

# **THE DIGITAL COMPETENCES OF TEACHERS IN SOUTH EASTERN EUROPE - A CROSS-COUNTRY ANALYSIS**

## **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)

DNATT - Digital Needs Analysis for Teachers Tool

DigCompEdu - Digital Competence Framework for Educators

ERI SEE – Education Reform Initiative of South East Europe

ETF – European Training Foundation

EU – European Union

JRC - Joint Research Council

MoE – Ministry of Education

MoESTED - Ministry of Education, Science and Technological Development

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

# INTRODUCTORY NOTE

A major consequence of the COVID19 crisis was the shutdown of educational institutions and schools which forced teachers to switch to distance teaching and to make use of various digital and on-line tools. It follows that developing and improving digital competences is critical for teachers both now and in the future, where a more systematic use of information and communication technologies in teaching is expected. This regional report is a part of a project to develop and test a self-assessment process to identify and analyse the digital competences of teachers in the five countries in the SEE Region: Albania, Moldova, Montenegro, North Macedonia and Serbia, as well as, to analyse relevant current CPD provision and to identify CPD needs.

The first phase of this project, led by the ERI SEE,<sup>1</sup> aimed 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 project is concerned with developing a methodology 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 regional report explores the findings across the five countries in relation to the level of competences, the use of different digital tools/activities during the COVID19 lockdown, the character of training and support received and the training needs identified.

As part of the pilot, two schools received detailed analysis that broke down the findings for their own staff. The national reports 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>.

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<sup>1</sup><https://openspace.etf.europa.eu/wikis/network-school-based-cpd-coordinators>

# 1. METHODOLOGY

This survey builds upon the European Digital Competence Framework for Educators (DigCompEdu) that defines 22 digital competences organised in 6 Areas: (1) Professional engagement; (2) Digital resources; (3) Teaching and learning; (4) Assessment; (5) Empowering learner and (6) Facilitating learner digital competence. The DigCompEdu framework also proposes a progression model along six proficiency levels: Newcomers (A1), Explorers (A2), Integrators (B1), Experts (B2), Leaders (C1) and Pioneers (C2).

The Digital Needs Analysis Tool for Teachers (DNATT) used in the study incorporates the EU's Joint Research Council's 'Check-In' self-assessment tool<sup>2</sup> 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 the school, national and regional levels to analyse and exploit the data collected.

The English master version of the questionnaire (see Appendix 1) was translated into regional languages by national experts directly on the EU survey tool. After translation, 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. In Serbia, questions from Area (3): Teaching and Learning were revised together with representatives from the Ministry of Education Science and Technological Development (MoESTD), in order to stress teacher's roles as facilitators of the learning process and to align them with the national *Framework for digital competence – Teachers for digital age 2019*<sup>3</sup>.

A school-based sampling approach was implemented in each of the participating countries. Within each country a random cluster sample of 12 general and 12 vocational schools was selected according to size (small and large). Additionally, a list of random replacement schools was also created according to the same criteria (type of school and size). For each sampled school, two replacement schools were assigned. The final research sample, based on teachers' and schools' response consists of 2964 teachers (see Table 1), distributed across 123 schools, of which 63 were general schools and 60 vocational.

A random selection of schools contributes to the representativeness of the sample in each country. However, some potential limitations should also be considered. The first is a selection bias, since the teachers were voluntarily participating in the study. Thus, it is possible that teachers who were already involved, or at least interested in the development of digital competences were more likely to participate in this study. Secondly, since the questionnaire was web-based it is also possible that the participating teachers were already more highly engaged with digital technologies, which would 'inflate' digital competence. Thirdly, data in this survey was collected through a self-assessment instrument and may be biased due to personal factors (e.g. more prudent self-assessment of digital competences in some of the countries). Fourthly, participation of some teachers was jeopardized due to the situation caused by the COVID-19 virus (e.g. their own illness or illness of family members, lack of resources, higher workload due to blended teaching (face to face and distance teaching in the same day), etc.).

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<sup>2</sup><https://ec.europa.eu/jrc/en/digcompedu/self-assessment>

<sup>3</sup>[http://www.mpn.gov.rs/wp-content/uploads/2019/08/2019\\_ODK\\_Nastavnik-za-digitalno-doba.pdf](http://www.mpn.gov.rs/wp-content/uploads/2019/08/2019_ODK_Nastavnik-za-digitalno-doba.pdf)

Table 1. Sample.

	Albania	Moldova	Montenegro	N. Macedonia	Serbia	TOTAL
VET schools	12	12	12	12	15	63
General schools	12	12	12	12	12	60
Total of schools	24	24	24	24	27	123
Teachers from VET schools	493	216	316	289	396	1710
Teachers from General schools	358	209	159	225	293	1244
General subject teachers	NA	271	268	315	427	1281
Professional/vocational subject teachers	NA	129	160	143	192	624
Other subject teachers	NA	25	47	66	70	208
TEC teachers	119	34	74	46	72	345
Total of teachers	851	425	475	524	689	2964

The implementation of the survey ran for three weeks from the 2<sup>nd</sup> of November. In each country, the national expert 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 MoE was delivered to the schools. Those schools which did not reply before the stated deadline were additionally contacted through the telephone. The schools which were not able to take part in the survey were replaced by replacement schools.



## 2. ANALYSIS

### 2.1 Proficiency scores and levels

This section deals with teachers' self-assessment of digital competence. The European Framework for the Digital Competence of Educators (DigCompEdu) distinguishes 6 different, progressively advancing competence levels - Newcomers (A1), Explorers (A2), Integrators (B1), Experts (B2), Leaders (C1) and Pioneers (C2) (see Table 2). Within the framework, these levels are designed to describe typical stages and roles educators pass through when integrating digital technologies into their professional practices.

Table 2: Codes Key for competence levels

	<b>CODES KEY</b>
<b>Newcomers - A1</b>	Teachers have not yet really started using digital technologies in teaching.
<b>Explorers - A2</b>	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 without a comprehensive approach or consistent practice.
<b>Integrators - B1</b>	Teachers 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 are eager to expand the repertoire of practices. However, at this level teachers are still working on understanding which tools work best in which situations, and on fitting digital technologies to pedagogic strategies and methods.
<b>Expert - B2</b>	Teachers 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 are curious and open to new ideas, etc
<b>Leaders - C1</b>	Teachers have a consistent and comprehensive approach to using digital technologies to enhance pedagogic and professional practices, rely 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, 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.
<b>Pioneers - C2</b>	At this level, teachers question the adequacy of contemporary digital and pedagogical practice and are concerned about the constraints and drawbacks of these practices. They are driven by the impulse to innovate education and to lead innovation. Teachers experiment with highly innovative and complex digital technologies and/or develop novel pedagogical approaches

Based on the DigCompEdu framework, a self-assessment instrument – *DigCompEdu Check-in tool* was developed in a collaborative effort made by a multi-national team of researchers, coordinated by the European Commission Joint Research Centre (Redecker, 2018).

This self-assessment instrument consists of 22 statements, one per *DigCompEdu* competence. For each of these statements, respondents are asked to indicate to what extent the statement reflects their own practice by selecting one of five response options. Each answer is scored from 0 to 4 and the total maximum score is 88 points.

The cut-off scores attributed to each proficiency level are: *Newcomer* (A1) - less than 20; *Explorer* (A1) - between 20 and 33; *Integrator* (B1) - between 34 and 49; *Expert* (B2) between 50 and 65; *Leader* (C1) - between 66 and 80, and *Pioneer* (C2) more than 80.

### 2.1.1 Proficiency score

Figure 1 shows the mean proficiency score that teachers from five countries obtained at the DigCompEdu Check-in tool. The average for the five countries from the SEE region<sup>4</sup> is 49.81, which falls into the edge between the Integrator (B1) and Expert (B2) level (ie. very close to lower cut-off for B2 level). Regarding the mean proficiency score, N. Macedonia and Montenegro stand out as outliers. The average proficiency score registered in Albania and Moldova is close to the regional average. The mean proficiency score obtained for Serbia was 51.07, which falls into the Expert (B2) level.

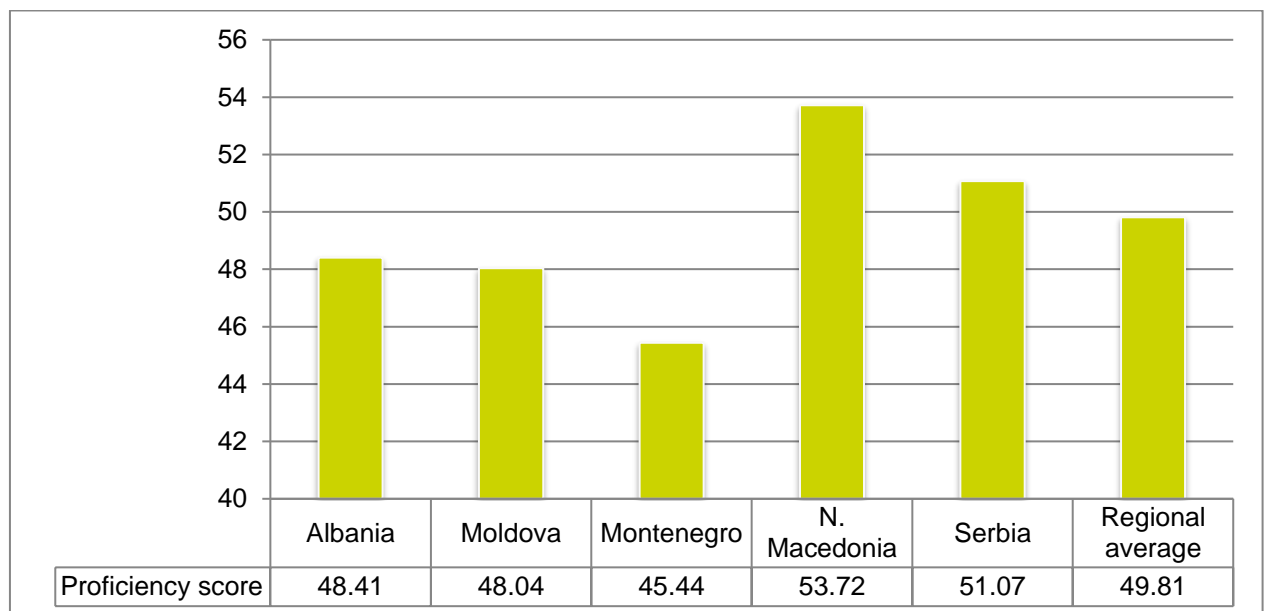


Figure 1. Average proficiency score for countries and regional average

### 2.1.1 Proficiency level

Regarding proficiency levels, the distribution of teachers in the five countries across the six proficiency levels proposed by the DegComEdu framework is shown in Figure 1.

Some 35% of teachers from the five countries self-assess their digital competency at 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, 13.8% of the participants reach a C1 proficiency level (Leader) which means they are able to keep up-to-date on

<sup>4</sup>To ensure a fair comparison regarding the proficiency score between countries, the average obtained by all respondents from each country was weighed with the percentage of teachers that each country has in the region: (Montenegro\*0.037 + Serbia\*0.43 + North Macedonia\*0.093 + Albania\*0.098 + Moldova\*0.34).

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), is reached by only 1.7% of teachers. This means that in total 50.4% of teachers in the five countries believe that they manifest a strong performance (B2 and upward) regarding their digital competences. Furthermore, a third of teachers in the five countries (34%) reach the B1 proficiency level (Integrator) 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.

On the other hand, the survey reveals that around 15% of teachers in the five countries, 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 (0.9 % and 12.8% respectively). These teachers need additional incentives or support to start using digital technologies for communication with students, parents and other colleagues from schools, as well as, in their educational practice.

In all five countries around 65% reach competence levels B1 and B2 (see Figure 2). These are the teachers who already integrate digital technologies into practice in a variety of ways and contexts. Additionally, in all countries a very small number of teachers are at the A1 level (teachers who do not use digital technologies) and C2 level (teachers who use digital technologies in an innovative way).

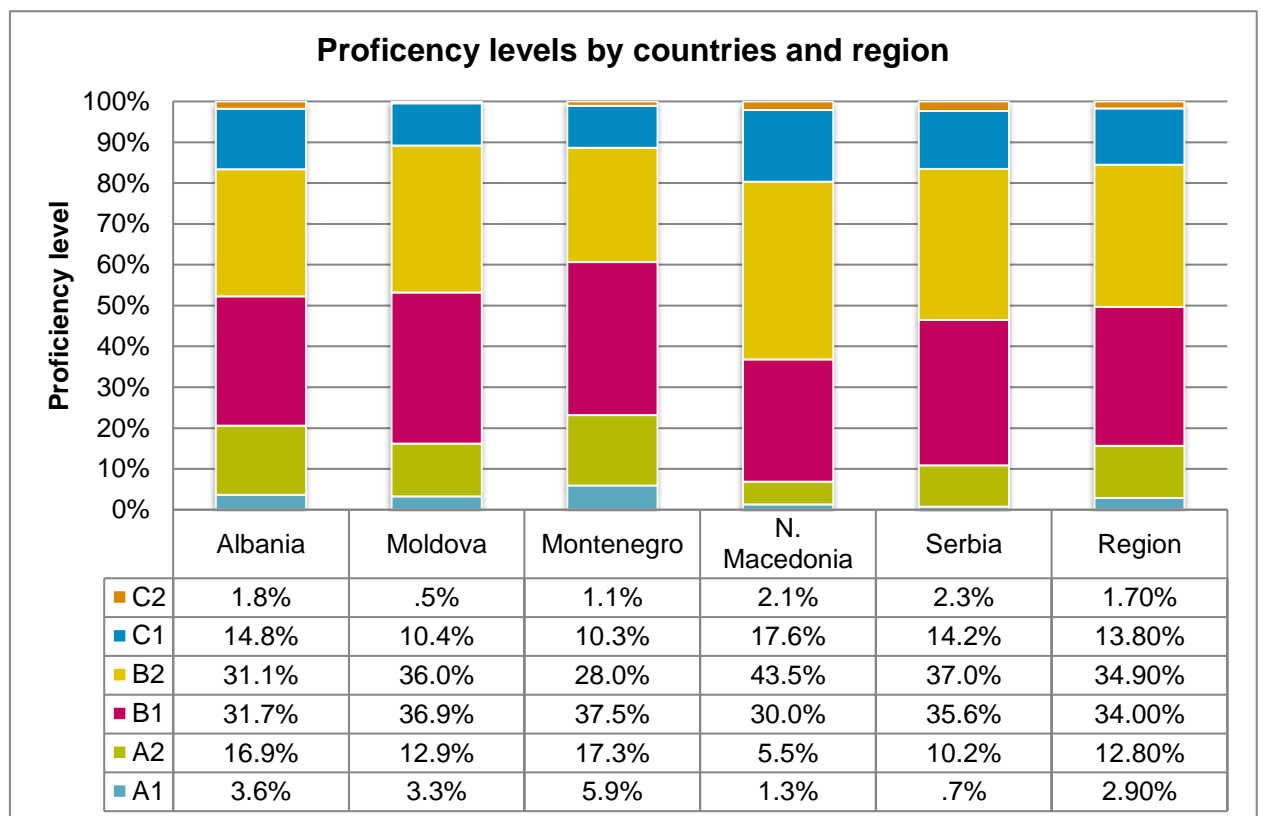


Figure 2. Percentage of teachers in each proficiency level by country and region

## 2.2 Proficiency levels by competence area

The European Framework for the Digital Competence of Educators (DigCompEdu) distinguishes six competence areas (see Table 3) and a total of 22 competences which specify the digital competences teachers need: cooperate with the professional working environment; plan, implement and assess teaching and learning; place students at the centre of the teaching and learning process; and to support the development of students' digital competence (Lucas, et al. 2021).

Table 3: Codes Key for competence areas

	<b>CODES KEY</b>
<b>Area 1: Professional Engagement</b>	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
<b>Area 2: Digital Resources</b>	Competence to identify good educational resources and to modify, create and share digital resources that fit their learning objectives, teaching style and students' needs.
<b>Area 3: Teaching and Learning</b>	Competence to design, plan and implement the use of digital technologies in different stages of the teaching and learning process.
<b>Area 4: Assessment</b>	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).
<b>Area 5: Empowering learners</b>	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.
<b>Area 6: Facilitating learner digital competence</b>	Ability to foster students' digital competence is an integral part of teachers' digital competence.

### 2.2.1 Proficiency levels by competence areas across the region

Figure 3 indicates how respondents in this regional survey self-assess their digital competence in six competence areas.

Teachers rate their own digital competences as relatively high in two areas - *Area 5: Empowering learners* and *Area 6: Facilitating learner digital competence*. In these two areas around 40% of respondents reached B2 and upward levels (C1 and C2).

On the other hand, around 35% of respondents from the five countries do not use digital technologies (A1) or are at the beginner level of digital competence (A2) in *Area 4: Assessment*. Digital competences are also less developed in *Area 2: Digital resources* and *Area 3: Teaching and Learning* and *Area 5: Empowering learners*. In these areas around 30% respondents are on the A1 and A2 level.

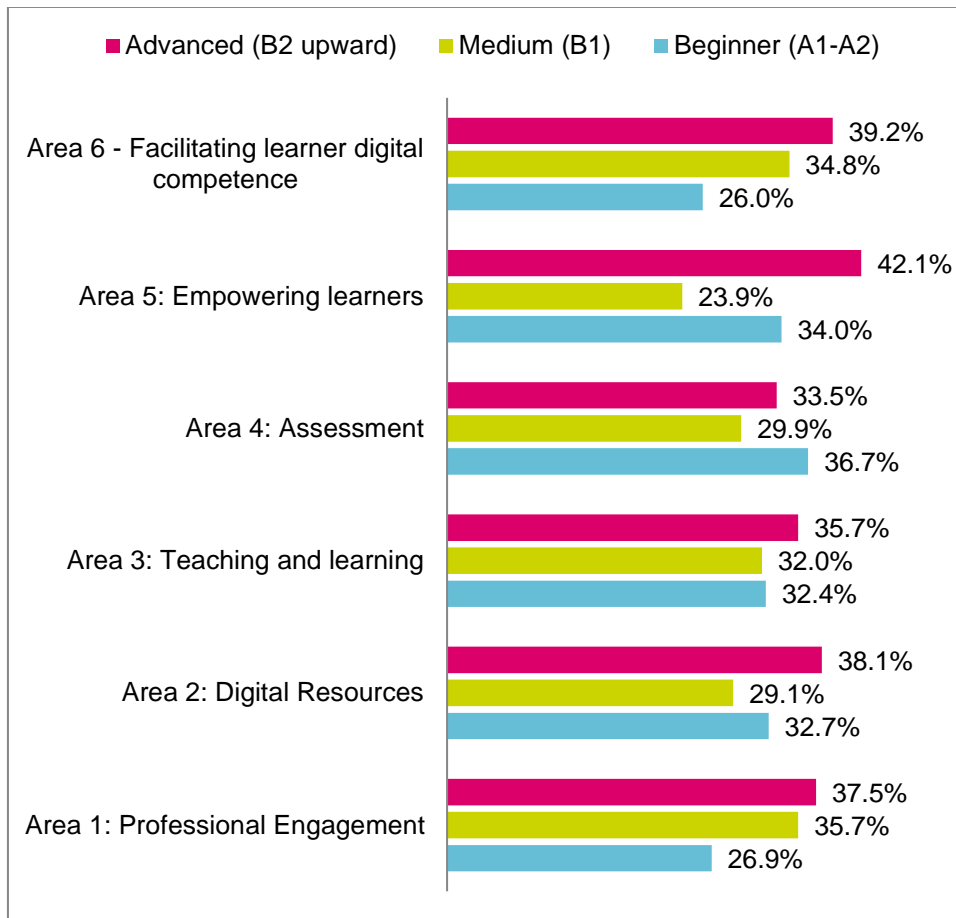


Figure 3: Percentage of teachers by proficiency level and competence areas across the whole region

## 2.2.2 Proficiency levels by competence areas: countries comparison

This section presents the distribution of proficiency levels in each of the six competence areas in the five countries and in the SEE region.

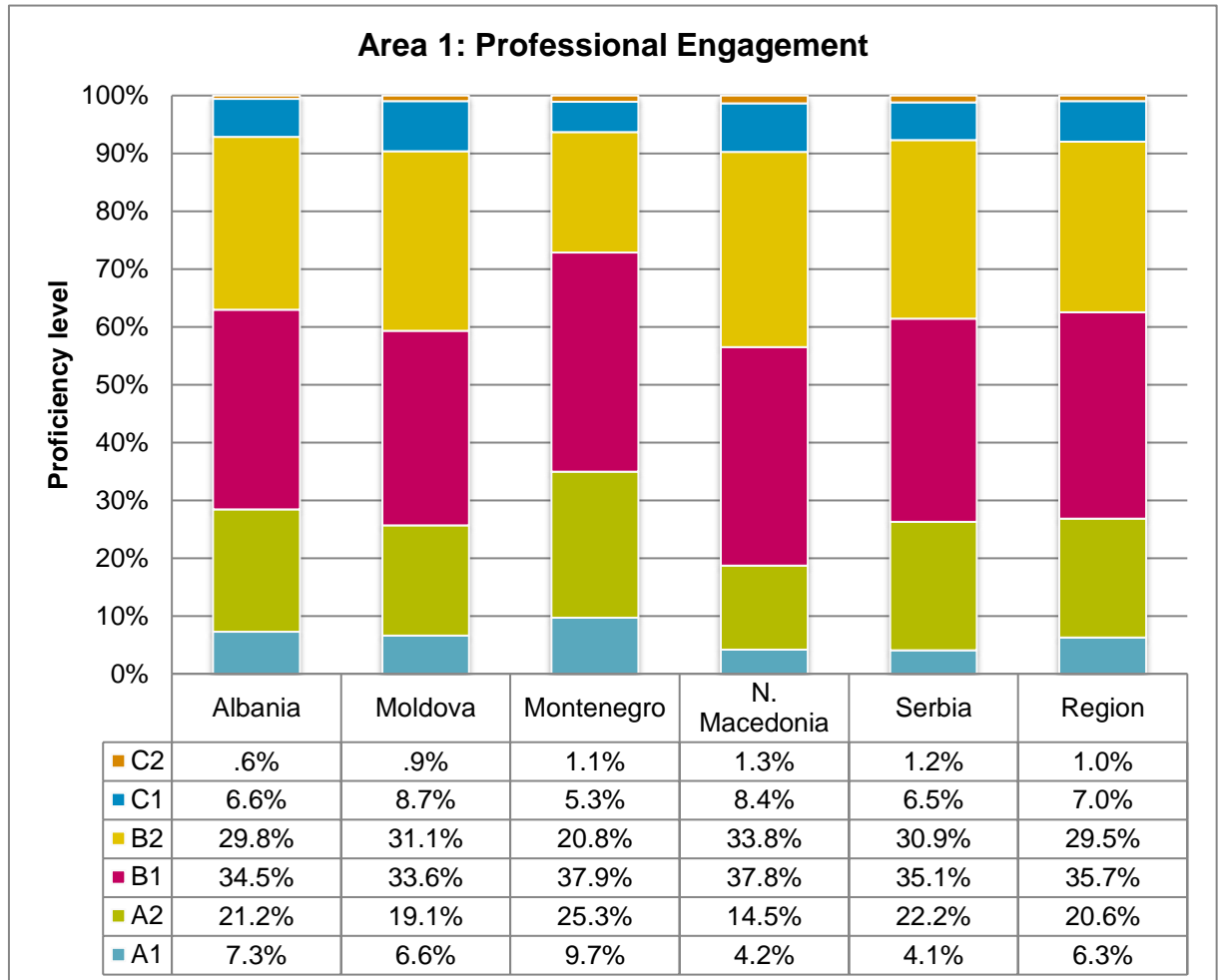


Figure 4.1: Teachers' proficiency levels in Area 1 by countries and region.

In *Area 1: Professional engagement* more than 35% of respondents from the five countries reached one of the advanced levels (B2, C1 and C2) of digital competence development. Around 35% of teachers from all countries participating in this study are at level B1 which indicates the use of digital technologies that could be improved by more consistent practice. On the other hand, more than 25% of teachers across the five countries are still at a basic level of development of digital competence and should be targeted by peer support or other modes of CPD. In *Area 1: Professional engagement*, N. Macedonia and Montenegro appear to be the outliers. For other commonalities and differences among the five countries see Figure 4.1. For country-specific context see national reports on <https://openspace.etf.europa.eu/resources/pilot-needs-analysis-tool-digital-competences-2020>.

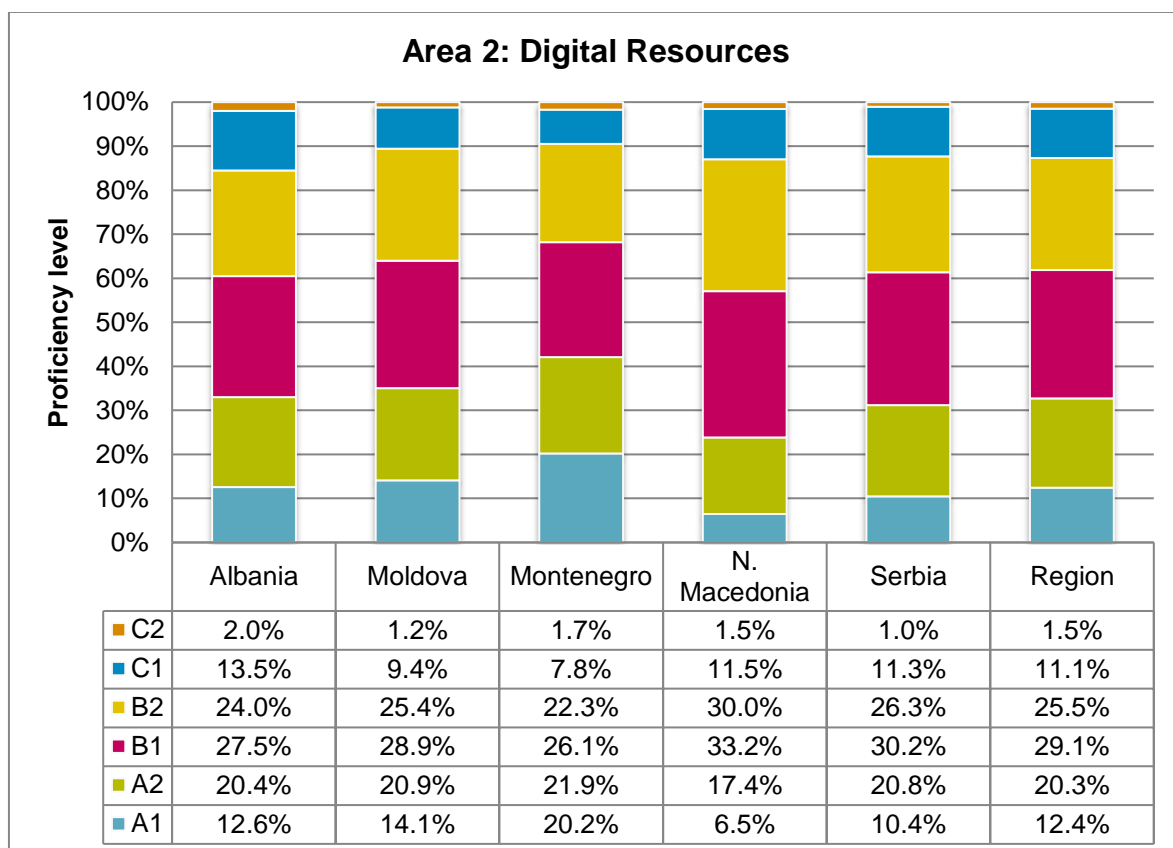


Figure 4.2: Teachers' proficiency levels in Area 2 by countries and region.

Regarding Area 2: Digital resources, in almost all countries more than 35% of teachers (see Figure 4.2) reach a more advanced level of digital competence in this area (B2 and upwards level). Additionally, around 30% of respondents in this survey are at the B1 level, meaning that they are able to select, manage and include various digital resources into their practice. On the other hand, according to their own evaluation, more than 30% teachers are at the beginners' level of digital competence (A2 and A1) when using digital resources. This means that there is a need to support teachers' CPD in Area 2 across the five countries. In all of the participating countries a very small number of teachers (up to 2%) are at the C2 level which refers to innovative approaches in (co-)creating digital resources. For other commonalities and differences across the region see Figure 4.2.

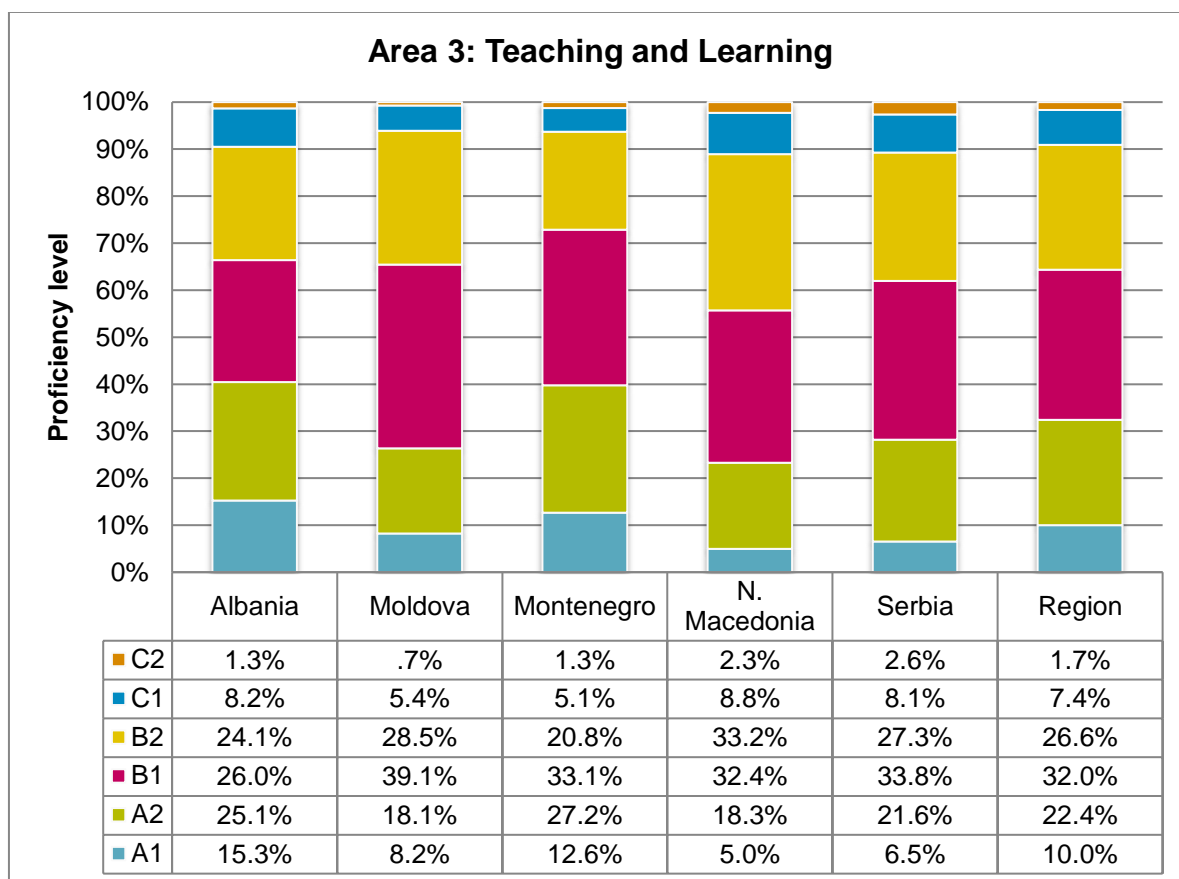


Figure 4.3: Teachers' proficiency levels in Area 3 by countries and region.

Similar trends are present in relation to competence Area 3: Teaching and learning. A small number of teachers from the five countries reach the top level (C2), while around 30% of teachers are at more advanced levels (B2 upwards) or at a medium level (B2). On the other hand, a significant number of teachers in the five countries (around 40% in Albania and Montenegro and around 30% in other countries) are at the beginner levels of digital competence (A2 and A1). This implies that teachers in the five countries should be supported by various modes of CPD in order to improve their competence to design, plan and implement the use of digital technologies in different stages of the teaching and learning process (for more details see Figure 4.3.).



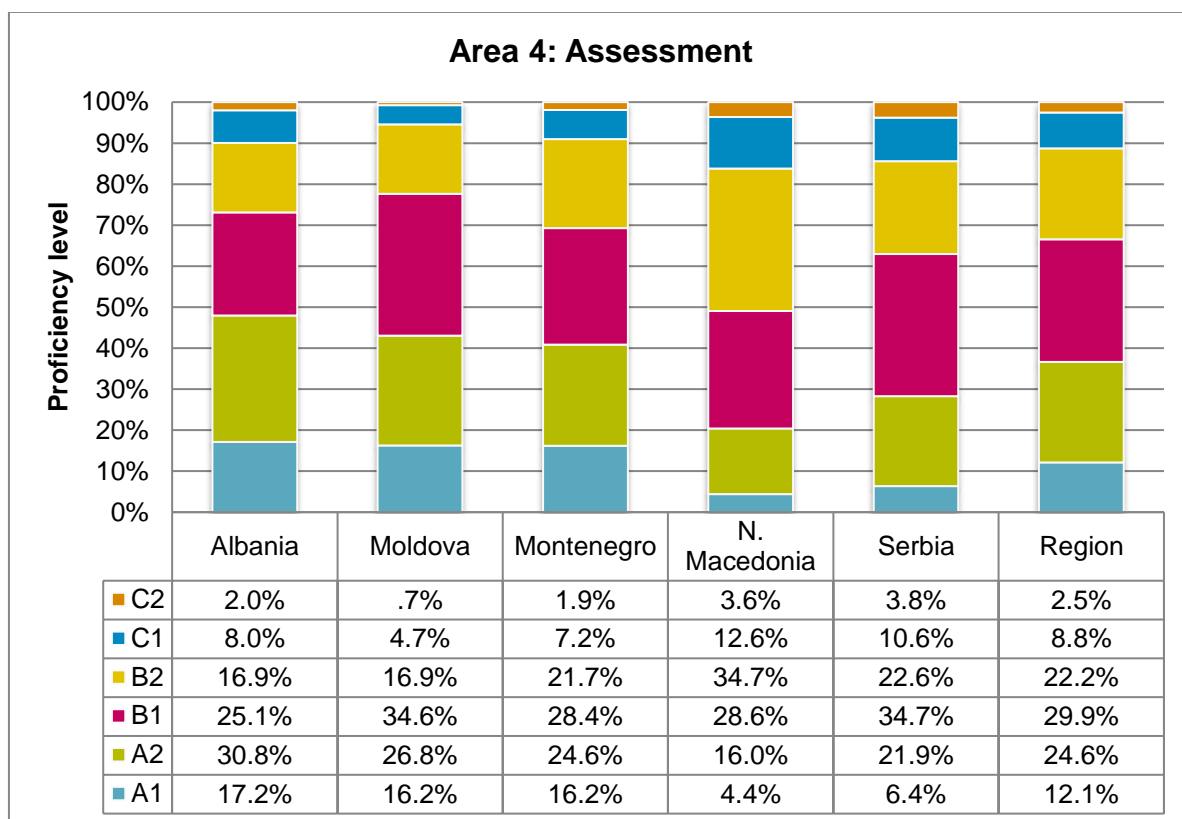


Figure 4.4: Teachers' proficiency levels in Area 4 by countries and region.

Competence Area 4: Assessment indicates teachers' proficiency to use various assessment strategies based on digital technologies (e.g. to analyse available digital data) in order to provide more targeted feedback and support for each student. In the five countries one third of respondents are at the advanced levels of digital competence (B2 upwards) in this area. Particularly, the highest percentage of teachers (51%) in N. Macedonia, compared to other countries, reached the advanced levels of competence (see Figure 4.4.). On the other hand, more than 40% teachers from Albania, Moldova and Montenegro are at basic proficiency levels (A1 and A2) in this competence area. This difference can be partly explained by differences in CPD teachers received during the previous twelve months (see national reports at <https://openspace.etf.europa.eu/resources/pilot-needs-analysis-tool-digital-competences-2020>).

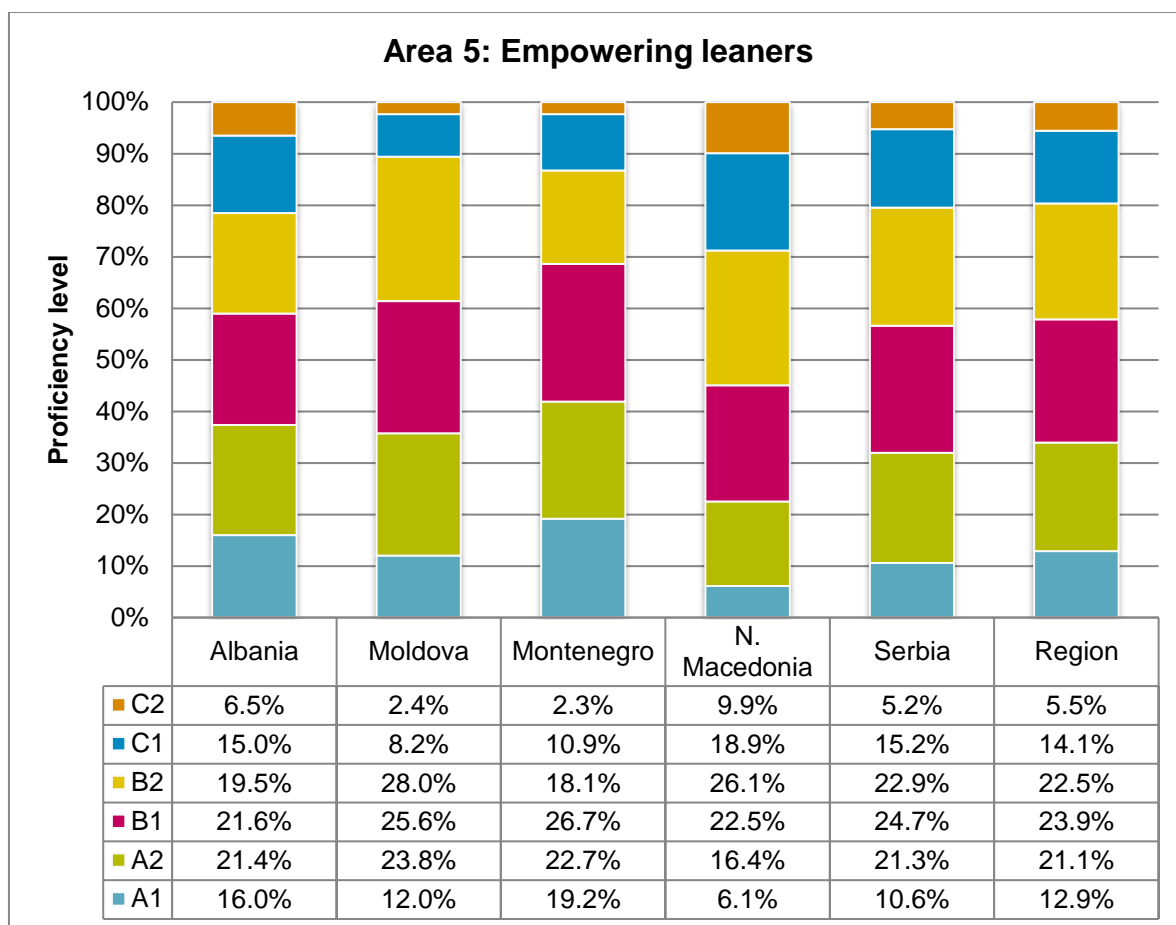


Figure 4.5: Teachers' proficiency levels in Area 5 by countries and region.

*Area 5: Empowering learners* is one of two competence areas in which a slightly higher number of teachers across the five countries (40%) accomplished advanced levels of digital competence (B2 upward). At the same time, further improvement is still needed in this area, since around 35% of teachers assessed their digital competence at the basic A1 and A2 levels (for more details see Figure 4.5). With 55% of teachers at levels B2 and upward, N. Macedonia is one of the outliers in *Area 5: Empowering learners*, as is Montenegro, with around 30% teachers at these advanced levels. For countries' specific results and contexts see nationals' reports on <https://openspace.etf.europa.eu/resources/pilot-needs-analysis-tool-digital-competences-2020..>

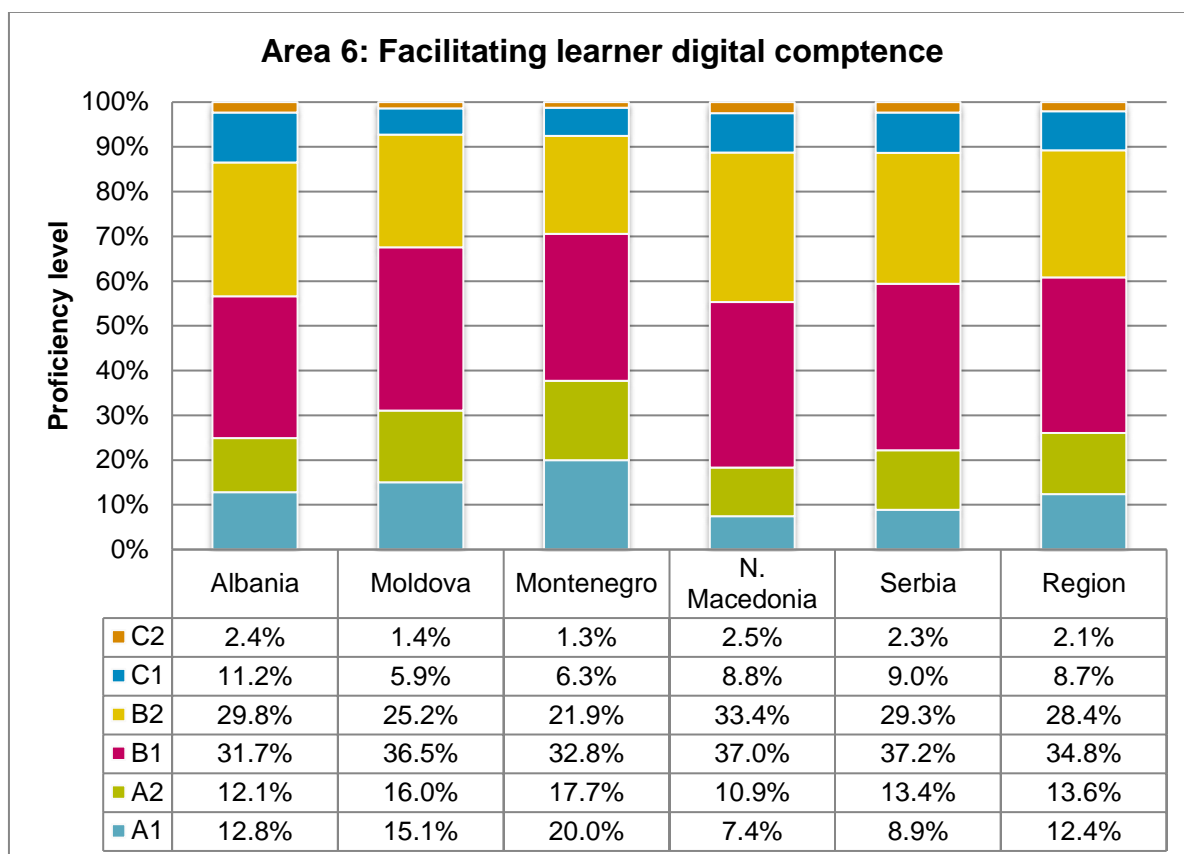


Figure 4.6: Teachers' proficiency levels in Area 6 by countries and region.

Area 6 - *Facilitating learner digital competence* is the second area with a slightly higher number of respondents across the five countries (around 40%) at the B2 and upward levels (C1 and C2). Teachers at the B2 and upwards level perceive themselves as capable of fostering the development of students' digital competence, such as: information and media literacy, communication inside and outside of schools, digital content creation, responsible use of digital technologies, and use of digital technologies for problem solving. On the other hand, around 25% of teachers across the region evaluate their digital proficiency in this competence area as basic (see Figure 4.6). In this area, N. Macedonia and Montenegro again emerge as two outliers.

## 2.3 Use of different digital tools/activities during the COVID19 lockdown

This section explores the degree to which different digital tools/activities were used during the COVID19 lockdown in the five countries. Respondents were asked to indicate to what extent they used various digital tools classified in following categories (see Table 4). The possible answers included the options: never, once a week, three times a week and every day. For the purpose of the analysis these answer-categories were reduced to three categories – ‘Frequently used’ (three times a week plus every day), ‘practised to some extent (once a week) and ‘not practised’ (never).

Table 4: Codes key of digital tools and activities

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

As presented in Figure 5, three digital tools/activities that are mostly likely to be ‘frequently used’ according to respondents during the COVID19 lockdown are *Virtual classroom software* (65.8%) followed by *Exchanging documents and text messages via social media* (60%) and *Synchronous video-communication tools* (54.7%).

The three tools/activities most likely to be marked as practised to some extent are *Brainstorming, quizzes or polls* (48%), *Watching videos/audios* (43.6%) and *Planning and organisational tools* (42.9%).

On the other hand, no use whatsoever was most mostly likely in relation to the following digital tools/activities: *Creating videos/audios* (31.3%), *Sharing screen (screen casting)* (29.8%) and *tools for Sharing and exchanging of documents (‘cloud services’)* (24%).

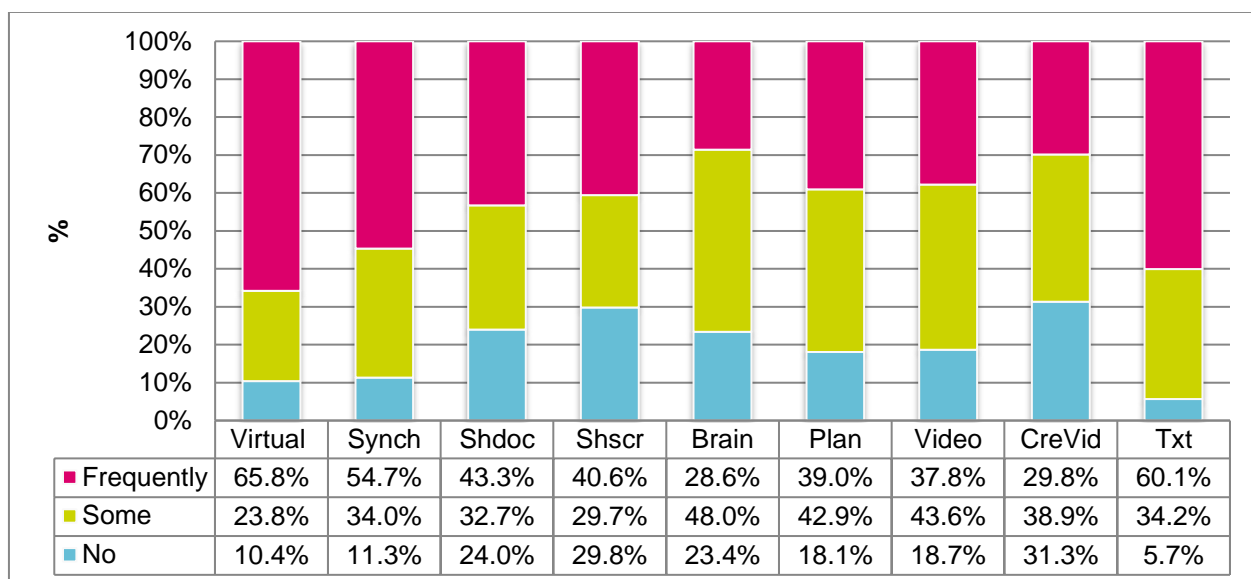


Figure 5. Frequency of use of different digital tools/activities during the COVID19 lockdown

### 2.3.1 Use of different digital tools/activities: countries comparison

The following analysis refers specifically to the use of Virtual classroom software (e.g. Ms Teams, Google Classroom, Moodle) and Synchronous video-communication tools (e.g. Zoom, Skype, WhatsApp, Facebook live) that are considered as curtail digital technologies for distance teaching and assessment during the COVID19 lockdown.

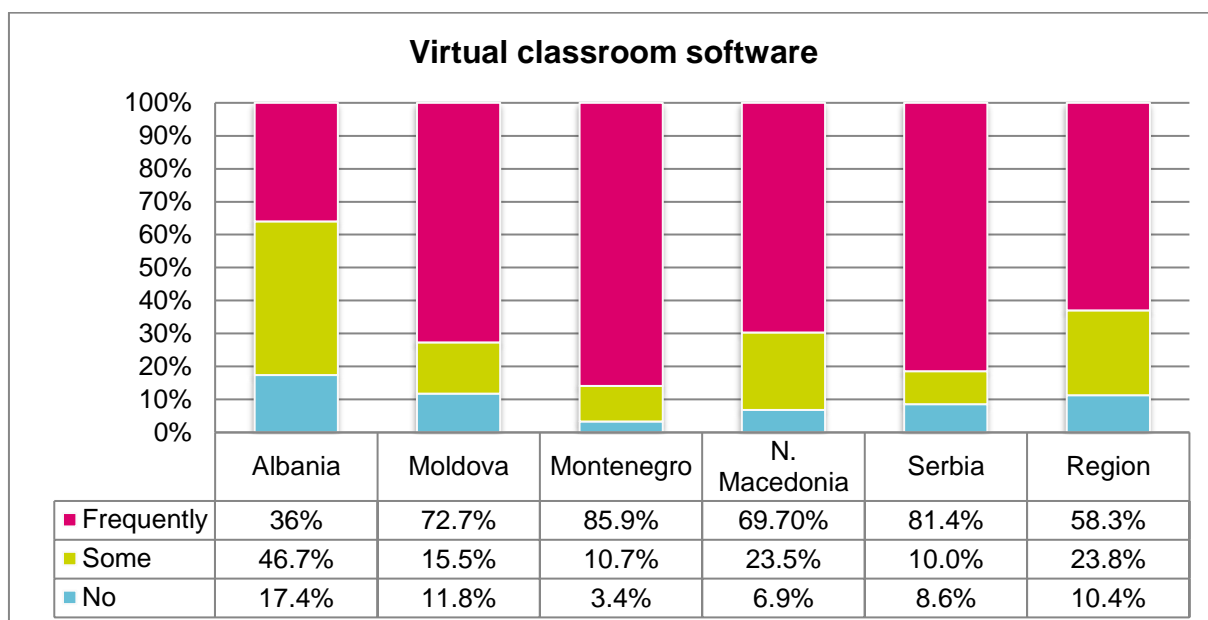


Figure 6.1: Frequency of use of Virtual classroom software during the COVID19 lockdown.

Virtual classroom software had extensive usage in the five countries during the COVID19 lockdown. Between 70% and 85% of respondents (except respondents from Albania) stated that they used this tool three times a week or every day (see Figure 6.1). Teachers in Montenegro (86%) and Serbia (81%) used this digital technology show very high levels of adoption.

On the other hand, teachers in Moldova reported a very high take up (82%) of synchronous video-communication tools.. In other countries around 50% of teachers reported frequent usage of these digital tools (see Figure 6.2).

The greater take up of Virtual classroom software (e.g. Ms Teams, Google Classroom, Moodle) in comparison to Synchronous video-communication tools (e.g. Zoom, Skype, WhatsApp, Facebook live) may be explained by regulations imposed by the Ministry of Education in each country or by issues connected to internet access and band (see national reports on <https://openspace.etf.europa.eu/resources/pilot-needs-analysis-tool-digital-competences-2020.>)

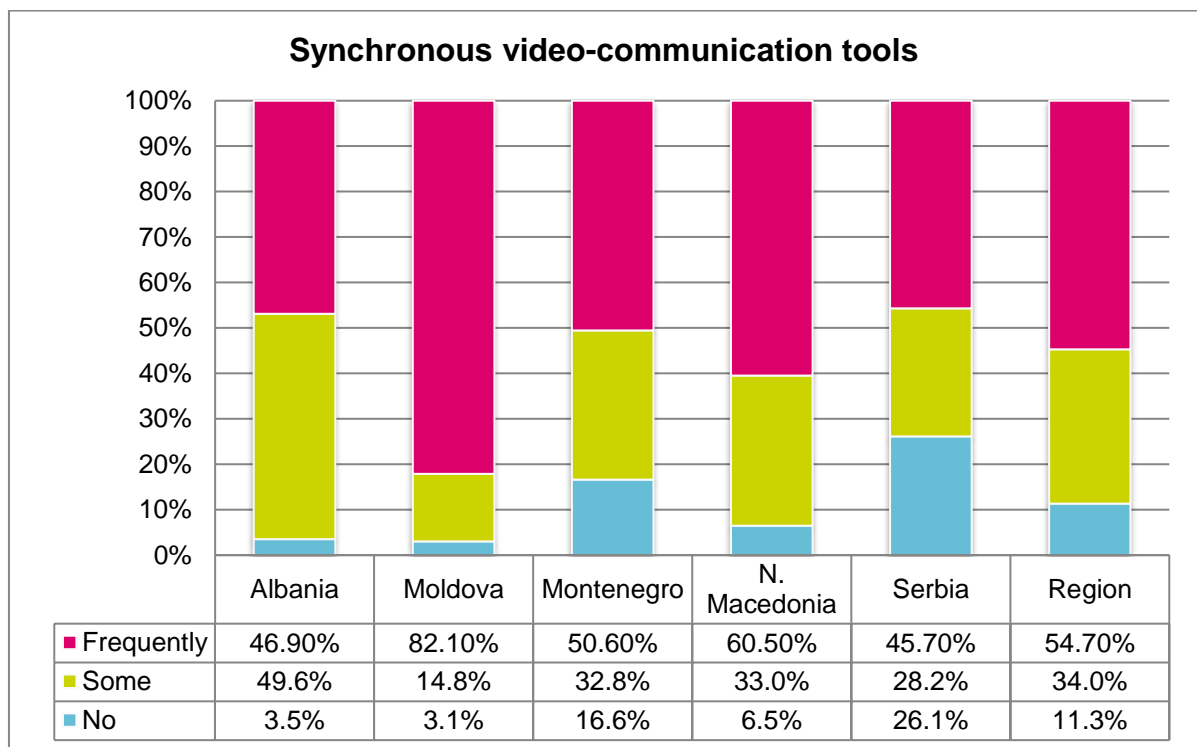


Figure 6.2: Frequency of use of Synchronous video-communication tools during the COVID19 lockdown.

## 2.4 Provision of CPD in the last 12 months

The COVID19 lockdown forced teachers all over the world to switch to distance teaching and to make use of various digital technologies. This section reports on what CPD provision (see Table 5) teachers in the five countries had in the last 12 months in order to enlarge their digital competences.

Table 5: Codes Key for CPD provisions

	<b>CODES KEY</b>
<b>OLCPD</b>	Over the last 12 months, I have participated in online CPD to develop my digital competences.
<b>Assist</b>	Over the last 12 months, I have been assisted by other teachers or advisors in my school to develop my digital competences.

### 2.4.1 Participation in CPD and access to Peer Support

In the past 12 months, around 80% of teachers from the five countries participated at least once, and around 50% participated on several or many occasions in online CPD in order to develop their digital competences (see Figure 7.1). The largest number of teachers who participated in online CPD is in Moldova (around 95% at least once and 80% on a few occasions or many times). Another outlier is Montenegro where 78% of teachers attended online CPD at least once (that is in line with the regional average) but only 37% on a few occasions or many times (lower than the regional average).

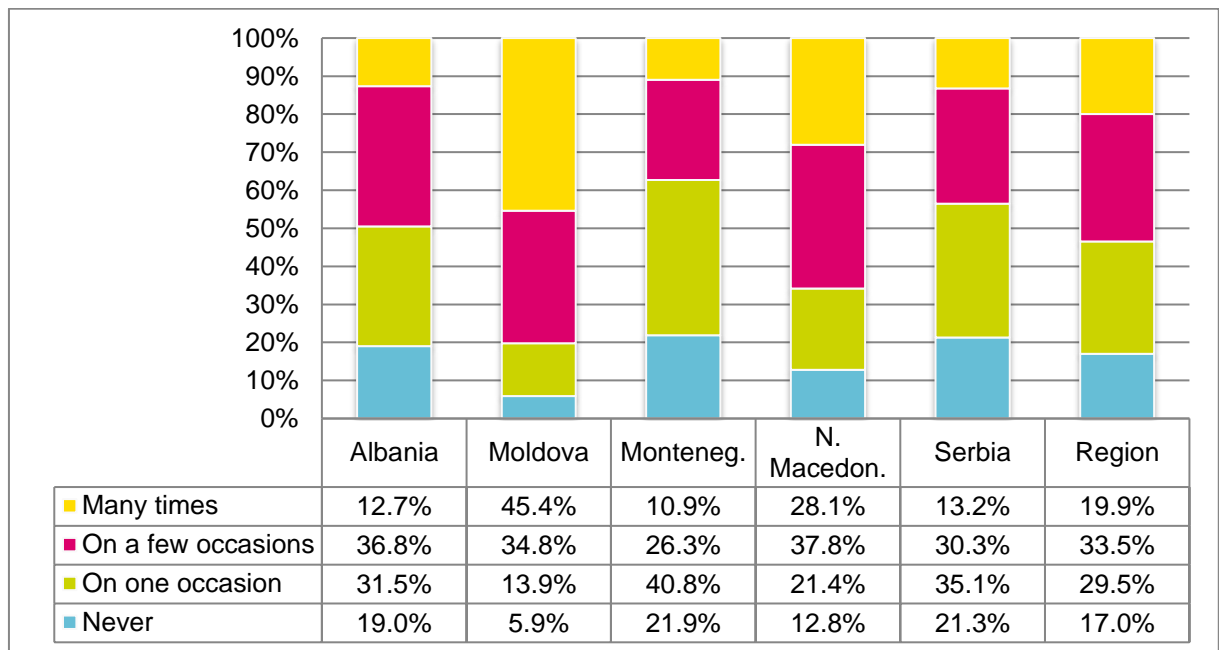


Figure 7.1: Participation in OLCPD in the past 12 months by countries and region

Provision of CPD in the form of peer support was given to 85% of teachers from the five countries at least once. In addition, around 60% received help from colleagues/advisors on several or many occasions in order to improve their digital competences. The differences regarding peer support during

the COVID19 lockdown among countries that participated in this survey are negligible (see Figure 7.2).

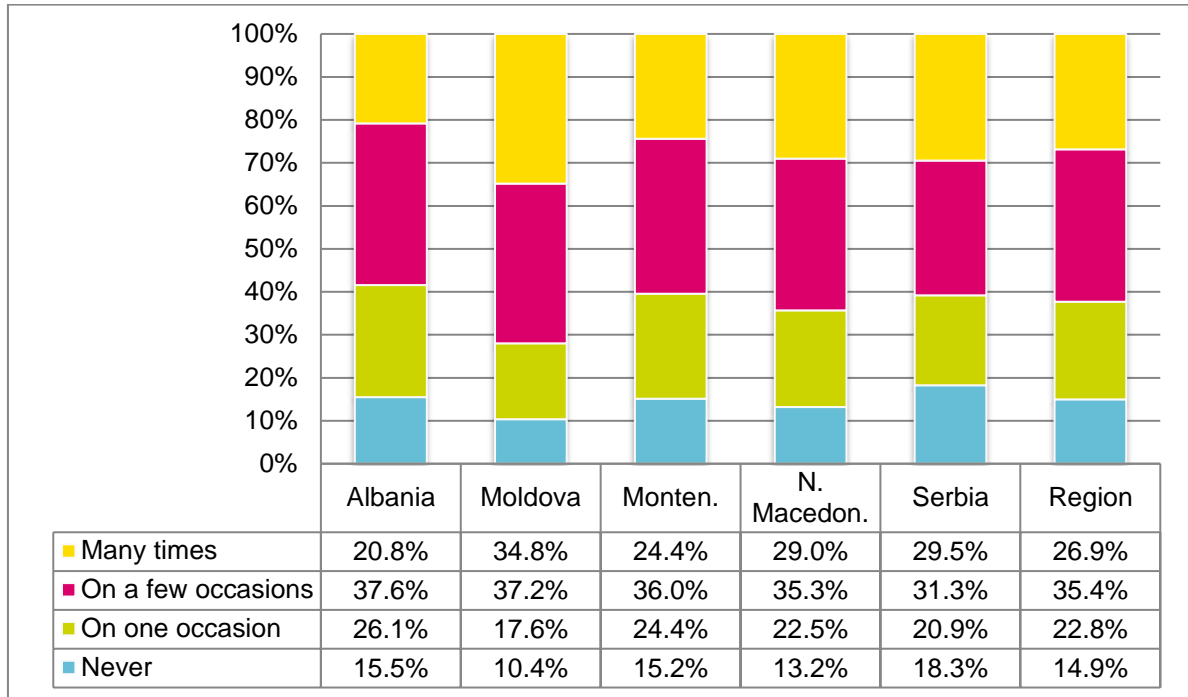


Figure 7.2: Assistance by other teachers/advisors in the past 12 months by countries and region

However, 5% of teachers from the five countries 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. Furthermore, around 20% of respondents who took part in this survey did not have one of these two types of CPD (see Figure 7.3)

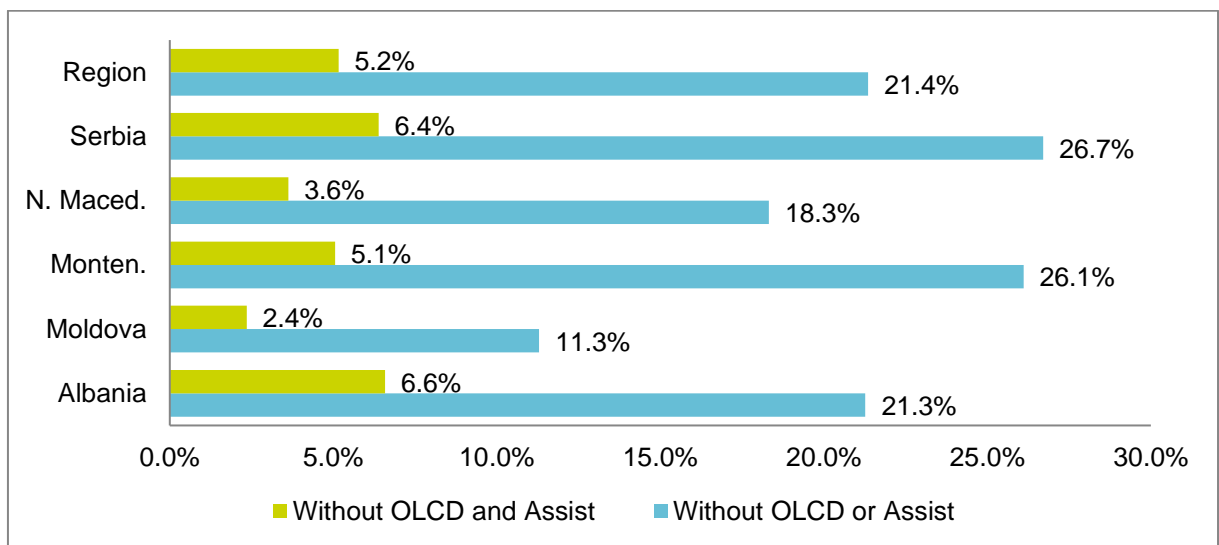


Figure 7.3. Teachers by country that lacked both On-line CPD (OLCD) and Peer-assistance (Assist) or who lacked both kinds of support



## 2.4.2 Encouragement and Relevance

This section presents a comparison between countries based on the extent to which schools encouraged CPD and the extent to which teachers report that CPD was relevant to their needs (see Table 6).

Table 6: Codes Key for encouragement and relevance

CODES KEY	
<b>ENC</b>	I was encouraged by my school to participate in CPD
<b>SEL</b>	I selected the CPD based on my personal development needs

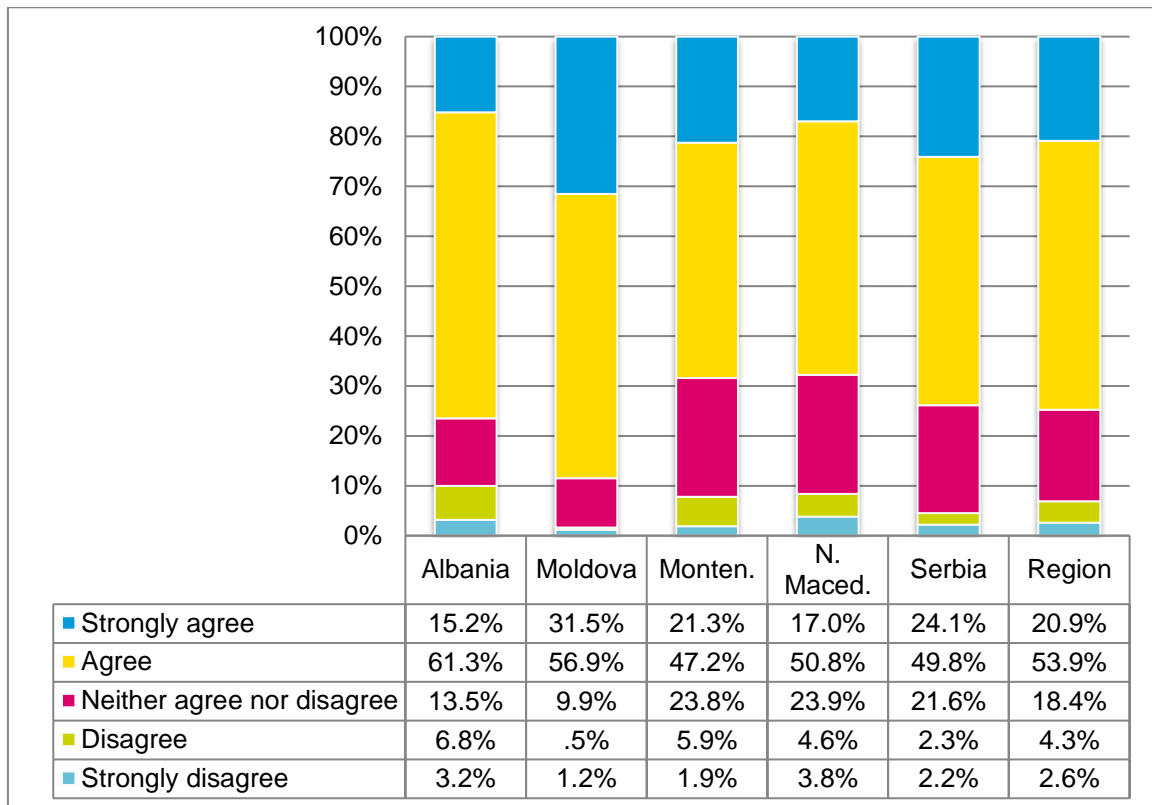


Figure 8.1: Teachers' perceptions of CPD encouragement by the school in the past 12 months by countries and region

In the five countries from the SEE region, around 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 Figure 8.1). Teachers in Moldova (88.5%) were most likely to report that they were encouraged to participate in CPD. For more details about countries' specificities see national reports. However, up to 25% of teachers chose not to answer this question or disagree with the statement (see Codes Key).

Regarding CPD relevance, more than 75% of teachers from the five countries report that they were able to select CPD based on their personal needs (see Figure 8.2). However, a significant minority of teachers (around 20%) chose not to answer this question or disagree with the statement.

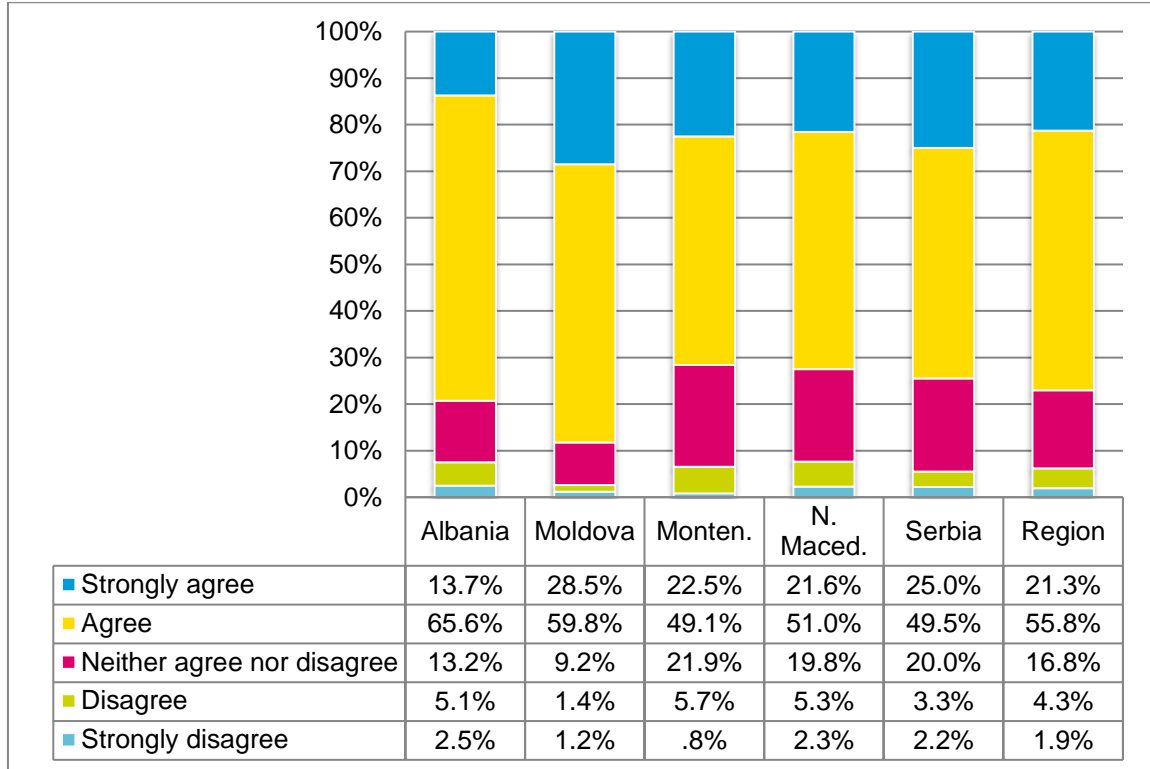


Figure 8.2: Teachers' perceptions of CPD relevance for their personal needs in the past 12 months by countries and region

## 2.5 Needs for CPD

This section shows how teachers in the five countries assess their need for CPD related to various kinds of digital competences (see Table 7). Teachers were invited to base the self-assessment on their actual level of digital competence, taking into account the training that they already have and their experiences of the last 6 months. The respondents were asked to express their need for CPD on the following range: No need, Low Need, High need, Very high need.

Table 7: Codes key for digital competences

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

Figure 9 reveals the distribution of training needs across the five countries. Grouping together the teachers who express the highest and high CPD needs the following “top five” training needs in the SEE region emerged: (1) N14 – Teaching and assessing at a distance (72.1%); (2) N6 - Enabling students to use digital technologies for group work (72) ; (3) N13 -Teaching students to make responsible and critical use of digital technologies (71.4%); (4) N9 Making use of digital technologies to engage students actively in learning (70.7%) and (5) N5 - Making greater and more effective use of different digital technologies (70%). Beside the overall need to improve teaching and assessing at a distance, which has paramount importance during the COVID19 lockdown, the other top needs are related to specific competence areas - Area 3: Teaching and learning (N5 and N6), Area 5: Empowering learners (N9) and Area 6: Facilitating learner digital competence (N13).

Figure 9.1 presents the extent to which the “top five” training needs are convergent between countries. The highest convergence is for N13 -Teaching students to make responsible and critical use of digital technologies, followed by N5 - Making greater and more effective use of different digital technologies; N6 - Enabling students to use digital technologies for group work and N14 – Teaching and assessing at a distance. On the other hand, some of the ‘top five’ training needs are more specific to some countries (for example, N. Macedonia).

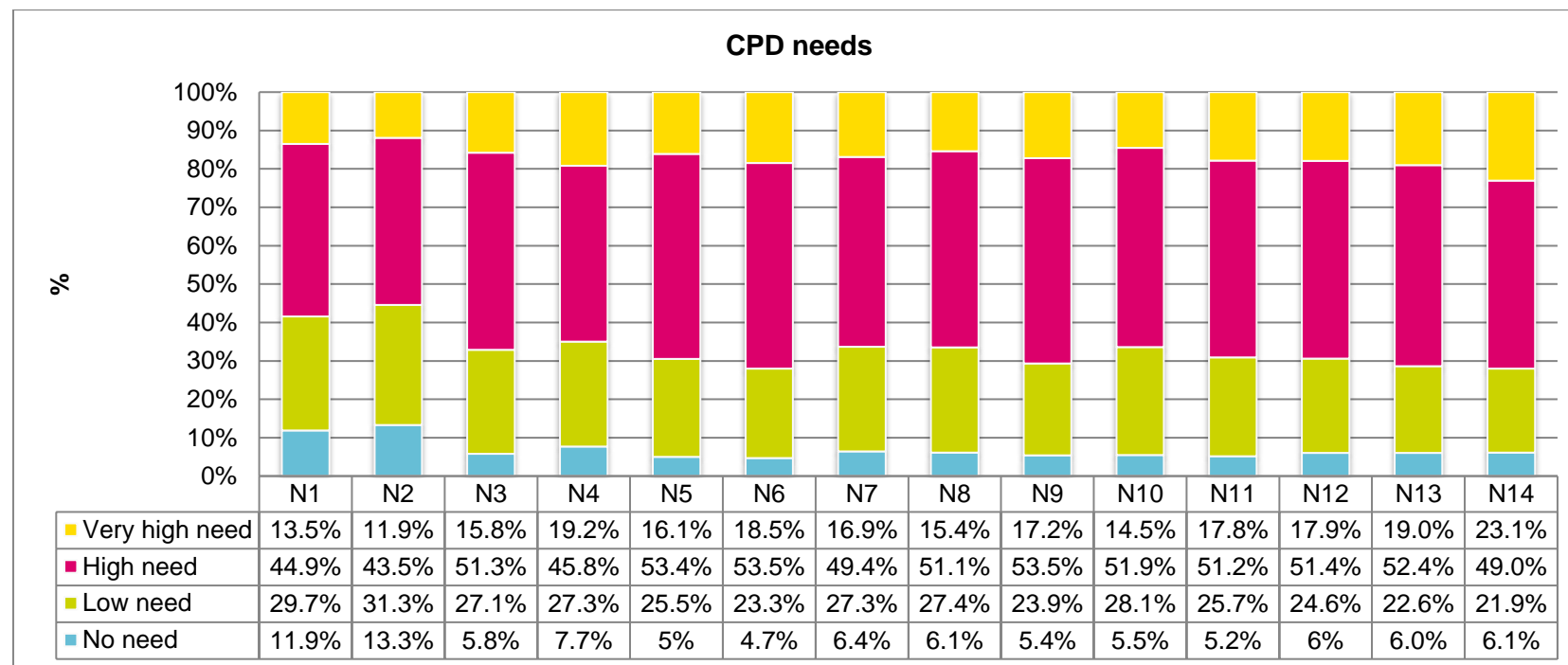


Figure 9: Teachers' perception of needs for CPD that addresses digital competences.

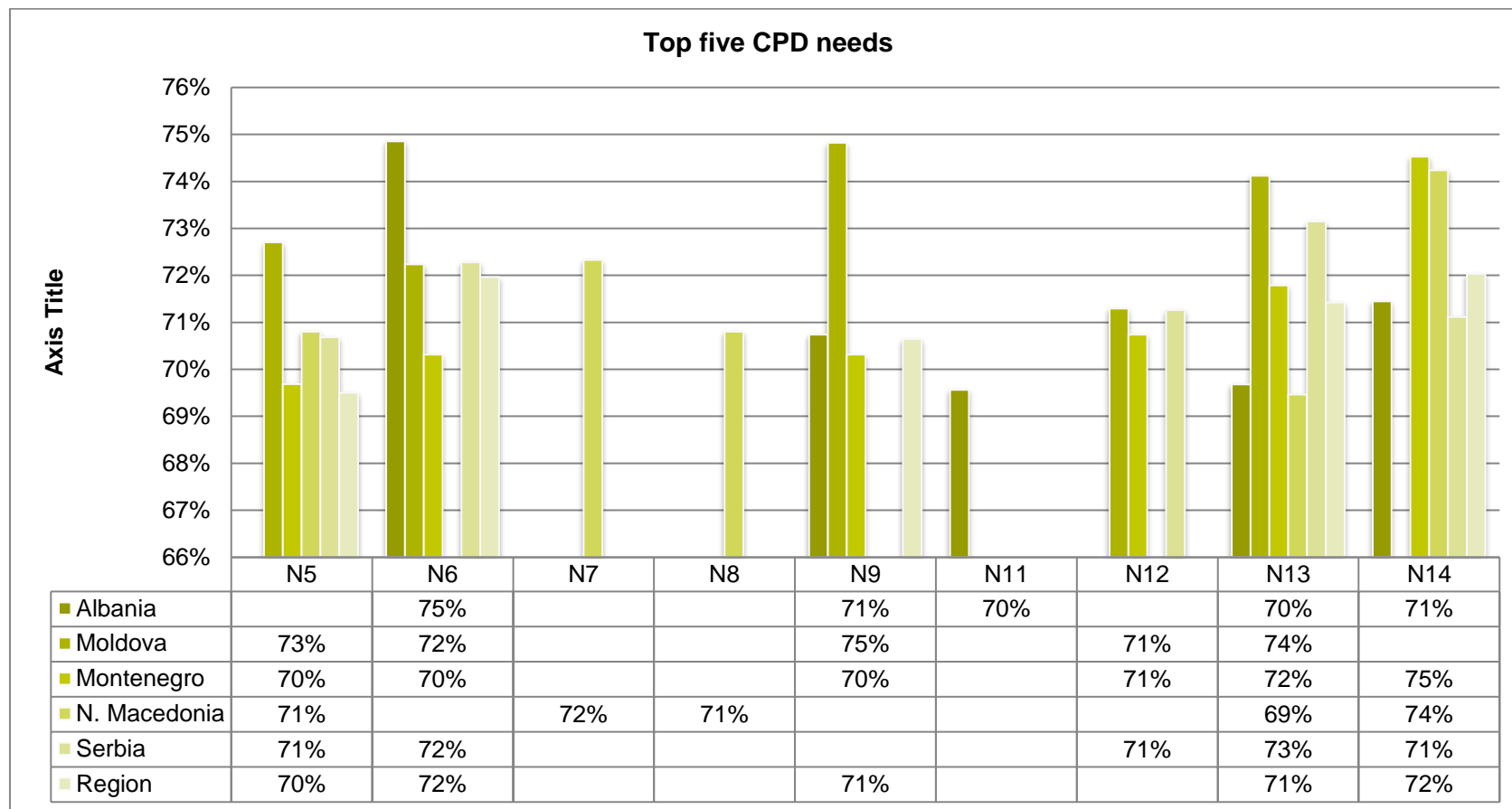


Figure 9.1: Teachers' perception of their 'top five' needs for CPD in relation to different digital competences by countries and region

### 2.5.1 Needs for CPD: country comparison

The following analysis refers specifically to needs related to teaching and assessing at a distance, so critical during a lockdown. It is clear that this is an area of continuing high need across the five countries- around 70% of teachers in each country perceived to have a high or very high need for CPD related to teaching and assessing at a distance (see Figure 10).

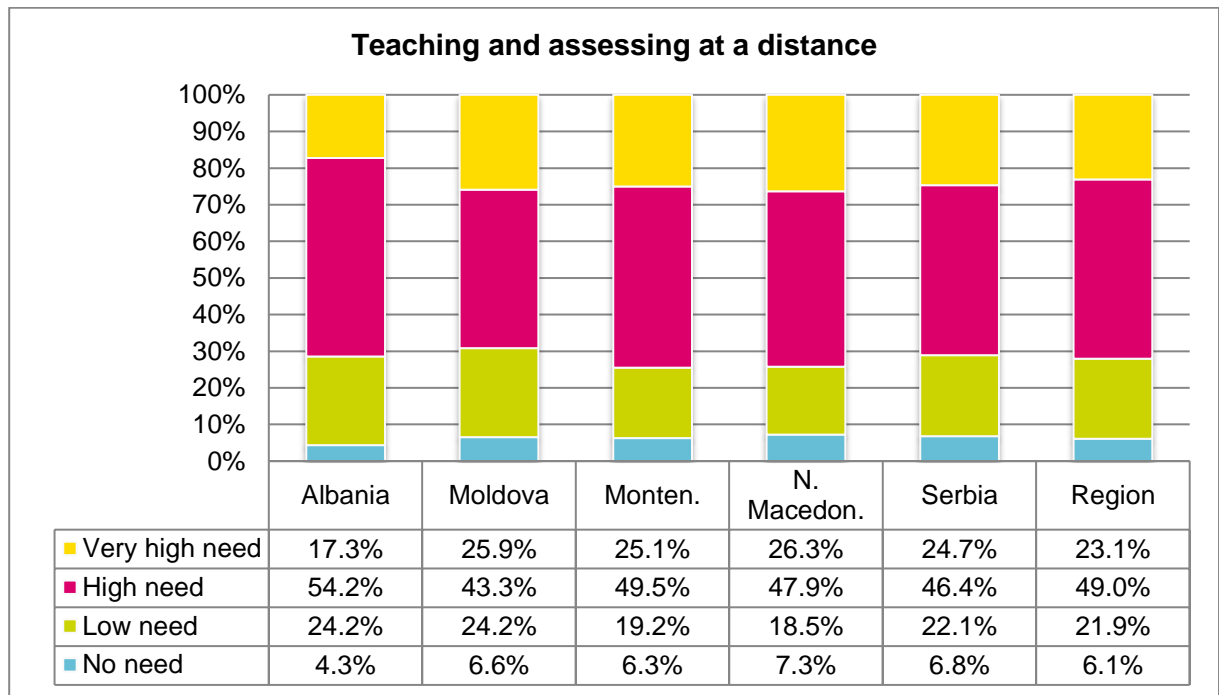


Figure 10: Teachers' perception of their needs for CPD that addresses teaching and assessing at a distance by country and region

## 2.6 Impact of CPD Regional

This section investigates teachers' opinions about the impact of their CPD on the development of various digital competences (see Table 8). Teachers were invited to state their level of agreement with the following statements about impact (answer options: strongly disagree; disagree; neither agree, nor disagree; agree; strongly agree).

Table 8: Codes Key for impact of CPD on various digital competences

	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

In this analysis, teachers' answers have been grouped in the following way: high impact (answer options: agree and strongly agree) and low or uncertain impact (answer options: strongly disagree; disagree; neither agree, nor disagree)

Figure 11 shows which CPD at the regional level is judged by teachers to have the highest and which the lowest impact.

Teachers who participated in this survey were most likely to believe that their CPD had high impact on the following five digital competences: digital communication with students and parents - 68.2% (I1, *Area 1: Professional engagement*); making greater and more effective use of different digital technologies - 66.3%; finding, adapting and creating digital resources that serve different learning tasks and different learners - 66.1% (I5, *Area 3: Teaching and learning*) (I3, *Area 2: Digital resources*); teaching and assessing remotely during the COVID19 lockdown - 66.1% (I14) and digital collaboration with colleagues - 65.4% (I2, *Area 1: Professional engagement*).

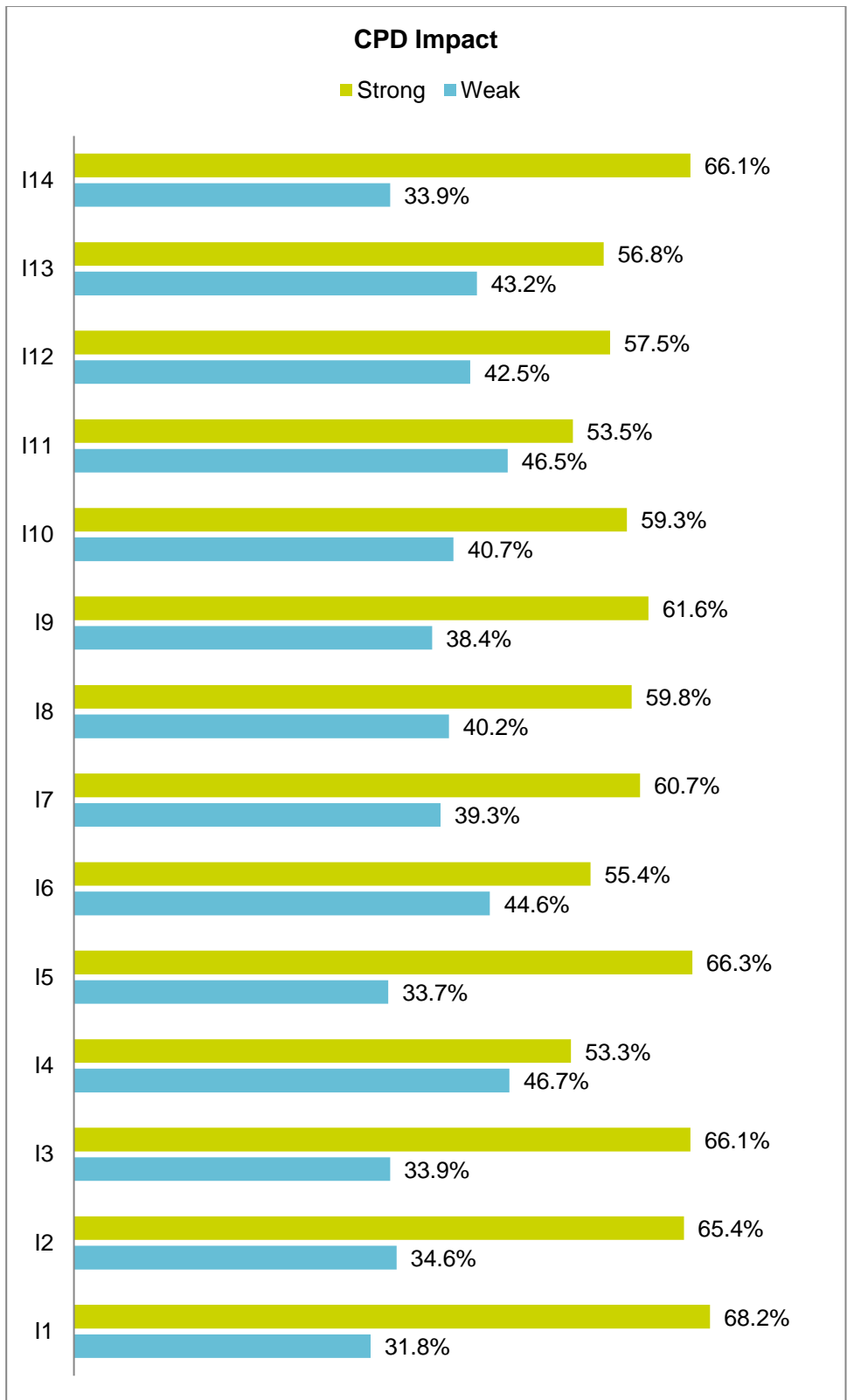


Figure 11: Teachers' perception of the impact of CPD

On the other hand, according to the teachers, CPD had the lowest impact in the following five digital competencies: (I4, Area 2: Digital resources) managing and protecting sensitive data



and content (46.7%); (I11, Area 5: Empowering learners) planning digital learning that will overcome potential digital problems, e.g. lack of access to devices or data (46.5%); (I6, Area 3: Teaching and learning) enabling students to use digital technologies for group work (44.6%); (I13, Area 6 - Facilitating learner digital competence) teaching students to make responsible and critical use of digital technologies (43.2%); (I8, Area 4: Assessment) making use of digital technologies to monitor and analyze students' digital activity (40.2%).

### 2.6.1 Impact of CPD: country comparison

The following analysis refers specifically to the impact of CPD on teaching and assessing remotely during the COVID19 lockdown. At the regional level, this kind of CPD was judged to have relatively high impact – indeed this was the main focus of CPD during the last 12 months (see Figure 11). If we compare the results in individual countries, it can be seen that teachers in Moldova and Albania believe that CPD influenced the development of their competence to teach and assess remotely more than teachers from Montenegro and Serbia, while the result in N. Macedonia is equal to the average (see Figure 12).

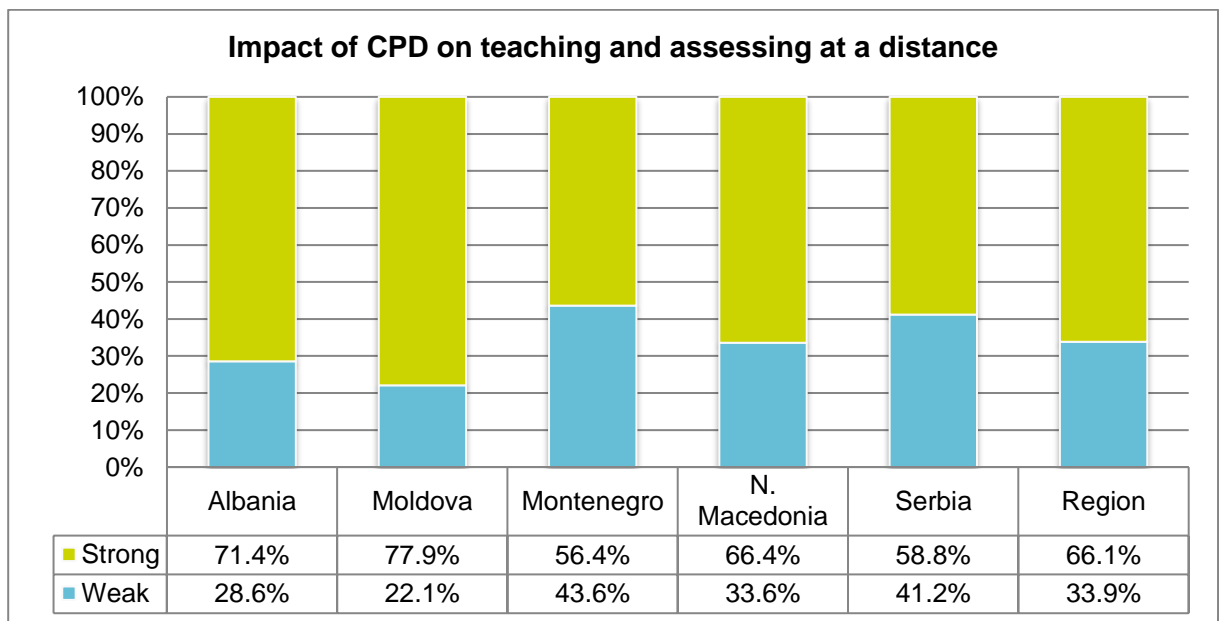


Figure 12.1 Teacher's perception of the impact of CPD on teaching and assessing remotely

Judgements about the impact of CPD vary slightly between countries (see Figures 12.2.-12.4), with, for example, a higher share of teachers from Moldova, and a lower share of teachers from Montenegro assessing the impact of their CPD as high.

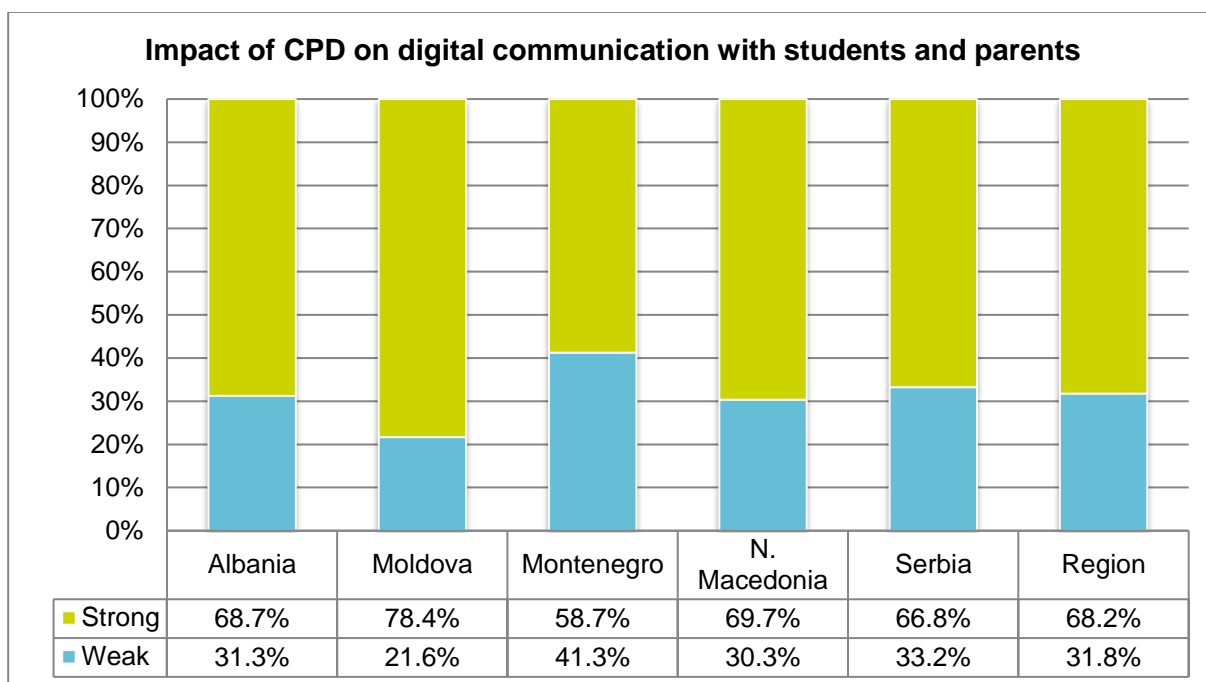


Figure 12.2: Teachers' perception of the impact of CPD on digital communication with students and parents (11)

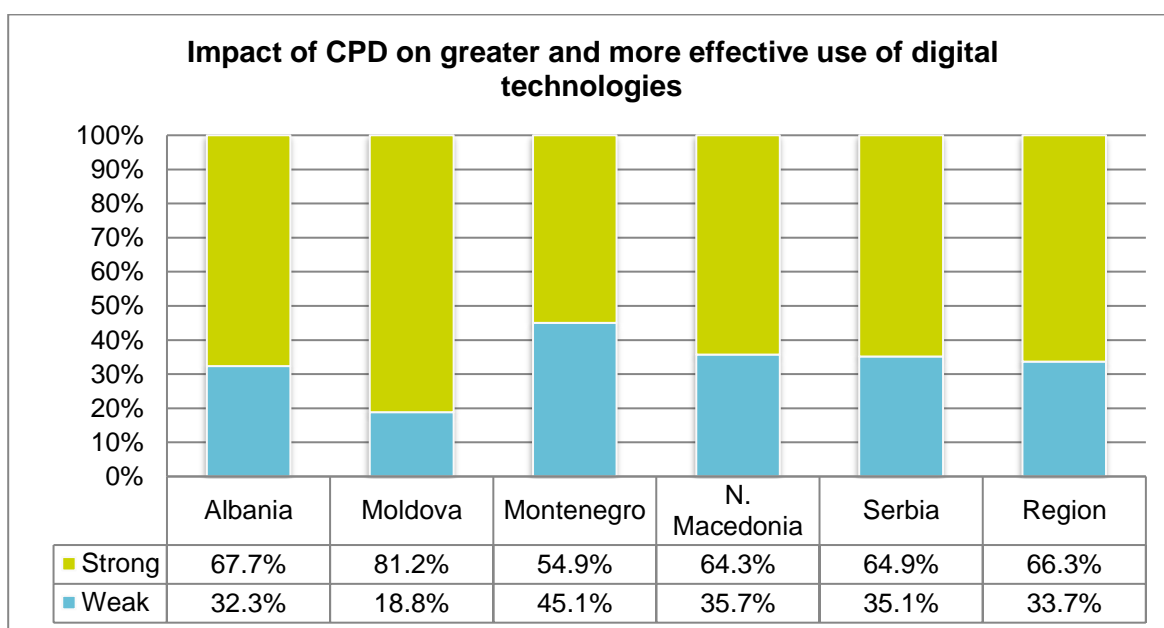


Figure 12.3: Teachers' perception (in percentages of the impact of CPD on use of digital technologies) (15)

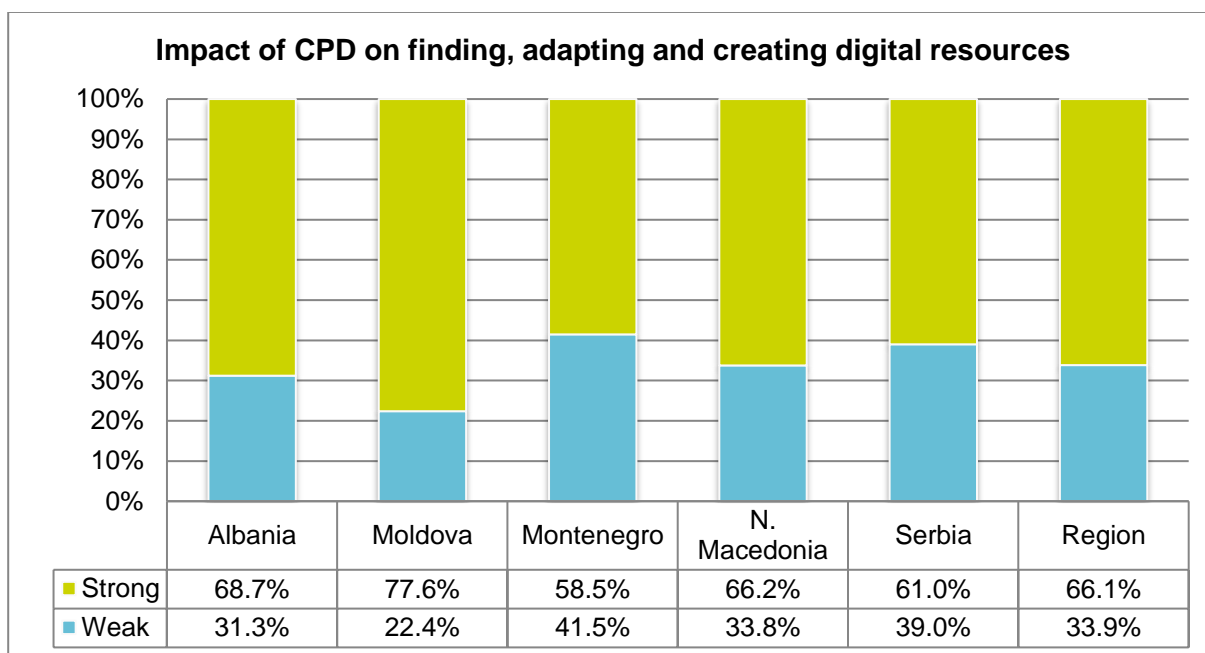


Figure 12.3: Teachers' perception of the impact of CPD on finding, adapting and creating digital resources (13)

## 2.7 Preferred modes of 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 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 were invited to state their preferences through the following answer options: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree.

The answers were grouped in the following way: Low preference (answer options: Strongly disagree; Disagree; Neither agree nor disagree) and High preference (answer options: Agree and Strongly agree)

Across the five countries all of these modes were more or less equally popular. There was a slightly higher preference for Online and Blended CPD (72% of teachers prefer these modes) compared to face to face training and peer support (see Figure 13).

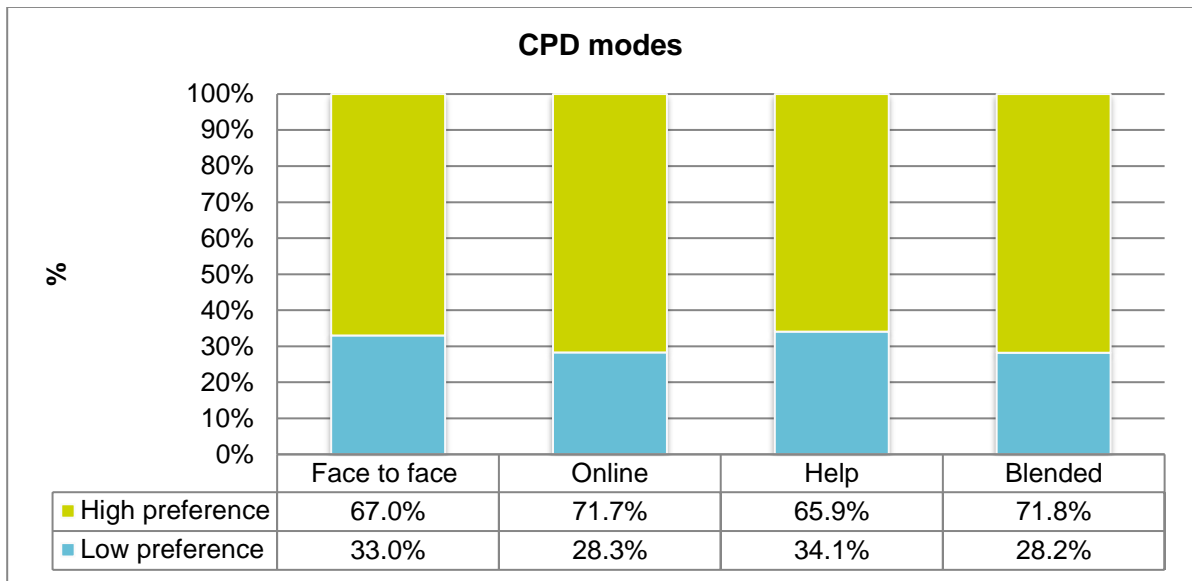


Figure 13: Teachers' preferred modes of CPD

### 3. CONCLUSION

The results obtained in this study show that the regional average proficiency score falls between B1 and B2 category. These teachers' overall proficiency scores are higher than those obtained by previous studies (e.g. Ghomi & Redecker, 2019 (the median of the total score was 45 points); Lucas et al., 2021 (overall proficiency score was 43.2)). As one of the aims of the DigCompEdu framework is to motivate teachers to continuously work on their digital competences and further increase them, it should be considered that proficiency scores obtained in this regional study, although higher than in previous studies, still need to be improved through CPD. The increased demand for the use of digital technologies during the COVID19 lockdown and CPD provision received by teachers has certainly contributed to the improvement of their digital competence and may explain the fact that teachers who participated in this study assessed their digital competence as higher than what was obtained in other studies. However, two potential limitations should also be considered although the same bias affects the other studies, as well. The first is a selection bias, since the teachers were voluntarily participating in the study. Thus, it is possible that teachers who were already involved or at least interested in the development of digital competences were more likely to participate in this study. Secondly, since the questionnaire was web-based it is also possible that the participating teachers already engaged with digital technologies to a higher extent, which is why the results show a high degree of digital competences.

The results show that the five countries in the SEE region differ when it comes to the overall proficiency score and the distribution of teachers across the proficiency levels (A1-C2), with N. Macedonia and Montenegro being outliers. Next to the variation in digital competences, these differences can be explained by contextual factors such as students' and teachers' access to technology and equipment, network infrastructure, school and peer support, requests from the Ministry of Education, etc. (for more information about countries' specific context see the national reports), as well as, personal factors (e.g. more prudent self-assessment of digital competences in some of the countries). However a significant minority of teachers in all countries (around 10%), according to their own evaluation, are competent only for a basic use of digital technologies (A level) and should be targeted with appropriate CPD provision and additional incentives. On the other hand, at least 10% of teachers in each country reach the Leader or the Pioneer proficiency levels (C1 and C2) and can be used as a leading force for further advancement of teachers' digital competences.

Analysis of proficiency levels across six competence areas reveals that teachers in the five countries perceive themselves as more competent in two areas - *Area 5: Empowering learners* and *Area 6: Facilitating learner digital competence* (in these two areas around 40% of teachers reached B2 and higher levels). On the other hand, more than 30% of teachers from the five countries self-assessed as beginners in *Area 2: Digital resources*, *Area 3: Teaching and Learning*, *Area 4: Assessment* and *Area 5: Empowering learners*. Comparison of countries regarding advanced proficiency level (B2 upwards) in six competence areas distinguishes N. Macedonia and Montenegro as outliers. Teachers from N. Macedonia, according to their self-assessment performed particularly well in *Area 4: Assessment* and *Area 5: Empowering learners* (more than 50% of teachers reached B2 and higher levels in these two areas). Teachers in Albania and Moldova were particularly likely to self-assess as less competent in *Area 4: Assessment*.

- *Technologies and practices used during COVID19 lockdown*

Results related to the use of digital tools/activities during the COVID19 lockdown revealed that teachers in the five countries were most likely to frequently use *Virtual classroom software* (65.8%) followed by *Exchanging documents and text messages via social media* (60%) and *Synchronous video-communication tools* (54.7%). On the other hand, a significant minority of teachers made no use whatsoever of the following digital tools/activities: *Creating videos/audios* (31.3%), *Sharing screen (screencasting)* (29.8%) and tools for *Sharing and exchanging of documents ('cloud services')* (24%). It seems that 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 and share teaching materials. There were some significant international differences related to use of *Virtual classroom software* (e.g. *Ms Teams, Google Classroom, Moodle*) and *Synchronous video-communication tools* (e.g. *Zoom, Skype, WhatsApp, Facebook live*). In particular, more than 80% of teachers in Serbia and Montenegro used *Virtual classroom software* frequently against the regional average of 65.8% whilst in Moldova more than 80% of teachers used *Synchronous video-communication tools* against a regional average of 54.7%. These differences appear to result from differences in regulations, CPD and access to computers and internet (see national reports on <https://openspace.ef.europa.eu/resources/pilot-needs-analysis-tool-digital-competences-2020>).

- *CPD experiences*

The majority of teachers from the five countries received support, at least once in the last 12 months, from colleagues or attended one online CPD (around 85% and 80% respectively) in order to improve their digital competences. The provision of online CPD was greatest in Moldova and lowest in Montenegro (80% of teachers in Moldova participated in online CPD on a few occasions or many times, compared to 37% of teachers in Montenegro). The relatively low levels of CPD participation in Montenegro are consistent with relatively low average digital competence. On the other hand, the differences regarding peer support during the COVID19 lockdown among countries were negligible.

Some 5% of teachers from the five countries did not receive any type of CPD or peer support relating to digital competence over the last 12 months. Furthermore, 20% of teachers from the five countries either did not participate in online CPD trainings, or did not receive support from other teachers and advisors for the development of their digital competencies, in the past 12 months.

Around 75% of all teachers were both encouraged by their schools to participate in CPD and were able to select CPD based on their personal needs. The survey revealed that teachers in the five countries have a slightly higher preference for Online and Blended CPD compared to face to face training and peer support (around 70% versus around 60% of teachers). This preference should be understood in the context of the continuing COVID19 crisis.

- *CPD effectiveness*

According to the teachers' opinion, CPD was especially effective in enabling them to more effectively communicate digitally with students and parents (68.2%) and to more effectively use different digital technologies (66.3%). This is consistent with the result that the majority of teachers in the five countries, during the COVID19 lockdown, extensively used virtual classroom software, were engaged in daily sharing of documents and text messages via social media, and used *synchronous video-communication tools* (65%, 60% and 55% respectively). Additionally, CPD helped teachers in finding, adapting and creating digital resources that serve different learning tasks and different learners (66.1%) and in establishing digital collaboration with colleagues (65.4%). It can be concluded that teachers benefitted most from CPD in *Area 1: Professional Engagement, Area 2: Digital resources* and *Area 3: Teaching and learning*.

- *Training Needs*

More than 70% of teachers in the five countries report high or very high needs for CPD in the following competences: teaching and assessing at a distance; enabling students to use digital technologies for group work; teaching students to make responsible and critical use of digital technologies; making use of digital technologies to engage students actively in learning and making greater and more effective use of different digital technologies. These widely experienced CPD needs are mainly related to *Area 3: Teaching and learning, Area 5: Empowering learners* and *Area 6: Facilitating learner digital competence* in which around 30% of teachers in the five countries, according to their own self-evaluation, express low levels of digital competence (A1 or A2 level). These priorities are shared by the five countries.

### 3.1 Recommendations

This survey provides a snapshot of digital competence of teachers in these five countries in South East Europe. It is pertinent to actors at all levels: international and regional organisations, national ministries and agencies, local educational government, schools and individual teachers. These recommendations are intended to help educationalists to meet the challenges imposed by COVID-19 and to better navigate the digital transition.

#### ***Learning from one another***

The survey reveals that teachers in different countries may have different average levels of digital competences, that there can be differences between their areas of strength and weakness and that they may differ in which educational technologies they make most use of. It appears that some of these differences can be explained by policies, such as for example, requirements to make use of virtual classroom software and access to certain kinds of CPD or equipment. Schools and national and international organisations should review their objectives and practices in the light of these differences to ensure that they are adopting the best measures available to achieve their goals.

#### ***Learning from good practice***

The survey demonstrates the wide range of competence between teachers and the enormous potential for peer learning. Where countries or schools or teachers within a school have advanced digital competence in a particular area then they should be encouraged to share

that practice and know-how in an appropriate manner. Such sharing could take place through a platform, a repository of resources (see below), through school-based or on-line CPD, through competitions, demonstration lessons, setting up of beacon schools or Centres of Excellence (see Beara & Petrovic, 2020) and learning conferences (such as the Moodle Moots). This sharing must be facilitated and incentivised – otherwise it will not happen and the differences in digital competence and hence in access to and quality of digital learning will persist.

### ***Develop Teachers' Digital Competences by CPD and Peer Support***

More CPD should be provided to meet teacher's expressed needs particularly in relation to their priorities: *Area 3: Teaching and learning*, *Area 5: Empowering learners* and *Area 6: Facilitating learner digital competence*. This can take the form of on-line or blended learning but it should take account of the fact that, as on-line workers, teachers need just-in-time support and advice which has to be regularly updated as software changes and, as pedagogues, teachers have to adapt educational technologies to meet the needs of their learners and their curriculum. International and national organisations, ministries and agencies should support the development of high quality on-line CPD, including MOOCs. The survey suggests that there is a particular need for effective CPD addressing: teaching students how to assess the reliability of information and to identify misinformation and bias; teaching students to behave safely and responsibly online; copyright regulation, protection of sensitive data and planning digital learning to overcome problems such as lack of access to devices and to data.

### ***Focus on the empowerment of learners and the assessment***

During the COVID-19 lockdown digital tools and activities which favour knowledge transmission and reception were used to a greater extent than those which focus on the active involvement of students in the learning process and upon facilitating self-regulating digital learning. There was also relatively little use of digital tools to support the assessment of learning. *Empowering Learners* and *Assessment* are the two areas where more than one third of teachers across the five countries are currently at level A. It follows that schools, national and international organisations should explore how they can develop tools and capability to better address these areas.

### ***Sharing digital resources and developing capability for digital resources***

Almost one third of teachers in the five countries are on level A with respect to creating and using digital resources while almost 40% are at level B2 or above. Some digital tools, such as on line brainstorming, video-making and document sharing are used infrequently by the majority of teachers. Some 67% of teachers express high or very high needs for CPD addressing the creation and adaptation of digital resources for learners. These needs should be addressed by the collecting and sharing of the many digital resources that have already been created by teachers, particularly during the COVID-19 lockdown. Networks, repositories and resource centres should be created to collect, evaluate and disseminate digital resources, the creation of open educational resources (OERs) should be encouraged. More skilled and experienced teachers should be empowered to provide support and training to their colleagues so that they too can create and adapt digital resources. Collaboration between



schools, national agencies and international organisations can help to support this sharing of resources and capability.

### ***Tailoring of support and CPD to meet the needs of schools and of individual teachers***

The ten school studies that were carried out as part of this research reveal that schools may sometimes have a different balance of competences and different development needs. Although many teachers report that they need to develop their competences in common areas – it is clear from the survey that their current levels of competence can differ greatly. These differences in competence contribute to differences in readiness and take up in the use of various educational technologies. To make best use of resources and time, it is important that CPD is designed and assigned to match teachers' existing capabilities. This can be done by providing more information about the training offer, by offering CPD targeted at different levels of competence and by offering short, targeted sessions rather than 'comprehensive training workshops'. Schools should make use of individual assessments of digital competence and school level analysis to plan and organise training and support which is directly relevant to what their teachers are currently teaching. Individual teachers should be encouraged and rewarded for developing more advanced digital competences, in particularly at C Level<sup>5</sup>, since these teachers can then inspire and empower their peers.

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<sup>5</sup> Only 13.8% of teachers in the five countries self-assessed themselves at C1 Level and just 1.7% at C2 Level.

