



**Collaborative learning and
collaborative school leadership in the
digital age
2020**

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INTRODUCTION

21st century, the digital age, has brought with itself unprecedented challenges – social, economic and environmental – driven by continuous globalization and rapid technological developments (OECD, 2018). These challenges have put schools and schooling under the pressure by posing new expectations and demands regarding what and how to teach to students. In a world that is changing rapidly, young people who are entering to the employment market and society need additional skills and competencies that are in many respects different from the ones that were necessary before the digital age.

Therefore the term “**21st century skills**” – the “skills and competencies young people will be required to have in order to be effective workers and citizens in the knowledge society of the 21st century” (Ananiadou and Claro, 2009, pp. 8) – has arisen in the discourse of educationalists. Critical thinking, problem solving, creativity, ICT literacy and collaboration are some of the skills and competencies mentioned most often (World Economic Forum, 2016; Ananiadou and Claro, 2009). This report focuses on one of them: **collaboration**.

Collaboration is a philosophy of interaction and personal lifestyle where individuals are responsible for their actions and they respect the abilities of and contributions of their peers (Laal and Ghodsi, 2012). In accordance to the understanding of the 21st skills, some authors (e.g. Austin, 2000; Welch, 1998) say that collaboration has become a twenty-first-century trend. The need to think together and work together on critical and complex issues in the context of new challenges and rapid changes has increased, which is why team work and community instead of individual attempts and autonomy have become increasingly valued in various contexts (Laal and Ghodsi, 2012), including in the landscape of education.

This report focuses on collaboration within two activities: **learning** and **school leadership**. Additionally, this report focuses on the **digital age**, i.e. tries to capture, how are collaborative learning and collaborative school leadership carried out in the digital age with assumably lots of support from various digital tools. In this report collaborative learning targets mainly the **students** and collaborative school leadership **school leaders**, but also the **teachers**, considering that teaching can also be understood as leadership (Farr, 2010).

Method

The main research questions (RQ-s) are:

1. What is collaborative learning (CL)?
2. What are the benefits of the CL?
3. What is collaborative school leadership (CSLS)?
4. What are the benefits of the CSLS?
5. What examples of policies and practices are there about CL and CSLS, including learning CSLS?

Therefore, this report aims to ...

- Provide concentrated conceptualizations of CL and CSLS by collecting and synthesizing relevant and recent definitions of both mentioned concepts;
- Demonstrate the importance of practicing CL and CSLS by bringing out the results of studies that have investigated the benefits of CL and CSLS; and



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- Provide a multifarious selection of “tried out” policies and practices of CL and CSLS in one paper in order to inspire (a) educational practitioners (teachers, school leaders, etc.) to practice CL and CSLS and (b) educational policy makers to support the practicing of CL and CSLS by the practitioners.

To answer to the research questions desk research was carried out. To give an overview about what the CL and CSLS are (RQ-s 1 and 3) and what are their benefits (RQ-s 2 and 4) academic literature was analyzed. To map the inspiring policies and practices of CL and CSLS (RQ 5) more diverse materials were analyzed. The latter included:

- national policy documents (e.g. strategies, decisions, etc.),
- descriptions of programs/ projects implemented in educational institutions, and
- research reports and policy briefs written by the international organizations (e.g. EU and OECD), non-governmental organizations (e.g. think tanks), universities and independent researchers.

Materials were submitted from the EEPN partners in autumn 2020, and from these, the examples of inspiring policies and practices were selected. The selection criteria were the following:

- The examples had to be in accordance with the definitions of CL and CSLS synthesized and explained in this paper;
- The amount of examples of CL and CSLS had to be in balance, if possible, i.e. if the EEPN partners had provided both in approximately equal amount;
- The examples had to origin from the EEPN partners' home-countries, i.e. from the European countries.

The main value and contribution of this report is reflected in two of its features:

1. **Broad selection** of inspiring and innovative educational policies and practices in one paper all focused on CL and/ or CSLS and all successfully implemented in various European countries in recent years;
2. **Collaborative expert knowledges and experiences** – the selection of examples of policies and practices gathered into this report is not a result of the work done by one researcher only; instead, the input to this report came from many members of the EEPN network, i.e. educational experts from various fields and countries, and therefore the report represents the collective selection of ones of the most inspiring policies and practices in the field of CL and CSLS in the digital age.

The report is divided into **six chapters**. Two first ones give a conceptual overview, i.e. explain what the CL and CSLS are and what their benefits are. The following three chapters focus on the examples of inspiring policies and practices of CL and CSLS: the third chapter takes a look at the examples of CL, the fourth chapter at the examples of CSLS and the fifth chapter at the examples that qualify as both CL as well as CSLS. The sixth chapter is dedicated to the Covid-19 perspective by giving a brief overview regarding what effects has the pandemic had on CL and CSLS and what potential is there to actively practice CL and CSLS during the distance learning.



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FINDINGS

What is collaborative learning and what are the benefits of it?

Johnson and Johnson (2009) has brought out three possible ways of individuals taking action in relation to the actions of the others. They may be working:

- together cooperatively to achieve shared goals,
- against each other, i.e. competitively, to accomplish a goal that only one or a few can achieve, and
- by oneself, i.e. individualistically, to achieve goals that are not related to the goals of others.

Collaborative learning (CL) is a way of learning that is based on consensus building through cooperation by group members, in contrast to competition in which individuals try to outdo other group members (Laal and Ghodsi, 2012). According to another definition, CL is a learning situation in which students actively contribute to the achievement of a mutual learning goal and share the effort to reach this goal (Teasley and Roschelle, 1993). The learners are responsible for each other's learning as well as their own and therefore, the success of one learner promotes the success of other students (Gokhale, 1995). Johnson and Johnson (1999) define the CL as a set of teaching and learning strategies cultivating student collaboration in small groups in order to optimize their own and each other's learning. Taken the definitions together, **consensus building, cooperation, mutual learning goal, responsibility and mutual help** stand out as the main keywords describing the essence of CL.

While cooperation is an essential part of CL it is important to emphasize that cooperative learning and collaborative learning are not the same (Dooly, 2008). Differences are related to the nature of how students work together, but also to the roles of students and the teacher. When cooperative learning can be understood as the division of work among group members, collaborative learning is linked with a continuous mutual effort of group members to learn by solving problems together (Paulus, 2005; Roschelle and Teasley, 1995). While in the context of cooperative learning the teacher still controls most of what is going on in the class, collaborative learning shifts the responsibility for learning to the student who, as a result, steps into the role of „researcher“ and self-directed learner (Dooly, 2008). Therefore, **collaborative learning is much more than cooperative learning** (Ibid.).

Collaborative learning (CL) is associated with a number of benefits which according to Laal and Ghodsi (2012) can be divided into four categories. Firstly, CL helps to develop a social support system and learning communities, i.e. CL can bring with itself **social benefits**. Secondly, collaborative ways of learning may increase students' self-esteem and decrease anxiety, i.e. encompass **psychological benefits**. Thirdly, CL may entail **academic benefits** by promoting critical thinking skills. And fourthly, CL **enables the use of various assessment techniques**.

According to some authors (e.g. Johnson, Johnson and Holubec, 1993) CL may be especially beneficial in the digital age when it is possible to practice CL with the help of technological devices. According to this understanding **ICT tools can equalize the opportunities for the students to actively participate in the CL** since students who might be shy in sharing their opinion face-to-face have now an alternative way to express themselves after taking their time to carefully think what they want to let others know (Dooly, 2008). The achieving of it, i.e. equalization of opportunities for the students to actively participate



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in the CL via the technological devices in the digital age, assumes, of course, the equality of opportunities for the students to freely use the technological devices and high-quality internet connection in the first place.

What is collaborative school leadership and what are the benefits of it?

In last decades the traditional view on the school leader as the main actor responsible for school development and improvement of students' results has been challenged (Larsson and Löwstedt, 2020). Several other, more collective and partly overlapping understandings of school leadership, such as shared leadership (Döös, 2015), democratic leadership (Gale and Densmore, 2003), distributed leadership (Larsson and Löwstedt, 2020) and collaborative leadership (Woods, 2021), have been suggested instead. While these concepts differ based on whether they concentrate on formal leadership positions (shared leadership, democratic leadership) or all participants involved in the school leading as the processes of co-construction (distributed leadership, collaborative leadership) (Larsson and Löwstedt, 2020), they all share the idea of abandoning the traditional one principal centered approach in school leading.

Collaborative school leadership (CSLS) – one of two main concepts of this paper – has been defined as leadership practice that focuses on strategic school-wide actions that are directed towards school improvement and shared among the school leader, teachers, administrators and others. Broad scope regarding the people involved in leading the school is central in the definition provided by Woods (2021) as well. According to him CSLS is “leadership that is enacted by everyone in the school and works for inclusive participation and holistic learning” (Woods, 2021). This means that CSLS encompasses the following:

- an awareness that leadership is a distributed process,
- a willingness to find ways how best to make the most of this distribution, by creating the environment for teachers, other staff in school, students and others in order to support the development of confident and pro-active leaders of change who are aware that leadership is not something that only senior-leaders can do,
- a commitment to demonstrate explicitly the values that foster collaborative practice and personal growth in a climate that encourages mutual respect, critical dialogue, independent thinking and feeling of belonging (Ibid.).

Hallinger and Heck (2010) have (additionally) emphasized the following features of CSLS: empowering school staff and students, encouraging broad participation in decision-making, and fostering shared accountability for student learning.

Taking the definitions together, the main features of CSLS are the following:

- making efforts to **improve school**,
- **sharing the leadership tasks and responsibility** between several people and/ or involving school staff and students to the decision-making processes,
- **creating an environment** for the school staff and students to support their development and to empower them,
- **leading based on explicit values** such as mutual respect, valuing collaboration, critical dialogue, independent thinking and feeling of belonging,



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- fostering **shared accountability for student learning**,
- cultivating **holistic learning**.

As mentioned in the introduction, this paper relies on a broader understanding of school leadership, targeting not only the school leaders, but also the teachers as leaders. Therefore, considering that the previous definitions of CSLS are targeted mainly towards school leaders, among the examples of CSLS brought in the next chapter, some may represent all features of CSLS highlighted in the previous definitions, whereas some may represent only some of them. For instance, if different subject teachers collaborate in the teaching process, they foster shared accountability for student learning and cultivate holistic learning, especially in case of phenomenon-based pedagogy (i.e. they represent the fifth and sixth features brought in the previous synthesis of definitions of CSLS), but the teachers may not at the same time be actively involved in school-level decision-making processes (i.e. represent the second feature in the previous synthesis).

Collaborative way of leading the school has been shown to be able to answer the challenges and expectations of today's society better than the more traditional leading style. Several studies (Bryk et al., 2010, referred by Anrig, 2015; National Center for Educational Achievement, 2009, referred by Anrig, 2015) have shown that **CSLS noticeably improves students' study outcomes**. In another study (Mourshed et al., 2010, referred by Anrig, 2015, pp. 72) that came to the same conclusion, this link was explained by an educational researcher Michael Fullan as follows:

“The power of collective capacity is that it enables ordinary people to accomplish extraordinary things – for two reasons. One is that knowledge about effective practice becomes more widely available and accessible on a daily basis. The second is more powerful still – working together generates commitment.”

Therefore, both CL as well as CSLS are practices that have proven to be beneficial in various educational settings and are thus recommended ways of operating for today's schools that are more or less struggling with the efforts of answering to new challenges and expectations of the digital age. However, there is evidence (see, for instance, Woods and Roberts, 2019) that these practices are not very common in many schools, which means that in many educational institutions traditional learning and hierarchical leading prevail. Still, there are lots of inspiring and innovative examples of both CL as well as CSLS used all over the world. The aim of the next chapter is to give an overview of ones of the best policies and practices of CL and CSLS implemented in European countries.

Examples of collaborative learning

Computer Supported Collaborative Learning (CSCL) and Knowledge Building Environments (KBES)

Learning in the digital age has become increasingly hybrid, which means that Face-To-Face and Peer-To-Peer instruction are often combined with learning in virtual environments (Lonka et al., 2015). Computer Supported Collaborative Learning (CSCL) and Knowledge Building Environments (KBES) are two terms that are increasingly used by educationalists in the discussions regarding these new ways of learning. **CSCL refers to the activity of students interacting with each other for learning purpose and with the support of information and communication technologies** (Suthers, 2012). **KBE is defined as any environment (virtual or other) that enhances collaborative efforts to create and improve ideas**



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(Scardamalia and Bereiter, 2003). CSCL or CSCL tools, such as electronic bulletin boards (e.g. Miro), conferencing systems (e.g. Zoom), emails and chats, tools for knowledge management (e.g. Google Search, Google Classroom, Google Drive), tools for assessment and data analysis, etc., and KBEs are sometimes used as synonyms. However, some authors (e.g. Scardamalia and Bereiter, 2003) emphasize the importance of differentiating these terms as, with their strong focus on knowledge creation and idea improvement, the KBEs stand out as being something clearly more specific. Therefore, according to this approach, from the list of CSCL tools above, KBEs are only the ones that consider knowledge creation and idea improvement as the most important features of themselves. The following is an example of hybrid learning. It is difficult to assess whether this is a CSCL or a KBE without in-depth knowledge of this initiative.

School Gardens for Future Citizens (eSGarden)

eSGarden is an ongoing (from 09.2018 to 08.2021) multidisciplinary project that aims to support the integral (i.e. both academic and social) development of students, cultivate the feeling of belongingness to the community, encourage cultural exchange and foster sustainability values, social integration and responsible behavior in digital platforms among young people (eSGarden, 2021; European Commission, s.d.). The core of the project is an innovative technology which transfers the observations and work done in the school garden to the classroom activities. This enables the learners to link the physical world (garden) with the digital and non-formal activities with formal content of the study programs. Expected outcomes, in addition to the ones mentioned above, are creating a community between the formal and non-formal educational organizations that addresses the integration of ICT in schools in a collaborative way, but also developing a new methodology for adopting the school gardens in school's curriculum with the support of ICT tools. As the eSGarden is an ongoing project there currently lack data regarding the outcomes and impact of this project. eSGarden project is implemented in Spain, Portugal, Greece, Slovenia and Romania.

Playful Learning (PL)

Education that enables students to successfully progress in learning and develop the competencies necessary in today's fast changing society should encompass experimentation and iteration, helping students make meaning of what they are learning and interact with others in doing so (Winthrop, 2019). One of these types of learning is Playful Learning (PL) that is defined as **learning that stems from students' inquiry and needs, is meaningfully linked to students' lives, and fosters experimentation and social interaction**. The most common skills PL fosters are 21st skills such as collaboration, critical thinking, communication and problem solving. (Ibid.) A number of studies have shown that PL gives better results, e.g. improved academic achievement, motivation and classroom dynamics, than the more traditional ones (Rosas et al., 2003, referred by Singh et al., 2019; Winthrop, 2019). The following are a couple of examples of PL.

SmartUS playground

SmartUS playground is a technology-enriched playground to integrate curriculum-based learning with outdoor games (Lonka et al., 2015). SmartUS cultivates knowledge creation for playing as well as for meaning making: explicit reasoning, exploration, inventing, proposing and validating ideas (Kangas, 2009). Playing in small groups and explaining one's ideas and thoughts to others promotes collaboration (Wells, 2002, referred by Kangas, 2009). Studies have shown that the success of SmartUS depends much on the teacher who has special role in constructing the groups and instructing the children by providing



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them emotional support, encouraging their thought experimentation and allowing their imagination to run free (Kangas, 2009). Teachers have to implement pedagogical sensitivity in using the playful learning environments (PLEs) which means, for instance, that they should not consider the PLEs as only an activity of having fun or making pretty things, but understand that important parts of the PLEs are their challenging, even painful or frustrating features – “hard fun” and “flow” –, which enable students to reflectively analyze their knowledges and skills (Kangas, 2009). The first SmartUS playgrounds were opened in Finland in 2006, but are now available in many countries, e.g. in Sweden, Norway, Germany, Hong Kong, etc. (Lonka et al., 2015)

Kahoot!

Kahoot! is a game-based student response-system (SRS) that can turn the classroom dynamics into a game show (Singh et al., 2019). Teacher plays the role of a game show host and students are competing with each other in providing answers to the questions teacher asks as fast and as correctly as possible. Digital devices are used by both teacher as well as students as teacher shows the questions via her/ his computer (and a large display) and students answer on their own digital devices. It can be participated individually, but also as a team to support the development of collaborative skills. Kahoot! has shown to have a number of benefits, e.g. turning the classroom dynamics to more energetic and engaged, increasing students’ motivation, improving students’ higher order thinking skills, raising students’ knowledge level and providing teachers with feedback regarding what students know about a topic and what needs further explaining. (Ibid.) Kahoot is a Norwegian game founded in 2012 and is now used all over the world with over 1,5 billion participating players in 200 countries (Kahoot, 2021).

Examples of collaborative school leadership

Support programs for school leaders to inspire them to use collaborative school leading style

The digital age requires school leaders to develop and use competences that may in some respect be quite different from the ones valued in earlier times. **One of the most important competences for today’s (school) leaders is that of collaboration.** This is why collaboration skills have gained a prominent place in many school leader development programs – these programs may be formal or informal and oriented towards beginning school leaders (i.e. people who have not worked as a school leader yet) or experienced ones.

The Ubuntu Leaders Academy

The Ubuntu Leaders Academy is a non-formal education project oriented towards empowering young people (aged 13 to 35) with high leadership potential, from vulnerable contexts or who want to work there (The Ubuntu Leaders Academy, 2016–2021). It aims to accompany, facilitate, enrich and consolidate the development of each participant as a leader serving the community, promoting the relevant human skills and techniques: caring, listening, trusting, connecting, and promoting human dignity. The objectives of the Ubuntu Leaders Academy are (a) empowering young people to act as agents of change at the service of their respective communities, (b) empowering educators helping to promote a culture of building bridges where servant leaders play increasingly important role, (c) encouraging a dialogue between and within communities to promote peace and justice, contributing to the development of more inclusive and resilient societies, and (d) providing an ethic of care, focused on empathy, attention and responsibility, considering three dimensions: I, I-other, I-world.



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The Ubuntu Leaders Academy is not directly focused on developing the school leaders, however, as school leaders (and teachers) are first and foremost the *leaders*, it may be very relevant for the people aiming to become school leader (or a teacher) to develop a base for more specific studies in future, or for already working school leaders (or teachers) to further develop their leadership skills and attitudes in the Ubuntu Leaders Academy.

The Ubuntu Leaders Academy is represented in Portugal, Spain, Latin America (Colombia, Venezuela and Peru), the Philippines and Cambodia (The Ubuntu Leaders Academy, 2019) with 68 schools and 2 educational centers, but as the academy also has a cooperation model, the Ubuntu method can in cooperation with the Ubuntu Leaders Academy be implemented in any organization anywhere in the world (The Ubuntu Leaders Academy, 2016–2021).

School leaders' development program in Estonia

This is a unique development environment for people with high potential to become a school leader and who see themselves in working as a school leader after 1–2 years (Republic of Estonia Ministry of Education and Research, 2021). The program lasts for 10 months during which the participants are prepared to become school leaders: they receive the necessary knowledges, skills and networks with likeminded people and field experts from Estonia and elsewhere. They are introduced with the most important topics for this job, including the school leaders' role in today's society, leading school that is in accordance with the needs of today's society, etc. While the program is first and foremost an example of collaborative school leadership – as this program is oriented towards preparing school leaders who rely at their job position on the new school leading approaches that are in accordance to today's societal needs –, collaborative learning also has an important role in it. This is reflected by the nature of many activities which are taking place in collective form, e.g. study seminars, workshops, “job shadowing”, interviews, study visits, coaching, learning from each other and receiving feedback, implementing developing projects and leading tasks, but also the activities that aim at expanding professional networks. Additionally, involving the community to deepen the understanding of school leader as an important societal actor who collaborates with different actors is crucial part of the program. Participants have not worked as a school leader before but they are highly motivated to take this role in coming years. All participants have a Master's degree or qualification equal to it and at least 2 years of experience as working as a teacher or other leading experience. The participants are not guaranteed with a job position but after going through the program they have received an excellent preparation to apply for school leader's position.

Supporting school leaders in learning new collaborative leadership style in Finland

An experiment that encompassed 20 school leaders was carried out in Finland from autumn 2019 to spring 2020 to support school leaders in learning new collaborative leadership style – servant leadership method (Bruun et al., 2020). While servant leadership method as such is not a new approach, the specific one used in this experiment was new, designed for the project described here. Servant leadership in this project was understood first and foremost as a specific mental state that is characterized by non-cynicism and positivity and which encourages the leader to actively remove obstacles that the school's staff have perceived and voiced. Another dimension that makes this method unique is that the philosophy of servant leadership is combined with other pedagogical philosophies and techniques, e.g. simplicity in organizational learning (focusing on few instead of many actions), repetition of relevant actions in order



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to achieve elements of immediate feel good via micro successes, creating culture of responsibility taking within school's staff, empowering staff, etc. An experiment to test the effectiveness of this method showed the noteworthy potential of it: 20% of school leaders who participated in the experiment needed very little help and quickly developed routines that were in accordance to the ideas of the method, 20% of the school leaders had negative attitude and resistance and did not progress, 60% landed in the middle-ground and would have needed more support as some of them were positive but tired, positive but busy, etc. However, as the experiment was not extensive, i.e. it encompassed only 20 participants and has not been repeated (in different contexts) yet, the method needs further testing in order to make final conclusions.

Examples that qualify as collaborative learning as well as collaborative school leadership

Phenomenon-Based Pedagogy (PBP)

The core of Phenomenon-Based Pedagogy (PBP) lies in **collaborative examination of complex real world phenomena with support from various fields of research, tools and experts** (Lonka et al., 2015). PBP is into the future looking approach that acknowledges that challenges of tomorrow can best be addressed by multidisciplinary teams working together on complex problems (Drew, 2020). PBP starts with students and teachers negotiating and deciding the phenomenon to study. It is recommended to think of current affairs or local issues as a starting point in choosing the phenomenon (Tissington, 2019). The phenomenon to study can be for instance climate change, the European Union, technology, the rise of artificial intelligence or urbanization (Symeonidis and Schwartz, 2016; Drew, 2020). One of the main features of PBP is holisticity – the acknowledged need to de-compartmentalize education (Drew, 2020), i.e. to look the problems through multidisciplinary “lenses”. This brings with itself the need to build bridges in various dimensions: between students to create synergy among students with different knowledges and different thinking patterns, and between subjects and teachers to support students with knowledge from various subjects in one project. Symeonidis and Schwartz (2016) have noted that to help students in doing their interdisciplinary project, i.e. to address the study of phenomena in its holisticity, team teaching with different subject teachers is recommended. Therefore, collaboration is an essential part of the PBP – not only between the students, but also the teachers (as leaders) which makes the PBP an example of both collaborative learning as well as collaborative school leadership.

One of the countries that stands out regarding its dedication to the PBP is Finland. While interdisciplinary teaching and learning in Finnish schools had had a long history (Sahlberg, 2015), PBP has gained popularity in recent years (Lonka et al., 2015), particularly since 2014 when the country added the PBP to its national core curriculum for basic education (Finnish National Board of Education, 2016). This means that since 2016, students aged 7–16 are required to participate at least one multidisciplinary PBP module per a year (Halinen, 2018, referred by Drew, 2020). Subject teaching is not abolished as a result of this reform, but instead complemented with study periods in which students will be working with several teachers across subjects on PBP-projects (Symeonidis and Schwartz, 2016). The following are some examples of PBP-projects carried out in Finnish schools.

Building a bridge in Helsinki

Educators and students at one Helsinki school collaborated with local architects to build a bridge in community (Kelly et al., 2018). The ten-year old students created the designs, carried out calculations and analyzed the topics of sustainability and safety. As a result of the project students learned interpersonal



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skills and gained a better understanding about the process of building a bridge. They were engaged in a meaningful learning experiences while contributing to the community.

Bridging the generations through play

The project carried out at Siltamäki Primary School stemmed from students' interest towards games that people played before technology (Kelly et al., 2018). The project started with students interviewing senior residents, asking them what games they played when they were young. To embrace collaboration through reciprocal learning and teaching children then taught seniors to play games using tablets. To wrap up the project a video regarding how to play the most popular games the seniors taught them was created by the students and shown to the community members with an idea to combine the traditional games with technology.

Whole-school musical

In Siltamäki Primary School the entire school participates in a musical that is led by the students who write, conduct and orchestrate the play themselves (Kelly et al., 2018). Several teachers support students in this process, e.g. general educators teach lessons on storytelling and music teacher helps the students to learn the art of songwriting and playing musical instruments. Therefore, the whole school – from students to teachers and school leaders, but also administrators – collaborates and contributes in making this year-long endeavor of preparing and carrying out the musical possible.

Peer Learning (PL)

Hospiedu (Korhazsuli)

This is an individualized learning support program that uses gamified, IT-based activities to ensure that children in primary and secondary schools who are not able to attend school for long time, mostly because of an illness, can catch up with their peers and successfully complete their studies after the recovery (Multincludu, 2019). The program is built upon collaboration in several dimensions. Collaborative school leadership emerges through collaboration between the school and the program team who have to work together to provide the children not attending school with an opportunity to follow the same curriculum as their classmates do. Collaborative learning emerges through collaboration between children not attending school and volunteers of the program – secondary school students who develop the materials for children not attending school and university students who support and instruct these children, i.e. work with them directly. Study materials are developed and introduced individually, according to the needs of each child. Experiences of participants have shown that this program is especially useful for children not attending school as they have shown to learn much more effectively than before, plus they receive a valuable peer community experience which they often lack as they are mostly helped by adults, but the program also provides an important learning experience for the volunteering students. Success of the program is also reflected by the numbers. In 2015 when the program started there were only 20 volunteers helping 4 children, but in school year 2017/2018 the according numbers were already 250 and 120. Program is implemented in Hungary.

Note in between pairs

This is a program that focuses on peer observations between the teachers as well as between the students (Note in between the pairs, s.d.). The program started already in 2013 under another name and between teachers only. The students have been involved since 2019. The aim of the program encompassing students is to help students become aware of their ways of learning and to promote self-



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regulation of learning. In groups consisting of two members and guided by an observation guide students observe their peers, focusing on their difficulties and learning strategies they use in the classroom. The observation is followed by a joint reflection that is supported by the teacher. The program is considered as an example of both collaborative learning (students are learning together and teachers are learning together) as well as collaborative school leadership (teachers (as leaders) are collaborating in order to support student learning and improve school). Since 2020 due to the COVID-19 crisis the project has been adapted to be usable in an online environment as well. The program is implemented in Portugal.

Multimodal Learning Analytics (MMLA) to receive feedback about CL and to improve it

Increased focus on CL has brought with itself an increased need to study the success of it. Collaboration has traditionally been studied by observation, interviews and ethnographic methods and later by Learning Analytics (LA) (Chejara et al., 2020). Each of these methods have their shortcomings. While the traditional methods provide detailed information, they require lots of human effort and time. LA on the other hand can provide only a part of the picture, because while Computer Supported Collaborative Learning (CSCL) often involves face-to-face and computer-mediated interactions, LA often relies only on digital logs. Aware of these limitations, Multimodal Learning Analytics (MMLA) has emerged and set to itself a goal to understand learning through multimodal data from digital as well as physical spaces. (Ibid.) According to Worsley (2016, referred by Chejara, 2020) **“MMLA sits at the intersection of three ideas: multimodal teaching and learning, multimodal data, and computer-supported analysis. At its essence, MMLA utilizes and triangulates among non-traditional as well as traditional forms of data in order to characterize or model student learning in complex learning environments”**. Modality refers to the ways we perceive the world, e.g. by vision, hearing, etc. MMLA addresses and analyzes, therefore, various types of information sharing between the students and students, and students and teachers. Thus, **MMLA should not be confused with LA as MMLA is much more multifarious than LA**.

MMLA can be considered as an example of both CL as well as CSLS. On one hand it supports teachers who by receiving help from a digital assistant in order to improve students' outcomes may not anymore feel as being left alone with big classrooms and lots of tasks. Therefore, MMLA encompasses a feature of CSLS: receiving support from other actors (here: a digital actor) in order to improve students' outcomes and school more generally, as well. And on the other hand, MMLA also encompasses a feature of CL: MMLA supports students practicing CL by noticing how the CL, for instance in a form of group work, is proceeding, who needs what kind of support from the teacher, etc.

However, in the context of all the mentioned positive sides of MMLA it should be kept in mind that the MMLA may have some limitations/ challenges which are extremely important to address in order to best support students' learning. Ethical, practical and methodological challenges are the most important ones to consider when further researching and trying to find ways to implement the use of MMLA in real-world practice (Cukurova et al., 2020). For instance, further work is needed to develop appropriate protocols and communication approaches that both researchers as well as practitioners can use in order to enable students and teachers to be fully aware of the multi-modal data they provide while interacting with MMLA systems (Ibid.).

The following is an example of a MMLA tool designed specifically to support collaborative learning.



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CoTrack

It is a smart digital device to help teachers in supporting students' group work (Kasepalu, 2021). The teacher can in each moment receive information about how far the groups is with their task, how active the students in the group are and what is the overall mood of the group. CoTrack uses facial recognition program to see students' emotions and the device also gathers data about students' written as well as verbal contribution to the group work. CoTrack can be used in classroom as well as in case of distance learning. CoTrack helps teachers to be more aware of the study process. Students can easily ask help via the device if they come up with a problem. In future, the device will probably have an additional system that predicts which groups may come up with problems regarding dysfunctional collaboration and inform teacher about it – therefore, help will be provided also in cases where the students do not dare or are not able to ask for help. The device will also have a function of providing instructions for teachers regarding how to support the groups that have come up with a problem and teacher may use these instructions if she/ he decides to do that. CoTrack is developed by the scientists of Tallinn University in Estonia.

Learning Communities (LC)

Learning communities (LC) are communities that ...

- provide a space and a structure for people to connect around a common goal,
- connect people, organizations and systems that are interested in learning and working across boundaries,
- enable participants to learn from each other, thereby improving their ability to achieve quick yet significant progress (Center of the Developing Child, Harvard University, 2021).

Different authors have, however, given somewhat different meaning to LC, i.e. one generally accepted definition of LC lacks. For instance, both huge organizations such as a whole school as well as smaller units, e.g. a classroom or even smaller groups can be understood as LC-s (West and Williams, 2018). According to some authors (e.g. Himmelmann, 1994, pp. 28, referred by Kilpatrick et al., 2003) LC-s are sets of institutions, e.g. educational institutions, government bodies, industry partners and community groups, who have united forces to promote systemic societal change and share the "risks, responsibilities, resources and rewards". Himmelmann (1994, pp. 27, referred by Kilpatrick et al., 2003) calls this phenomenon of partnership between public, private and non-profit organizations who increase community's capacity to shape and manage its own future "collaborative empowerment". The following are some examples of LC from different countries.

INCLUD-ED Project (Strategies for Inclusion and Social Cohesion in Europe from Education)

The project funded by the European Commission between 2006–2011 and coordinated by the Community of Research for All (CREA) in 14 countries aimed at increasing academic success for all students, strengthening the social solidarity in schools and overcoming inequalities by transforming the schools and their socio-cultural environment (SEAs4All, s.d.; School Education Gateway, 2016; Diez and Elecha, 2010, referred by Gatt et al., 2011). Becoming a school as a LC in the INCLUDE-ED project was a conscious work that consisted of specific phases: (a) raising awareness – sharing research-based knowledge about the benefits of LCs and other actions this project encompassed among the members of educational community (i.e. the school's staff, students, parents etc.) to ensure that as many members of the educational community as possible understand the scientific reasons for the transformation of



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the school; (b) decision making – making the final decision that the school is going to be transformed into a LC, whereas this decision has to be consensual, i.e. it requires the agreement of most of the teaching staff and students' families; (c) the dream – members of community 'dream' what they would like the school to become, considering that there is also an overarching dream: an Information Society for everyone and wishing for other people's children what one wishes for her/ his own; (d) selection of priorities – the dreams are shared with each other, organized, categorized and prioritized and agreed on a common vision of the school; (e) planning – designing the path to transform the school, i.e. to achieve the common dream and forming mixed working communities that will make this path possible by implementing Successful Educational Actions (SEAs) (Gatt et al., 2011; SEAs4All, s.d.).

The INCLUDE-ED project identified six Successful Educational Actions (SEAs) – practices that demonstrably increased academic performance and increased social cohesion in all schools observed and are therefore recommended actions in order to change the schools into LCs (SEAs4All, s.d.). The list of SEAs: Interactive Groups, Dialogic Gatherings, Family Education, Educational Participation of the Community, Dialogic Model for Prevention and Conflict Resolutions, Dialogic Pedagogical Training.

An important feature of the SEAs is their universal nature, i.e. they have been shown to be successfully transferable in very diverse contexts, leading to educational success (School Education Gateway, 2016). INCLUD-ED project is considered as a success story by the European Commission (2011, referred by Garcia-Carrion and Diez-Palomar, 2015) as the main findings of this project have informed educational policies and practices across Europe and have raised transforming the classroom, the school and the community to a prominent position in the discourse of educational policies and practices.

Interactive groups (IG)

Interactive groups (IG) was one Successful Education Action (SEA) in the INCLUD-ED project implemented together with other SEAs in schools as Learning Communities (LCs). However, IGs can also be used as an independent practice (School Education Gateway, 2016) that turns a classroom into a LC. By being part of the INCLUDE-ED project the IGs share the goals with the project, i.e. to increase the academic success for all students, to strengthen the social solidarity in school and to overcome inequalities (SEAs4All, s.d.; School Education Gateway, 2016; Diez and Flecha, 2010, referred by Gatt et al., 2011).

IG means grouping the students in a class into small heterogeneous groups, i.e. groups that consist of approximately six or seven students with different characteristics regarding their ability level, gender, cultural background or ethnicity (Community of Research on Excellence for All, 2016; Community of Research on Excellence for All, s.d.). Each group is supported by an adult – a staff member, a specialized educational professional (e.g. a psychologist), a university student or a community volunteer. (Community of Research on Excellence for All, 2016) The more heterogeneity there is, the better. The role of an adult is to create dynamic supportive learning interactions in the group, guide the activity and ensure that all members of a group participate and contribute in solidarity to find a solution to the task. Her/ his role is not to replace the teacher whose tasks is to prepare all activities to do in the class and to guide the whole activity. Teachers receive an initial intense training in which they are introduced with the scientific bases of the IG. Volunteers may also participate in this initial training. Before each class teachers may briefly explain the exercises that will be done in the class to the volunteers. (Community of Research on Excellence for All, s.d.)



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Activities in the groups are short, 15–20 minutes long. The students do their tasks by interacting with each other through egalitarian dialogue to solve learning activities, whereas dialogue is strengthened if it is based on the reasoning, rather than how much a student knows or does not know. After completing one activity all students in the group move to the next one and work with another adult. As the prerequisite to be able to move to the next group is that all members of a group have finished their task, helping each other with their tasks is an important feature of the IG. The IGs have shown to increase the effectiveness of learning, improve motivation as well as coexistence of the students who participate in the IGs as learning this way is based on the principle of solidarity, rather than rivalry. (Community of Research on Excellence for All, s.d.) Therefore, by practicing collaborative learning among the students and involving adults from outside, implementing IGs builds bridges between students in a class and between a class (i.e. students and a teacher) and people from the surrounding educational community, thus helping to create true LC in the classroom.

Practicing IG does not bring with itself additional costs for the schools as resources that are already available in the educational community, primarily community members and students, are mobilized, which makes the IG a sustainable educational action. IG (implemented in the context of INCLUDE-ED project) is considered as a success story which is why the number of schools implementing IG has greatly increased in last decades. There are more than 200 schools implementing IG in Europe and more than 300 in Latin America. (Community of Research on Excellence for All, s.d.)

Collaborative learning of the school teams in order to implement new educational approaches in Estonia

Implementing a new study approach, i.e. the one that emphasizes critical thinking, collaboration, social skills and other 21st skills, was one of Estonian educational policy's strategic goals according to the Estonian Lifelong Learning Strategy that was in effect from 2014 to 2020 (Republic of Estonia Ministry of Education et al., 2014). Several activities were initiated to reach that goal. One of these activities was an activity where educational institutions (EIs) were asked to write project proposals regarding how they would collaborate with their colleagues from their own EI and/ or from other EIs in order to learn as a community and cultivate collaborative school culture necessary for implementing the new educational approaches in their EIs (Republic of Estonia Ministry of Education and Research, 2015). Specific goals and the content of the projects were for the EIs themselves to decide (Haaristo et al., 2019).

In 2017 and 2018 approximately 100 collaborative projects were carried out (Haaristo et al., 2019). The projects were carried out in a variety of topics, e.g. learning a specific method or approach (e.g. mindfulness, learning outside, digital competences and practices of inclusive education), supporting the mental health of teachers and school leaders and coping with work-related stress, developing the communication-, collaboration- and leadership skills of teachers and school leaders, conscious work with developing school culture (e.g. articulating the school's vision and values together), and creating the collaboration networks between the EIs. The projects lasted generally from two to six months and were carried out in the form of trainings, discussion rounds, study visits to other EIs, etc. The number of participants per a project was 20–50 which means that for smaller EIs (e.g. some pre-school institution) the whole staff was included, but for bigger EIs a part of it participated. Most of the events carried out were oriented towards teachers only or towards teachers and school leaders (and support staff), but there were also events that included other actors of a local educational community, e.g. parents and educational experts from the local government.



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Most of the projects were successful according to the activity reports: the satisfaction of the participants was high and the goals set for the projects were achieved (Haaristo et al., 2019). The collaborative learning experience was assessed as valuable because it increased motivation and self-confidence and enabled people to thoroughly discuss topics that in every-day-life are not discussed, develop and use a uniform professional vocabulary, cultivate respectful and trusting attitudes towards each other, strengthen the feeling of belonging together and developed a culture of collaborative learning. As the sustainability of the LCs developed in these projects has not been studied, it is not known whether the LCs lasted only during the time of the projects being carried out or had a longer lasting effect.

European Methodological Framework for Facilitating Teachers' Collaborative Learning (EFFeCT) project

This is a project that aims to enhance opportunities for teachers' collaborative learning by promoting networking and professional collaboration between teachers and other educational stakeholders (EFFeCT, *s.d*). The name of the project – EFFeCT – comes from the following words: Equity, Flexibility, Feedback, enrichment, Common purpose and Trust. The EFFeCT project is coordinated by the Knowledge Centre of the Tempus Public Foundation and carried out with the participation of six countries: Finland, Latvia, the Czech Republic, the United Kingdom, Ireland and Hungary. The main goal of the international collaboration was to develop a European Methodological Framework to facilitate teachers' collaborative learning and to provide guidelines for policymakers and European stakeholders. As a result of the project the EFFeCT portal was created as well. This is a platform that provides guidance for teachers, teacher trainers, school leaders and other educational stakeholders. It also provides practical help of collaborative learning. More specifically, it offers (a) inspiring ideas on the process and conditions of Teachers' Collaborative Learning (CTL), (b) main principles and factors supporting and challenging CTL, (c) strategies, capabilities, values and attitudes of facilitating CTL, (d) guidance to evaluate CTL, and (e) methodological tools and other sources of information.

CL and CSLS in the context of Covid-19 pandemic and distance learning

Implementing CL and CSLS in the context of Covid-19 pandemic is a topic that has so far been studied insufficiently to draw any conclusions in this regard. However, there is some evidence that the impact of the pandemic to CL and CSLS is negative. For instance, a study carried out in Indonesia showed that teachers found it hard to implement CL during distance learning because of (a) the difficulties to coordinate activities and monitor students' activities during the online learning, and (b) the problems with (good quality) internet connection, especially for the students living in specific regions (Mustakim and Mona Adha, 2020). Study carried out in Estonia (Lauristin et al., 2020) brought out shortcomings in collaboration between (a) the teachers and their colleagues (i.e. other teachers, school leader(s)) and (b) teachers and parents. While the teachers were grateful to the colleagues and parents of the help that was provided during the distance learning, they brought out that regarding the collaboration in general there is room for development. Teachers stressed that it is important to break free from the teachers' isolation. It was proposed that the schools and teachers could share experiences and study materials more, support each other more, carry out covisions or supervisions to discuss the problems, etc. Additionally, it was brought out that the support and guidance from educational technologists could be helpful. Therefore, there seem to exist some issues regarding both CL as well as CSLS in the context of Covid-19 pandemic, however, as the evidence is lacking no conclusions can be made yet.



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Considering the examples of CL and CSLS provided in this paper, there are some that have been adapted to be usable in the context of distance learning. One such example is Note in between pairs as an example of Peer Learning. There are others that are created specifically in order to enable people to communicate (and learn) from the distance – such as, for instance, Zoom, Google Classroom, etc. as examples of Computer Supported Collaborative Learning (CSCL) environments/ Knowledge Building Environments (KBE-s). And as a third group there are those that can equally successfully be implemented in classrooms as well as from the distance. An example of it is the digital device called CoTrack introduced in this paper as an example of Multimodal Learning Analytics. Phenomenon Based Pedagogy can be considered as an example from this category as well. Still, a number of the examples provided are the ones that require face-to-face form of studies, whereas some of them encompass the use of digital devices (e.g. eSGarden as an example of CSCL/ KBE or SmartUS Playground as an example of Playful Learning) and some of them do not (e.g. Interactive Groups as an example of Learning Community). Therefore, while a number of examples provided in this paper are currently meant for practicing in face-to-face form of learning only, there are many examples of both CL as well as CSLS that can be practiced in virtual form, i.e. in the context of distance learning.

It seems, thus, that both CL as well as CSLS can successfully be practiced in the context of distance learning as well, because the methods, digital devices and platforms to support it exist. Challenges brought out by the teachers described earlier, however, are very real and should be taken seriously. What are needed are the trainings for the teachers regarding what digital devices and platforms (to support CL and CSLS in the context of distance learning) exist and how to use them. Other needed activities are regular covisions or supervisions for the teachers, school leaders and other school staff to discuss about the problems that occur during the distance learning and to collaboratively share ideas regarding how to resolve them and cope with the difficult situation in a best possible way for the teachers, school leaders and other school staff, as well as for the students and parents, while keeping the collaboration in focus during the discussion rounds as well as during the learning processes which in these difficult times take place (only) in the form of distance learning.

CONCLUSION

The core concept of this report was collaboration – philosophy of interaction and personal lifestyle that is considered as one of the most important competencies in digital age, a so-called 21st century skill next to such competencies as critical thinking, problem solving, creativity and ICT literacy. This report focused on collaborative learning (CL) and collaborative school leadership (CLSL) in the digital age by looking at what these concepts mean and how these are practiced. The main part of the report was dedicated to the latter, i.e. mapping the most inspiring policies and practices of CL and CLSC that have been successfully implemented in European countries in recent years.

The main keywords of collaborative learning are consensus building, cooperation, mutual learning goal, responsibility and mutual help. Collaborative learning has been shown to have many benefits that can be divided into 4 categories: social benefits, psychological benefits, academic benefits and ability to enable the use of various selection of assessing techniques (Laal and Ghodsi, 2012). Collaborative school leadership can be defined as „leadership that is enacted by everyone in the school and works for inclusive participation and holistic learning“ (Woods, 2021). Collaborative school leadership has been shown to



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improve the study outcomes of students (Bryk et al., 2010, referred by Anrig, 2015; National Center for Educational Achievement, 2009, referred by Anrig, 2015).

Neither collaborative learning (CL) nor collaborative school leadership (CSLS) are practiced in schools as extensively as they could be in order to answer to the challenges and expectations of digital age successfully. However, there are still many examples of inspiring policies and practices of both CL and CSLS, implemented in many countries in Europe, from the Nordic countries, such as Finland and Estonia, to Southern part of Europe, e.g. Portugal and Spain. The examples gathered into this report were provided by the members of the EEPN network which makes the best practices brought in this report a collective selection approved by many educational experts from all over Europe.

Among the examples provided were those that have been implemented in only one country, but also those that have been practiced in several countries and which are more universal nature, i.e. the ability to be successfully transferred to various contexts has been at least to some extent confirmed. This does not, however, mean that the examples that have so far been implemented in only one country could not be successfully transferred to other contexts. Among the examples provided, the ones focused on CL were represented somewhat more than the ones focused on CSLS. However, the majority of the examples were categorized as the ones that qualify as both CL as well as CSLS. For example, while the main aim of the Interactive Groups – or in other words, classroom as a Learning Community – is to promote collaboration between the students, i.e. collaborative learning, involving volunteering adults to the group works of students means that the role of the teacher changes in a way as she/ he can receive support from the volunteering adults and therefore lead the learning process collaboratively. This seems to suggest that CL and CSLS are very closely related and they tend to go hand in hand: without the existence of one it would be difficult to successfully implement the other. Still, it has to be mentioned that the examples of “real-life” practices of CSLS from the perspective of leading the school by the school leaders (i.e. not the classroom by the teacher(s)) were clearly underrepresented in the sample of this study. This may either mean that CSLS at the level of school is yet rarely practiced or that this practice is rarely studied. Whether it is the lack of practice or the lack of data is due to the method used in this research currently un-known.

Most of the examples of CL and CSLS in the digital age brought out in this report encompassed digital technology in one form or another: whether in the form of computer supported collaborative learning tools, knowledge building environments, multimodal learning analytics or some other forms. Still, examples of CL and CSLS that did not encompass digital technology were not missing either – therefore, education in digital age does not mean that learning and school leading takes place only or even mostly via the digital devices, as the face-to-face contacts remain; however, for both CL as well as CSLS the technology can provide significant support if used with the guidance of pedagogical sensitivity.

The effects of Covid-19 pandemic to CL and CSLS is a topic that has been insufficiently studied to make any conclusions, however, there is some evidence that the effects tend to be negative. As this report showed, there exists a number of methods as well as digital devices and platforms that can be used in distance learning (in the context of Covid-19 pandemic) in order to continue practicing CL and CSLS. However, to successfully do that teachers need support and guidance in such questions as which suitable devices and platforms exist, how to use them and how to resolve the challenges that may occur during



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the distance learning. Taking these questions into focus has the potential to develop both CL as well as CSLS, which means that while the Covid-19 pandemic has brought with itself noteworthy challenges to practice CL and CSLS, it is possible for the educational stakeholders to “take positive out of this crisis”, so that instead of *losing* the ability to learn and lead school collaboratively they *grow* it.

RECOMMENDATIONS

- **Collaborative learning (CL) should be practiced as often as possible** because this way of learning has shown to improve the study outcomes and have several other benefits. It is especially useful to practice CL in investigating real-life phenomenon (i.e. in practicing Phenomenon Based Pedagogy) as the different perspectives, knowledges and potential synergy created through collaboration is especially valuable there. It should be acknowledged that collaborative learning and cooperative learning are not the same. In order to expect the benefits associated with the CL it should be made sure that the practice that is used really is CL, characterized by consensus building, cooperation, mutual learning goal, responsibility and mutual help.
- **Collaborative school leadership (CSLS) should be practiced in schools without hesitation** because this way of leading the school has shown to improve the study outcomes and have several other benefits.
- **To ensure that CL and CSLS are used in schools without hesitation, teachers and school leaders should be provided with relevant trainings and support**, i.e. CL and CSLS should have a prominent place in teachers' and school leaders' initial and in-service trainings so that teachers and school leaders would receive the understanding of the essence and benefits of CL and CSLS and skills to implement these practices.
- **Digital devices and platforms to support CL and CSLS should be used in schools without hesitation** because technology can provide a significant value. Digital tools may, for instance, (a) equalize the opportunities for the students to actively participate in the CL, (b) provide a platform for knowledge creation and idea improvement, (c) provide an opportunity for the students to link physical world with the digital world and to acknowledge the value of ICT tools in study process, (d) foster the proactivity, motivation, energy, experimentation and social interaction among the students and make the studies more meaningful and engaging, and (e) improve the study outcomes. It should be acknowledged that in order to receive the expected outcomes from the use of digital devices, the technology should be used mindfully and with pedagogical sensitivity. Digital tools in learning process should not be taken as only or even mostly as having fun, not even in case of Playful Learning, but rather the teachers should acknowledge that the features of the digital tools that are most developing are the challenging, even painful or frustrating ones. Teachers should guide students in the process of CL with the help of technology and provide the students with emotional support.
- **To ensure that digital tools are used in schools without hesitation to support CL and CSLS, teachers and school leaders should be provided with relevant trainings and support**, i.e. digital literacy should have a prominent place in teachers' and school leaders' initial and in-service



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trainings, and schools should be provided with sufficient amount of digital equipment and good quality internet connection.

- **Peer Learning among the students, as well as among the teachers and the school leaders should be practiced in schools without hesitation** as this has shown to give good results for all these groups. In case of students, for example, besides a potential to improve the study outcomes the Peer Learning provides a peer community experience (i.e. students helping and supporting each other) which is especially valuable for the students who are not able to attend school for longer periods. Digital age provides opportunities to practice collaboration between the student attending school and the ones who are not, as well.
- **Learning Communities and Interactive Groups should be practiced in schools without hesitation** as these have shown to be effective ways of learning. It should be acknowledged, however, that developing a Learning Community is a process that requires conscious decision, effort and dedication, especially when it is developed at the school's level. It should not be hesitated to involve parents, community members and other relevant stakeholders to this process.
- **To ensure that CL and CSLS are successfully practiced also during the distance learning (in the context of pandemic or other large-scale crisis), teachers and other school staff should be provided with additional training and support**, e.g. ad hoc trainings on how to use the necessary digital tools, co-visions or super-visions to share the ideas on how to resolve the several kinds of problems that have emerged and how to generally cope with the difficult situation of the crisis.



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