Sociological analysis of Montenegrin teachers' digital capital

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Abstract

Starting with the concept of digital capital in social sciences, this article presents the key findings of the "Global Kids Online" nationally representative survey of primary and high school teachers' digital skills and practices that was conducted in Montenegro with Unicef's support in 2018. Digital capital, as any other form of capital within Bourdieu's perspective, has a sociological validity only in correlation with other forms of capital – such as economic, cultural and social – in a limited context and according to a multi-dimensional approach which goes from a macro- to a micro-social perspective (Pandolfini, 2016). This article identifies and discusses three perspectives of digital capital – macro, meso-social and micro – and their material (technologies, digital services and school experiments with devices) and non-material resources (digital competencies). Analysis of data from the Montenegrin research relating to this perspective shows that the daily practice of using digital technology in classrooms seems to be marginal, even though most teachers have access to the internet in their schools. Currently the majority of teachers are using the internet at school mostly just for checking information online. Their digital competencies are not generally advanced: on average, social and operational skills are the most developed, while their creative skills are least developed. Therefore, to support the development of children's media literacy through formal education, further investments towards the strengthening of teachers' digital competencies need to be made and the research shows that the demand for digital pedagogy courses already exists among most teachers. In other words, the Montenegrin research points to the need to invest more in education and experimentation related to the meso- and micro-social perspectives of digital capital.

Keywords

digital capital; digital competencies; media literacy; Montenegro; teachers

Análise sociológica do capital digital dos professores montenegrinos

Resumo

Partindo do conceito de capital digital nas Ciências Sociais, este artigo apresenta as principais conclusões do inquérito nacionalmente representativo do "Global Kids Online" sobre as competências e práticas digitais de professores do ensino básico e secundário, realizado em Montenegro com o apoio da Unicef, em 2018. O capital digital, como qualquer outra forma de capital na perspetiva de Bourdieu, apenas tem validade sociológica em correlação com outras formas de capital, como a económica, cultural e social, num contexto limitado e de acordo com

uma abordagem multidimensional que vai de uma perspetiva macro a uma microssocial (Pandolfini, 2016). Este artigo identifica e discute três perspetivas do capital digital – macro, meso e micro social – e os seus recursos materiais (tecnologias, serviços digitais e experiências escolares com dispositivos) e não materiais (competências digitais). A análise dos dados do estudo montenegrino, de acordo com esta perspetiva, mostra que a prática diária de utilização da tecnologia digital nas salas de aula parece ser marginal, embora a maioria dos professores tenha acesso à internet nas escolas. Atualmente, a maioria dos professores utiliza a internet na escola principalmente para verificar informação online. Geralmente, as suas competências digitais não são avançadas: em média, as competências sociais e operacionais são as mais desenvolvidas, enquanto as competências criativas estão menos desenvolvidas. Portanto, para apoiar o desenvolvimento da literacia mediática nas crianças através da educação formal, é necessário realizar mais investimentos para reforçar as competências digitais dos professores. O estudo mostra ainda que a procura por cursos de pedagogia digital já existe entre a maioria dos professores. Por outras palavras, o estudo montenegrino aponta para a necessidade de investir mais na educação e na experimentação associadas às perspetivas meso e microssocial do capital digital.

Palavras-chave
capital digital; competências digitais; literacia mediática; Montenegro; professores

Introduction

This article presents a reflection on the concept of digital capital in Social Sciences according to Bourdieu's perspective (1986). The results of a national survey on the use of digital technologies in classrooms and on the digital competencies of primary and secondary school teachers in Montenegro are analysed and interpreted within this perspective.

Digital capital can be meant as a set of internal, non-material resources (digital competencies) and external ones (technologies) which are accumulated and transferred from one area to another (Ragnedda, 2018; Ragnedda, Ruiu & Addeo, 2019). This concept can be reduced to a form of *specific capital* (Bourdieu, 1986). It can be understood as a series of material (technologies, digital services and school experiments with devices) or non-material resources (digital competencies) which are available in a specific area (or social space), such as a school, and which one (a teacher, student, administrative staff, school principal, etc.) can use to achieve specific objectives.

Digital capital, as any other form of capital within Bourdieu's perspective, has a sociological validity only in correlation with other forms of capital – such as economic, cultural and social capital – in a limited context and according to a multi-dimensional approach which goes from a macro- to a micro-social perspective (Pandolfini, 2016).

In this way, from the *macro perspective*, the indicators of digital capital to be considered are related to two dimensions. The first one is material. It is related to the technological infrastructure of a school and the availability of digital resources for implementing digital education activities from the digital literacy curriculum perspective (Pandolfini, 2016). The second one is non-material. It is related to investments towards the strengthening of the digital competencies of different school actors through educational projects or didactic experimentation.

From the *meso-social perspective*, digital capital indicators refer to the use of technologies in the classroom for planning lessons, managing classroom activities, relationship dynamics within and outside the school (students, families, other schools, administrative staff, stakeholders, etc.) and the organizational dynamics and improvements of the administration management (Pandolfini, 2016).

Finally, the *micro level* of digital capital refers both to the cultural practices of school actors related to the use of different devices and to the cultural capital of each one of them in terms of the digital competencies that they have acquired during their educational experiences and the everyday working practices for improving their performance and their socio-cultural and educational achievements individually (Magaudda, 2014; Paino & Renzulli, 2012; Pitzalis, 2016).

Digital capital: concepts and background

Starting with its introduction, in the *macro perspective*, a school's digital capital is certainly connected to its financial capital. The school's technological infrastructure and the strengthening of its digital education projects depend on the investments and finances available to the school to improve its digital capital. This often happens through networking with external agencies (public and private) to improve the socio-material wellbeing of the school (Landri & Viteritti, 2016; Pitzalis, 2016; Selwyn, 2011).

Digital capital then becomes closely linked to social and cultural capital, as the school's financial capacities to invest in digital technologies can be proportional to the *governance*, and thus, to the school's capacity to attract financial investments and make agreements with external entities to improve the functioning of the school. It also includes the school's medium-term investment in training and class experimentation projects with digital technologies aimed at improving the school's performance.

From the *meso perspective*, digital capital refers to the concept of didactic innovation and requires an educational approach mostly based on the development of competencies, learning by doing, and on a focus on the educational context during experimentation. OECD defines didactic innovation as any dynamic change in the teaching process capable of providing an added value to students' learning which can be measured in terms of the level of satisfaction of stakeholders and of school performance of the students (OECD, 2010). In particular, the EU identifies four principal points around which didactic innovation with the use of technologies is to be measured: 1) a political context favourable to the integration of technology and correlated to the changes and international decisions in terms of digital education, digital literacy and digital competencies; 2) pedagogical updating, in relation to teaching methods and strategies which use technology effectively to support students' learning; 3) updating of technology; 4) the knowledge and digital competencies which need to accompany the integration and use of technologies in different contexts, such as the classroom context (Pandolfini, 2016).

From this point of view, the concept of "didactic innovation" is introduced, in order to go further than the mere digital/technological perspective, so as to include an

educational approach based mostly on the development of soft competencies (connected to the methodological and didactic fields), learning by doing and experimenting with new things in the educational context. The fact that this process is often unpredictable means that the school needs to be flexible and to continuously adapt its educational strategies and didactic tools to the specific learning contexts. Hence, according to Ferrari (2017), the key challenges to didactic innovation can be reduced to a minimum of three: 1) limited methodological preparation of teachers; 2) limited implementation of active didactics, not necessarily digital; 3) tensions between the requests for innovation coming from ministerial decrees and the needs and realities of schools, as well as psychological resistance from certain teachers and school managers to innovation.

According to the *micro vision*, digital capital Magaudda, 2014; Paino & Renzulli, 2012; Pitzalis, 2016) consists of the digital competencies and practices of teachers, students, administrative staff and school management within the school context. From the micro-social perspective, if we look at this according to the EU's digital competence framework for educators (DigCompEdu 2017) (Redecker & Punie, 2017) framework and its updated versions (Digcomp 2.0 from 2015, Digcomp 2.1 from 2017) (Carretero, Vuorikari & Punie, 2017; Vuorikari, Punie, Carratero & Van den Brande, 2016), we need to take into account the following key areas of teachers' digital competencies: 1) access to digital technology; 2) a critical attitude towards the media (linked to the information and data analysis indicator of Digcomp); 3) creative production (linked to the digital content creation of Digcomp); 4) problem solving with the use of digital technology (linked to the problem-solving indicator of Digcomp); 5) digital awareness (linked to the safety indicator of Digcomp); and 6) citizenship (linked to the communication and collaboration indicator of Digcomp) (Ferrari, 2013).

In this case as well, the specific dimension of digital capital is reduced to the human capital of the actors. It refers to the cultural characteristics and knowledge (capabilities, internal and fundamental) (Nussbaum, 2010) to which individuals refer when using digital technologies and which contribute to defining the type and level of teachers' digital competencies.

These competencies can be identified as socio-emotional, socio-relational and metacognitive. They are at the basis of the socialization process regardless of one's digital experience. However, digital experience influences this process by increasing or reducing socialization within specific social and relational contexts.

In all three perspectives of the analysis of digital capital (macro, meso and micro), teachers' digital competencies, both notional and transversal – those related to the cultural background (acquired before and outside of the working context of the teacher) or to the relational background (acquired formally or informally within the teaching experience) – become essential for ensuring diffusion of the digital culture into the school's socialization processes. This happens not only in terms of strengthening the students' learning processes (cognitive and metacognitive), but also in terms of supporting the students to become aware and responsible users of digital media and to apply critical assessment to all content shared in virtual environments.

In 2018, the European Commission provided guidelines on *Teaching media literacy in Europe: evidence of effective practices in primary and secondary education* and invited all educational systems in different EU member countries to review the curricula (McDougall, Zezulkova, van Driel & Sternadel, 2018). This review should be based on the *Council recommendation on key competences for lifelong learning* from 22 May 2018 (Recommendation 2018/C 189/01). Digital competency is included in this document as one of the basic competencies, together with reading, writing and basic mathematics skills (Giancola & Viteritti, 2019, pp.11-40).

Therefore, it is not possible to speak about the realization of digital capital in schools without investment in the curriculum for students' digital education, as well as for teachers' education on digital literacy. In this way, teachers acquire new transversal, digital competencies which facilitate their communication and relationships with students and colleagues, and open them up to new interpretations of the social reality around them.

In this regard, it is useful to have in mind Unesco's proposal for a curriculum of Media and Information Literacy (MIL) (Unesco, 2008, quoted in Grizzle et al., 2013), which aims at providing guidelines to teachers for construction of a transversal media literacy curriculum for adults and young people. This process includes defining the objectives, contents, activities and didactic practices, as well as the assessment criteria of the learning processes. The curriculum proposal from Unesco is structured according to three key thematic areas: 1) media knowledge and understanding; 2) assessment of media content and of sources of information; and 3) the production and use of media with critical awareness. Unesco's curriculum goes beyond the issue of teachers' access to communication technologies to include the development of transversal competencies, such as critical analysis and problem solving (in the second area of MIL – knowledge deepening), as well as planning and multimedia production and self-regulation in the use of media in different social contexts (in the third area of MIL – knowledge creation).

When defined in this way, digital capital corresponds to Bourdieu's (1986) criteria of accumulation: the autonomous and responsible use of technologies and the development of digital competencies inevitably require continuous, educational and practical investment in the subject and in the school which needs to integrate media into the educational process.

Digital capital fulfils the criterion of transferability, since the material and non-material resources which characterize it are contextualized and applied in other social contexts outside the school, based mostly on the use of technologies and transversal digital competencies. Digital capital also satisfies the criterion of conversion, as the school technological infrastructure and the digital, cultural practices can transform with time into the improvement of the school management (macro-social capital). This can lead to further and greater economic investment in the school by different entities (financial capital), an increase in the opportunities for didactic innovations (by using meso-social capital), as well as to a rise in the number of students who want to attend such a digitally, advanced school.

Through the process of school digitalization, a chain mechanism is initiated: it starts from the provision of the technological infrastructure (macro prospective) and

ends with the usage of students' digital competencies (micro prospective). This mechanism engages all the actors of the school system which are directly or indirectly involved in the process of digitalization with the aim of ensuring the good digital performance of the school.

The challenges to digitalization can be many and various: the difficulty of the school in attracting financial investment and participating in the schools' network to strengthen its use of technologies; the gap between the technologies, which are often made available in the school and the lack of teachers' training for access and effective use of educational innovations. These training sessions are often sporadic or not inclusive. These initial problems, of a macro-social type, are reflected at the meso-social level by making it more difficult to invest in didactic and methodological innovations with digital technologies in classroom. In fact, the process of digitalization in contemporary society seems not be so much about the possession of technology, or lack thereof, and the piloting or not of a project any more, but more about being technologically advanced in line with the ongoing digital revolution, disseminating technology collectively and having all classes and all actors participating in the educational socialization included in the training.

We need to add to this the complex issue of investment in teachers' digital literacy, not only in terms of access to technology, but also in terms of the implementation of digital soft skills (Cortoni & Lo Presti, 2018). The aim would be didactic-methodological innovation and the organization of didactic activities in the classroom to support students' learning processes. Also, the aim would be to spread a digital communication culture so that it becomes central to the processes of socialization of young generations and acquires a symbolic identity function for educators. This culture would change the behaviours, perceptions and key individual and social identification processes through the use of communication tools, languages and environments (Cortoni, in press).

Objectives and methodology

The data in this article comes from the Unicef – supported research conducted in 2018 among primary and secondary school teachers in Montenegro within the "Global Kids Online" research network developed by the Unicef Office of Research – Innocenti, in collaboration with the London School of Economics and Political Science. The objective of the research was to learn about teachers' digital knowledge and skills, and their experiences inside and outside school, as well as about their attitudes towards the use of media in classrooms. The data collected is useful for analysing the macro, meso and micro perspectives of digital capital and for supporting education system reform in the digital age.

The "Global Kids Online" methodological toolkit for research with children and parents was used as a starting point for developing a 45-minute questionnaire for the teachers' survey. The questions relate to access, online practices inside and outside school, digital skills, opportunities, mediation of internet use and sources of information. The questionnaire included questions related to the macro, meso and micro dimensions of

digital capital and so the data collected offers a useful insight into the indicators of digital capital according to these three perspectives.

In total, 911 teachers from 75 primary and secondary schools in Montenegro were interviewed.

	Gender		**Age**				**Region**			**School type**		
Total	Male	Female	Up to 35	36–45	46–55	56+	North	Centre	South	Gymna-siums	Vocational schools	Primary schools
100	28	72	22	29	32	18	32	48	20	7	27	66

Table 1: Sample structure (%)

The sample was constructed in such a way as to be nationally representative – the researchers considered the region, type and number of schools. Schools were selected randomly from the list of schools proportional to their size within the stratum. Teachers were also selected randomly from the list of all the teachers in the school.

As shown in Table 1, the sample contains more female (72%) than male teachers (28%), as that is representative of the general situation in the country. Two-thirds of the teachers come from primary schools, as these schools are more numerous than high schools in the country. One in two teachers are aged below 45 years, one in three are 46–55 years old and almost one in five are over 56 years. Almost half of the teachers live in the central region, while around one-fifth are from the south and almost one-third from the northern region. This is in line with the fact that the central region is the most densely populated one.

Results

The key findings of the nationally representative research conducted among primary and secondary school teachers in Montenegro (Unicef Montenegro, 2019) are presented according to the three perspectives of digital capital discussed in the introduction: macro, meso-social and micro.

Macro perspective

Only 2% of primary and secondary teachers in Montenegro do not use the internet. The majority of teachers use it on a daily basis (94%). Even though most of them (87%) have internet access at school, teachers use the internet most often at home (91%), while only 4% say that they use it most often at school. The reason behind this could be the fact that the internet is generally not available in all school premises. More than half of the teachers had problems using the internet at school, and issues with the internet connection are identified as the most frequent challenge relating to use of the internet at

school. Most of those who do not have access to the internet at school (85%) claim that they would use it for teaching if it became available in their schools.

This data indicates how important it is to make the latest technology and internet access available in all the premises of every school. However, this is only the first step since, in order to ensure that digital technology is used in classrooms effectively, it is necessary to provide adequate training for teachers continuously. Four in 10 teachers think there should be more training of this kind and three in 10 have not undergone any kind of computer literacy training.

Research shows that there is a significant demand among primary and secondary teachers for free digital pedagogy training and similar courses. More than 80 percent of teachers claim to be interested in attending such training. However, there is an intergenerational and gender digital divide, and female teachers confirm this in their higher percentages, while teachers over 56 years are least interested in such opportunities. Teacher training is identified as the number-one motivating factor for using the internet in the classroom. This finding confirms the importance of providing more of these training sessions continuously.

On a daily basis, teachers use smartphones the most, and then PCs as sources of information in general, while books come only in fifth place after TV and online news portals. This finding suggests that the training sessions should include active use and provide training materials primarily on smartphones and PCs, as the two most used devices. This proposal is also supported by the fact that the majority of teachers use smartphones (86%), PCs (58%) and laptops (57%) to access the internet every day. Furthermore, most teachers have a social media profile (59%), especially those under 45 years old, and primarily on Facebook (95%). Therefore, access to this social network should be made possible in schools both for teacher training and for teaching purposes in the classroom. The school portal for teachers is the second most visited website by this group of professionals, which means that digital pedagogy and similar training materials and good practices should be shared there too. Finally, the fact that most of the teachers (69%) read online texts every day and that they find information in them more easily (57%) than in offline ones, while one in two (48%) find them more interesting than printed texts, also speaks in favour of supporting teacher training through digital resources.

To summarize, when it comes to the macro perspective, digital capital indicators related to the material dimension indicate that the technological infrastructure of schools and the availability of digital resources for teaching need to be further improved. Digital capital indicators for the non-material dimension point to the need to increase investment for the strengthening of teachers' digital competencies, as demand for such courses already exists among most of the teachers.

Meso-social perspective

From the meso-social perspective, focusing on the use of technologies in the classroom, the Montenegrin research shows that there is great potential that needs to be

realized in the future in order to increase effective use of technologies within and outside the school.

At the moment, the majority of teachers use the internet at school mostly just for checking information online. In the classroom, the internet is mostly used for having students look for information online regarding lessons. Half of the teachers say that they have never asked their students to create multimedia messages on the topics studied. The majority of teachers do not use social media or simulate the work of a newspaper/ TV/radio/online news portal to teach a lesson in the classroom.

Teachers report using the internet more outside of school for educational purposes. Most often they use it for checking information online. They use this information and relevant online educational contents for preparing classes and for creating practical exercises for students (e.g. for mathematics/music/language lessons). Teachers of vocational subjects use the internet more often than others in this way.

When it comes to teachers' mediation of students' internet use, the survey explored about different types of mediation. On one hand, the questions asked the teachers whether they talk to their students about what they do online; whether they encourage them to explore and learn things online; whether they sit with their students or near them while they use the internet in class and whether they do shared activities online with the students. On the other hand, the survey also explored whether students ask for the teacher's help through a set of questions: whether a student has ever started a discussion with him/her about online things; whether a student has told him/her about an upsetting internet experience; whether a student has asked for advice on how to behave online or on how to handle a challenging online situation; and whether a student has helped him/her to find or do something online.

The data reveals that one in three teachers do not talk to their students about what they do online, or else do this rarely. These are more often teachers with no internet access at school and those teaching vocational subjects and working in vocational high schools. One in five teachers do not encourage students to explore and learn online: they are also more often those who are teaching vocational subjects and working in schools without internet access. These findings point to a link between digital and social inequalities and to the fact that both children and adults without access to the internet and basic digital skills are a disadvantaged group in a digitally divided society. The majority of teachers do not engage in online activities with their students, which points to limited use of the internet.

When asked whether students approach them to ask for help regarding online things, the teachers' mainly negative responses highlight that there is a general lack of active teacher mediation of the internet. Most teachers have never had a student complain to them about upsetting things on the internet or ask them for advice about how to behave online or how to handle a challenging situation online. The majority of teachers have not had a student help them do or find something online. These findings also point to the limited use of the internet as a tool for learning and for reinventing the teacher's role in the digital age as that of a knowledge and cultural mediator.

Montenegrin research shows that the use of technologies and the internet in the classroom is not encouraged. Most teachers do not organize the teaching setting so that students can use their mobile telephones or webcams, make, share, comment or watch video clips related to the lessons, update Wikipedia, write, comment or publish a blog, make a comic, take part in an online debate on the issues studied in the classroom, etc. This finding highlights how important the school culture is, as it determines whether and how new technologies are used when they are available.

To summarize, the situation in Montenegrin primary and secondary schools from the meso-social perspective of digital capital is not advanced: the use of the internet at school and in classrooms is quite limited and so is the teachers' mediation of it. Teachers use digital media mostly for searching for information online and exploring the topics taught in the classroom. Media production and analysis in classroom are generally not promoted for didactic purposes. Similarly, teachers seem not to be involved in internet mediation activities to support students' digital literacy while further investigating the topics studied online.

Micro perspective

The micro perspective is focused on the digital competencies and practices of teachers and others within the school context. The Montenegrin research provides insight into five types of teachers' digital competencies – operational, informational, social, creative and mobile – according to the "Global Kids Online" framework.

The majority of teachers have operational skills – they know how to open up a browser on the computer, how to open downloaded files, save a photo they have found online, change privacy settings online and use shortcut keys. Gender and age come out as important for the digital divide: male teachers and teachers over 56 more often admit to not knowing how to perform these tasks. Also, the type of school where the teacher works makes a difference, as gymnasium (general secondary school) teachers show the greatest confidence in their operational skills.

Most teachers are confident about the information/browsing skills measured through this survey. They can easily find websites they have visited before, choose the best keywords for online searches, find information online for their classes, check if the online information is true and use the internet during classes. However, one in two teachers admit ending up sometimes on websites without knowing how he/she got there. Male teachers and teachers aged over 56, as well as those without access to the internet at school, are more often those who admit to not knowing how to do any of these things. These findings highlight that this type of digital skill should be further strengthened.

When it comes to social skills, most teachers are quite confident and claim to know which information they should and should not share online, as well as how to remove people from their contact lists. An intergenerational digital divide is present here, as teachers over 56 years old admit more often to not knowing how to do these things. Also, access to the internet at school plays a role, as teachers who do not have this more often

say that they do not possess these social skills. Gymnasium teachers are somewhat more confident in these skills compared to teachers working in other types of schools.

Creative skills are the least developed ones: the majority of teachers do not know how to design a website, create something new from a video or music they have found online, edit online content made by others or post a video or music that they have created. Teachers are most confident about identifying which type of licences apply to online content – 57% claim to know this. It is interesting that male teachers are somewhat more confident about their creative skills, although they are generally less confident about other digital competencies. Also, teachers of natural sciences show the highest level of confidence about their creative skills. Here again, age makes a difference, as teachers over 56 are least confident.

Finally, most teachers say that they have mobile skills: they know how to install apps, track the costs of the use of an app and make an in-app purchase. As for other digital competencies, teachers over 56 years old are the least confident ones.

On average, teachers' social and operational skills are the most developed skills, while creative skills are least developed, and teachers of natural sciences show a higher level of confidence compared to others.

Discussion

The sociological debate about digital capital is complex, because it takes into account interconnections between a variety of variables – material ones (technological qualifications) and non-material ones (digital competencies) – which are analysed according to different perspectives: macro-, meso- and micro-social. In addition, the implications of digital capital in terms of social, financial, cultural and human capital (Bourdieu, 1986) are also considered.

Analysis of the key findings of the Montenegrin research from the macro perspective indicates that, generally at the national level, there is a good school infrastructure with access to technological equipment. However, the process of school digitalization today cannot be analysed only from the perspective of the availability of technology, but must also be analysed from the perspective of considering other variables, such as the type and speed of internet connection, the process of the use of media within the school, the availability of the internet in classrooms and the number of classrooms with the broadband internet connection needed to cope with constant innovations brought by new technology. Digitalization cannot be considered as the only factor which determines the development of a high level of a school's digital capital. Investing in teachers' and students' cultural capital (in terms of digital literacy) is essential for ensuring that a cultural shift in the processes of media socialization happens. This cultural change leads to a new awareness, communication responsibility and ethical behaviours within the relationship dynamics and actions in the digital environment.

For example, this investment in the teachers' and students' cultural capital can be in the form of digital literacy training sessions and courses which can be systematically

promoted in all schools throughout the country by the relevant authorities and in co-operation with universities and other institutions specializing in media literacy. These courses would be aimed *in primis* at teachers in order for them to acquire new digital soft skills (Cortoni & Lo Presti, 2018) and new ways to communicate with their colleagues and students through the better use of communication technologies. Also, the aim would be to strengthen teachers' capacities to propose new didactic approaches in order to stimulate students' cognitive and metacognitive processes, development of socio-emotional skills and active participation in the activities proposed by teachers. Providing teachers with adequate digital competencies means also supporting the development of students' digital soft skills, as they start trying new ways of communicating with each other and with their teachers and new ways of participating in didactic activities by means of digital devices.

An educational system which is sustainable from a technological point of view has to engage all the school actors and cover all school premises – all classrooms and administrative offices, in order to ensure complete technological coverage (Ferrari, 2017).

It often happens that the availability of digital equipment is not accompanied by an appropriate number of activities in which this equipment is used in everyday school practices. The key challenges to the socio-cultural inclusion of digital technologies in the school system are related to the lack of a proper educational strategy to promote this within the school management and organization, the fact that attitudes against the inclusion of digital media in school often remain widespread, a lack of motivation and an ideological and practical rejection of digital technology by some teachers and school principles (Capogna, Cocozza & Cianfriglia, 2016; Ferrari, 2017).

From a meso-social perspective, the analysis of digital capital takes into account the relationship dynamics, didactics, management, and the organizational and evaluation practices of various actors within the school. All of these can be improved and renewed thanks to the material and non-material resources of the school's digital capital.

In Montenegro, despite the government's investments in schools' infrastructure and technology, the daily practice of using digital technology in the classroom as part of didactic innovation seems to be marginal. Research suggests that there is limited support for the development of students' notional and transversal competencies (digital education), as well as for the further strengthening of teachers' and students' digital soft skills within the digital literacy perspective. If we consider the European framework – the digital competence framework for educators (DigCompEdu 2017) (Redecker & Punie, 2017) – in order to assess the digital capital of Montenegrin schools from a meso-social perspective, we see that the only area in which teachers seem to be oriented towards the use of digital technology is that of professional engagement, as they use media above all to improve their professional development (cultural capital).

On the other hand, what is lacking is the use of digital technology in the other areas and practices mentioned in the DigCompEdu framework, such as: the use or creation of digital resources for preparing didactic activities; teaching and learning within the digital education perspective; assessment by means of technology; the use of digital media to

empower learners and strengthen their transversal competencies; and supporting learners to develop digital competencies through digital education courses (Redecker & Punie, 2017).

Considering the European Digcomp framework, introduced in the background section, analysis of the results of the Montenegrin research shows that access competence is the most present competence among the interviewed teachers. Access, however, refers not only to basic knowledge of the key concepts, which is widespread among Montenegrin teachers. It also refers to more complex things, such as knowledge about media effects (strategic knowledge), about the basic rules of the narrative structure of a media message (procedural knowledge), about media production systems, as well as about media consumption and the process of communication feedback. These more advanced forms of knowledge seem to be less present and practiced by teachers in Montenegro.

Critical analysis is a digital competence which uses one's human and cultural capital to mobilize metacognitive resources of information selection, recognition of multimedia symbols and semantic interpretation of a text. In reference to Digcomp and the Montenegrin research, this competence is to be found within the area of information and data analysis, as it refers to two specific indicators: 1) browsing, searching and filtering; and 2) evaluating data. Analysis of data from the Montenegrin research shows that the competence of carrying out online research while using specific analysis criteria is more present in teachers' habitual practices than the competence of doing an assessment of a multimedia text online.

As far as creative production is concerned, the Montenegrin research shows clearly that this is generally lacking in the cultural background of teachers. It includes different abilities, such as the production of multimedia content on different media interfaces; the use of open-source apps or software; and programming.

Competencies linked to digital awareness, safety and problem solving from Digcomp are not well represented in the research questionnaire, and so further research is required to make comments on these areas. The first competency refers to taking autonomous actions for using media and it has four key indicators: 1) device protection; 2) protection of personal data and copyright; 3) protection of individual and collective wellbeing; and 4) environmental protection. Problem solving, on the other hand, refers to the teachers' capacities to manage media autonomously and in a personalized way based on the needs of the socio-cultural and didactic contexts in which they work. The indicators for this competence are: 1) the teacher's capacity to solve technical problems; 2) their capacity to identify students' needs, to which they need to provide proper technological responses; 3) creative and personalized use of digital technologies; and 4) the capacity to identify gaps related to digital competencies.

To conclude, the Montenegrin research highlights the need to invest more in education and experimentation related to the meso- and micro-social perspectives of digital capital. The aim should be to support the realization of teachers' transversal competencies in order to improve the level of digital awareness and critical analysis of media among teachers and students. Finally, digital education practices should be supported

in order for didactic methodological innovation to become a systemic and consolidated everyday didactic activity.

Authors' note

Ida Cortoni has written Introduction, Digital capital: concepts and background and Discussion; Jelena Perović has written Objectives and Methodology and Results (macro-perspective, meso-perspective, micro-perspective).

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