или аудио записа (нпр. YouTube)	◉	○	○	○
* Дељење и размена докумената и текстуалних порука, на пример, путем имејла или веб локација или друштвених медија (нпр. Facebook, Whatsapp)	○	○	○	◉

Кликните на дугме "Next" како бисте наставили са попуњавањем упитника. Клините на дугме "Previous" уколико желите да се вратите назад.

Стално стручно усавршавање (ССУ)

COVID-19 је приморао наставнике да пређу на наставу на даљину и на онлајн наставу и да користе разне дигиталне технологије. Овај одељак истражује какаво сте **Стално стручно усавршавање (ССУ)** имали у последњих 12 месеци да бисте развили Ваше дигиталне компетенције и какав је утицај то имало на Вашу наставну праксу.

Изаберите опцију која најбоље описује колико се слажете са изјавом.

* 1 **Током последњих 12 месеци учествовао/ла сам у онлајн програмима ССУ да бих развио/ла своје дигиталне компетенције.**

- ○ Никада
- ◉ Једанпут
- ○ Два или три пута
- ○ Више пута

* 2 **Током последњих 12 месеци други наставници или стручни сарадници у мојој школи су ми помагали да развијем своје дигиталне компетенције.**

- ○ Никада
- ○ Једанпут
- ◉ Два или три пута
- ○ Више пута

3 **Уколико сте током последњих 12 месеци добили неку другу подршку или упутство за побољшање дигиталних компетенција, опишите испод:**

4 **Како бисте описали своје искуство ССУ у протеклих 12 месеци које се односило на Ваше дигиталне компетенције?**

	уопште се не слажем	не слажем се	нити се слажем, нити се не слажем	слажем се	у поптуности се слажем
* Моја школа ме је подстакла да учествујем у ССУ	○	○	○	◉	○
* ССУ сам изабрао/ла на основу личних развојних потреба	○	○	○	◉	○

5 **Узимајући у обзир компетенције и обуку коју Већ имате и искуства у последњих 6 месеци, процените своју потребу за ССУ који се бави следећим врстама дигиталних компетенција.**

	Нема потребе	Мала потреба	Велика потреба	Веома велика потреба
* Коришћење дигиталне технологије за комуникацију са ученицима и родитељима	◉	○	○	○
* Коришћење дигиталне технологије за сарадњу са колегама	◉	○	○	○
* Проналажење, прилагођавање и стварање дигиталних ресурса који служе различитим задацима учења и различитим ученицима	○	○	○	◉
* Управљање и заштита осетљивих података и садржаја	○	○	◉	○
* Већа и ефикаснија употреба различитих дигиталних технологија	○	○	◉	○
* Оспособљавање ученика за коришћење дигиталних технологија за групни рад	○	○	◉	○
* Коришћење дигиталне технологије за оцењивање рада ученика и пружање повратних информација	○	○	◉	○
* Коришћење дигиталних технологија за праћење и анализу активности ученика	○	○	◉	○
* Коришћење дигиталних технологија за активно укључивање ученика у учење	○	○	◉	○
* Коришћење дигиталних технологија за задовољавање индивидуалних потреба за учењем	○	○	○	◉
* Планирање онлајн учења које ће превазићи потенцијалне проблеме, нпр. недостатак приступа дигиталним уређајима или подацима	○	○	◉	○
*				

Учење ученика како да раде и уче у онлајн окружењу	○	○	◉	○
* Учење ученика да одговорно и критички користе дигиталне технологије	○	○	◉	○
* Настава и оцењивање на даљину током COVID-19 забране кретања	○	○	◉	○

6 **Како бисте описали утицај ССУ у којима сте учествовали на дигиталне компетенције?**

	у потпуности се не слажем	не слажем се	нити се слажем, нити се не слажем	слажем се	у потпуности се слажем
* ССУ ми је помогло да користим различите дигиталне технологије за комуникацију са ученицима и родитељима	○	◉	○	○	○
* ССУ ми је помогло да користим различите дигиталне технологије за сарадњу са колегама	○	◉	○	○	○
* ССУ ми је помогло да пронађем, прилагодим и створим дигиталне ресурсе који служе различитим задацима учења и различитим ученицима	○	○	◉	○	○
* ССУ ми је помогла да управљам и штитим осетљиве податке и садржаје	○	○	○	◉	○
* ССУ ми је помогло да боље и ефикасније користим различите дигиталне технологије	○	○	○	◉	○
* ССУ ми је помогло да омогућим ученицима да користе дигиталне технологије за групни рад	○	○	○	◉	○
* ССУ ми је помогло да користим дигиталне технологије за процену рада ученика и за пружање повратних информација	○	○	○	◉	○
* ССУ ми је помогло да користим дигиталне технологије за					

праћење и анализу активности ученика	○	○	◉	○	○
* ССУ ми је помогло да користим дигиталне технологије за активно укључивање ученика у учење	○	○	◉	○	○
* ССУ ми је помогло да користим дигиталне технологије за задовољавање индивидуалних потреба за учењем	○	○	○	◉	○
* ССУ ми је помогло да планирам онлајн учење које ће превазићи потенцијалне проблеме, нпр. недостатак приступа дигиталним уређајима или подацима	○	○	◉	○	○
* ССУ ми је помогло да научим ученике како да раде и уче користећи дигиталне технологије	○	○	○	◉	○
* ССУ ми је помогло да научим ученике да одговорно и критички користе дигиталне технологије	○	○	◉	○	○
* ССУ ми је помогло да предајем и оцењујем на даљину током COVID-19 забране кретања	○	○	○	◉	○

7 **Који начин ССУ за дигиталне компетенције преферирате?**

Наведите да ли се слажете са следећим тврдњама.

	у потпуности се не слажем	не слажем се	нити се слажем, нити се не слажем	слажем се	у поптуности се слажем
* Желео/ла бих да учествујем у радионицама које воде тренери лицем у лице да бих развио/ла своје дигиталне компетенције	○	○	○	◉	○
* Желео/ла бих да учествујем у онлајн ССУ да бих развио/ла своје дигиталне компетенције.	○	○	○	○	◉
* Волео/ла бих да ми други наставници или стручни					

сарадници у школи помогну да развијем своје дигиталне компетенције	○	○	○	◉	○
* Желео/ла бих да учествујем у ССУ који комбинује методе лицем у лице и онлајн методе	○	○	○	○	◉

8 **Молимо Вас да додате било који други коментар који се односи на ССУ за дигиталне компетенције.**

9 **Уколико желите да примате новости о дигиталним технологијама и онлајн учењу, унесите своју имејл адресу у поље испод.**

dspetrovic65@gmail.com

Кликните на дугме "Submit" како бисте завршили са попуњавањем упитника. Клините на дугме "Previous" уколико желите да се вратите назад.

10 Free Text Question

Contact

Contact Form