New roles and competences for teachers and school leaders in the digital age
Highlights Report 2021

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Author: Eszter Salamon, ESHA
Authors of the quoted research papers:
2.1 Peter Kelly, University of Plymouth
2.2 Sandra Haugas, Praxis
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2.4 Hellen Janssen, AEDE and Eszter Salamon, ESHA
2.5 Amélia Lopes and Filipa Soares, UPorto

EXECUTIVE SUMMARY

This report highlights the main findings of five research papers and aims to offer a basis for policy development and implementation at different governance levels and inform the work of the European Commission (EC) on the new roles and competences required of teachers and school leaders in the digital age for inclusive quality education in all European Union Member States. To do this, we bring together recent education research with inspiring practice and policy and the views of various education stakeholders.

The research quoted has been developed by members of the European Education Policy Network (EEPN) project partnership, based on resources and examples identified by partnership members. The papers aim to offer a policy and research framework for the analysis of practical examples of inspiring practice, especially for policy transfer and policy learning.

Research carried out in interlinked fields that imply new roles and competences for teachers and school leaders in the digital age, feeds into the work of EEPN to formulate and promote policy recommendations in the field of teacher and school leader careers as well as to the future work of EEPN until 2023. The primary aim of this work, starting with desk research, is to promote co-operation, policy development and implementation at different governance levels. It supports the European Commission's policy work to assist teachers and school leaders by providing research evidence and evidence-based policy recommendations for European, national, regional and local levels.

While EEPN members are aware of the width and depth of research in the field of digital age, these papers are distinctive as a result of the research process described in this report and are validated by this process as well. The researchers are aware of the multitude of new experiences emerging from school closures in 2020/21, but as they are yet to be properly researched, it is not the primary focus of the papers. However, as the digital age and its impact on schools are fast changing, these papers need to be read understanding that they were captured at a given time and with a certain scope.

Summary of Research-based recommendations

Based on the specific recommendations of the five papers quoted below in detail, the following synthesis has been compiled by the Research Lead, Peter Kelly:

- Raise awareness of the benefits of digital technologies in all aspects of education and promote in all phases
- Invest in digital infrastructure, digital teaching and learning platforms, digital devices and associated professional development
- Seek to attract technology-minded people into teaching and school leadership
- Prioritise the development of the digital confidence and competence of teachers and school leaders and of digitally mature schools
- Promote digital technology supported collaborative learning for all within the context of schools as learning organisations amid wider supportive digitally networked communities
- Engage stakeholders such as businesses, universities, families and youth organisations and these networks
- Make use of local development opportunities that allow school leaders, teachers, students and parents to shape school and community life
- Address the barriers to digital technology use for school leaders, teachers and students, including those for specific groups

- Research all areas further, contrast the experiences of teachers and students in different countries and identify effective digital pedagogies

RESEARCH PROCESS

EEPN creates research according to the guidance of the European Commission defining the area of research supported policy of their choice. In Year 2 of the EEPN project this has been 'new roles and competences for teachers and school leaders in the digital age'. When developing the annual workplan, the consortium highlighted five topical areas within this broad field that provided the basis for research and will also be the starting point for annual policy recommendations formulated later, guided by research. The five research papers produced in the second year of EEPN are based on partner input. This data collection process makes these papers distinctive in the broad research field related to digital age and its impact on education, but it also implies certain limitation given the restricted sample. The process also validates these papers as they are based on policy, research and practice 30 partners from 19 European countries have found relevant and important in this field.

Data collection and delivery process

Collecting input from partners started at the beginning of the project year and ended on 22 October. It took the form of a complex internal survey tacking all five topics. This aimed at all partners to identify relevant research and/or practice for the desk research. Questions guided partners to provide researchers with links to sources they found relevant together with a brief explanation on how and why they found the given resource relevant. The survey was created by the research partners in the first conference call of the year. In the case of resources not available in English, the partners were asked to provide enough detail in a summary for the resource to be used in desk research. All partners were provided with funding to invest working days in identifying these desk research resources. National partners were requested to provide input on national policies, research and practice. In the case of international organisations this input was to primarily focus on countries not yet represented in the network.

This first period of input collection was followed by a State of Affairs meeting with the participation of all partners on 29 October 2020. The first of the two meetings of the whole network was aiming at ensuring the active contribution of all network members to the research activities. It was organised in a way ensuring that desk research coordinators receive as much input as possible in the form of presentation of inspiring practices, research data, national policy examples and outcomes of EU-funded projects in the field. After the State of Affairs meeting, research partners offered a small window in time to share any further input they found important based on discussions.

The research papers were drafted, peer reviewed and edited until mid-February 2021, discussed at a Review Meeting between the research team and EEPN leading partners, finalised and published on 26 March 2021 based on a majority acceptance vote by the leading partners (not an unanimous vote in some cases as there has been some disagreement on the research findings and the formulation of conclusions). This Highlights Report is based on the final, published versions of the five EEPN research papers.

Research approach and paper structure

During the analysis process, researchers have implemented an impartial and disinterested approach ensuring the independence and objectivity of the process. The papers have been peer reviewed by others in the research team as well as the EEPN partner responsible for process and quality three times. This was followed by an independent editing process. Two of the leading partners not involved in research offered some comments and suggestions in the review process and some of these were taken on board at finalization.

The research team is aware that we are living in rapidly changing times, and that today, the time of school closures and lockdowns introduced with the aim of ending Covid-19, education as well as other domains of life are more dependent on digital technology than before. Thus, all challenges and risks raised in the research paper are more part of everyday life than ever. However, researchers have formulated their findings being convinced that the messages conveyed will not be changed by the fact that the papers have been written about a "moving target" and the current crisis is believed to not affect what is said about good practice.

All five research papers quoted in this Highlights Report contain a description of existing international and European policy contexts, an analysis of education research relevant for the topic and published in or after 2015. This is followed by an analysis of national examples of policy and practice using an inductive approach: begin with examples of good and inspirational practice, induce the principles common to them and identify where they fit with existing frameworks or guidelines. There is a balance between international and national documents representing the diversity of the consortium.

On the basis of the above analysis, researchers have drawn their conclusions and provided research-based recommendations for policy and practices. These conclusions and recommendations, quoted below, will form the basis for drafting policy recommendations for European, national, regional and local level later on in the project year.

2.1 DIGITAL TECHNICAL TOOLS, SKILLS AND COMPETENCES SUPPORTING TEACHING AND LEARNING

This paper reports on how digital technologies are used to support and enhance pedagogy and formative assessment in schools with the aim of improving student outcomes, and includes a number of examples of inspiring policy and practice from across Europe. It then turns to how school leaders and teachers have developed the professional confidence, competence and critical understanding required to use digital technologies effectively, and includes further examples to illustrate this. This research was conducted at a particular moment, during the Covid-19 pandemic, and subsequent analyses may change the picture presented here.

The focus of this paper is the current use of digital technologies to support teaching and learning, particularly in language and mathematics, in primary and secondary schools in Europe. This will be explored in response to the following five areas of questions:

- What is the extent of digital technology use in primary and secondary schools in Europe?
- What, in general, are the benefits of digital technology use for supporting teaching and learning in schools?
- What examples are there of where digital technologies are used well to enhance student learning in schools? How do these examples link to what we know about effective use of digital technologies to support teaching and learning?
- What are the main barriers to supporting teaching and learning using digital technologies in schools?
- What examples are there of schools developing their use of digital technologies to enhance student learning? How do these examples link to what we know about the features of schools that are most effective in using of digital technologies to support teaching and learning?

Conclusions

(1) Digital tool use in classrooms remains under-exploited and varies considerably across Europe. Indeed, evidence of the effects of digital technologies on student achievement is no better than mixed.

Nevertheless, there is broad agreement that digital technologies benefit disadvantaged students, especially poorer students who rarely use digital devices at home and at school.

(2) Digital technologies benefit socioeconomically disadvantaged students directly by broadening access, widening participation and providing flexible and individualised approaches to learning, and indirectly by affording classroom approaches that are better at engaging such students.

(3) Assistive technologies are effective in supporting students with a wide range of impairments and needs. However, little consideration has been given to the social and psychological effects of assistive technology use on learners' confidence, participation and identities, or attention paid to practices that are potentially stigmatising.

(4) Flipped classrooms, as one of the many examples mentioned in the report, allow students to engage with new ideas at their own level and go over the things they find difficult at their own pace, with potential benefits for subsequent classroom activity. Although there are few convincing evaluations of this approach, its individual components are known to be effective.

(5) Computer-assisted learning is particularly effective in early language teaching. Evaluations in other areas are also broadly encouraging, especially for low achieving students who can learn at their own pace and according to their current proficiency.

(6) Digital technologies can enhance the teaching of difficult areas of mathematics. However, they have not had the expected impact in the classroom because teachers adapt the technologies to benefit teacher instruction rather than using them to enhance student engagement and exploration.

(7) The digital divide, unequal opportunities for digital access and limitations in infrastructure and access to CPD on digital skills and competence are significant concerns in a number of European countries.

(8) In those countries where digital technology use in schools is established, the effectiveness of technologies in supporting learning is variable, and even when most students have digital access outside school, the way technologies are used varies with students' ethnicity, gender or socioeconomic status.

(9) Sustainable investment in infrastructure, digital teaching and learning platforms, digital devices and professional development within supportive environments can significantly improve the degree to which digital technologies are integrated into the life and work of schools.

(10) The Covid-19 pandemic has highlighted the additional need to provide digital devices to students without access to them outside school. Meanwhile, the crisis has shown how coordinated groups of experts under strong leadership can be rapidly mobilised to produce digital teaching and learning platforms.

(11) The model of schools as learning communities or organisations – where teachers enjoy a wide variety of formal and informal collaborative professional development opportunities – is particularly suitable for developing the digital maturity of schools.

(12) School leaders have a central role in acquainting themselves with and supporting access to professional high-quality digital competence training for teachers to achieve digital school maturity. Their confidence and competence with technologies is key to the development of digital tool use to support student learning in schools, and they should focus on student learning and to improve teaching and working conditions of the teachers when making decisions. However, allowing school leaders the time to prioritise leadership for the use of digital technologies remains problematic in some contexts.

Specific recommendations based on research

1. As areas of national school development, governments should invest in ensuring equal access for all students, teachers, school leaders and schools to digital infrastructure, digital teaching and learning platforms, digital devices and associated professional development. Such infrastructure should support and not be the aim of teaching.

2. Within schools as learning communities, school leaders should prioritise the development of their own and their colleague's digital confidence and competence as a well-tested route to digital maturity, and allow sufficient time to focus on the development of digital tool use to enhance student learning.

3. In particular, schools should prioritise digital tool use that supports disadvantaged students (a) directly by broadening access, widening participation and providing flexible and individualised approaches to learning, and (b) indirectly by encouraging classroom approaches using digital tools that engage such students.

4. More research is needed to evaluate all areas of digital tool use to support student learning in schools, not only to provide greater confidence in the effectiveness of such approaches, but also to raise awareness of their limitations. Focuses should include:
   a. the pedagogic principles behind the effective use of digital technologies to support student learning, and professional development approaches that encourage teachers to follow these principles;
   b. effective ways of using digital tools to complement other classroom approaches;
   c. the social and psychological implications of digital technology use in schools, including identifying practices that are potentially stigmatising and considering how these might be improved.

5. The Covid-19 pandemic provides an opportunity for research to explore the relation between learning outcomes and access to digital devices and engagement with online teaching and learning platforms. Studies should usefully contrast the experiences of teachers and students in different countries and identify the effect of digital pedagogies, including flipped classrooms and participatory approaches, on student outcomes when compared with traditional approaches.

2.2 COLLABORATIVE LEARNING AND COLLABORATIVE SCHOOL LEADERSHIP IN THE DIGITAL AGE

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 collaborative learning and collaborative school leadership are 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).

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
- 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.

Conclusions

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 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 shows, 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 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.

Specific recommendations based on research

- 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 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.

2.3 ENTREPRENEURIAL SKILLS AND COMPETENCES IN LEARNING, TEACHING AND SCHOOL LEADERSHIP IN THE DIGITAL AGE

When bringing together research, policy, and practice, researchers were aiming at offering an analysis of various approaches and frameworks in order to identify new roles and necessary competences in the field of entrepreneurship for teachers and school leaders in the context of the digital age. In this regard, they were looking into both the entrepreneurial competences of teachers and school leaders as a professional trait of these professionals and the roles in and competences for entrepreneurial learning of their students, framing it in the context of the digital age in order to go beyond already existing frameworks and research. Entrepreneurship education related teaching competences in school is a relatively well-researched area, thus the focus of this paper is on the entrepreneurial teachers and school leaders including a definition of these notions in the broader context of entrepreneurship understood as a behaviour and mindset and not in its narrow meaning of business management.

The paper is focusing on the following areas within this broad concept:

- School leaders' and teachers' competences, with the EntreComp at its core and specified for school leaders and teacher roles.
- Potential impact of teacher and school leader entrepreneurial behaviour on the wider sense of entrepreneurial education: personal development, creativity, self-efficacy, resilience, taking initiative, action orientation, i.e. becoming entrepreneurial.
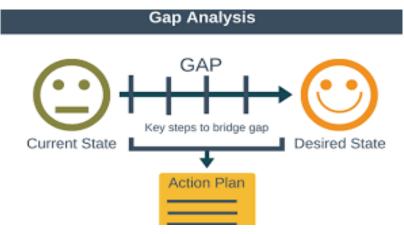
The number of examples fitting these criteria were limited, thus the paper analyses only four inspiring practices: Entrepreneurial Competences for School Leadership Teams (EC4SLT, transnational), ASE Teacher Training Activities (Wallonia, Belgium), Entrepreneurship Education Programme Edu ja Tegu (Estonia) and ParENTrepreneurs (transnational) in detail.

Conclusions

In line with the main objective of the EEPN project, the aim of this research paper is to advise policy making on the main topic of this year, new roles and competences of teachers and school leaders in the digital age. In the scope of this paper, it offers an analysis of various approaches, inspiring practices, and frameworks in order to identify new roles and necessary competences in the field of entrepreneurship for teachers and school leaders.

Research quoted in this paper clearly shows that professional educators tend to be less entrepreneurial than people in other professions and are known to be risk averse people. Research also confirms that entrepreneurial competences are necessary for teachers and school leaders, and it is especially true when it comes to transforming education to fit realities of the digital age – a period that has been a global reality for decades now, but largely escaped formal education until the Covid-19 school closures. One of the main challenges is that the future of education largely depends on the ability of less entrepreneurially skilled persons to act in an entrepreneurial way.

When concluding the current research paper and moving towards tentative policy recommendations drawn from research and the analysis of successful programmes, we need to call the reader's attention to the design framework depicted below in order to keep the focus on desired outcomes.

Figure 1 – Gap Analysis Model

Case studies analysed in this paper together with quoted research describe the state of play, highlighting that in those localities where the importance of entrepreneurial competences of teachers have been acknowledged and subsequently there are programmes in place to foster them, the level of awareness is substantially raised, and relevant practices are more widely used. There is some evidence in the paper showing that there is a certain level of mindset change present in teachers taking part in programmes related to teacher and school leader entrepreneurship.

However, the low number of available initiatives also make it clear that a lot more effort is to be invested by policy makers to achieve the desired state, having a professional educator force ready and able to transform education. Research gaps show that there is a need for more targeted work in the field to support policy making, especially in the areas of further specifications of desired competences, analysing

the deeper impact of well-working practices, mindset change as a result of entrepreneurship programme.

It has also been proven by research done in the framework of the case studies provided that the EntreComp is a suitable tool for defining and further refining teacher and school leader entrepreneurial competences. It can be used as a basis for developing a new competence model specifically for teachers and school leaders.

Another clear conclusion is that a holistic and comprehensive open schooling approach is the best for fostering these competences. Successful practices identified during this research all have a collaborative element: collaboration with the business sector, universities, families and youth organisations have proven to be effective for better performance. Our analysis also shows that future teachers and school leaders need competence development in this field from the pre-service stage.

Case study analysis within this paper shows that given the necessary orientation, support and tools, teachers take on new roles enterprising with curricula, introduce the development of entrepreneurial spirit in all levels and areas of education. Supporting them with tools raising the entrepreneurial spirit has also shown better results in specially challenging contexts such as rural or disadvantaged schools. The importance of networks – both that of peer professionals and those consisting of various other stakeholders – has also been proven by research and practice. It has also been clearly shown that awareness raising is the most important pre-requisite in creating an open discussion about the topic. Based on these findings, the authors have come up with specific tentative recommendations in the field of policy support for teacher and school leader entrepreneurship.

Specific recommendations based on research

1. Policy should aim for defining and promoting entrepreneurial roles and related competences of teachers and school leaders, using the EntreComp as a starting point.

2. Awareness raising among in-service professionals as well as those planning to choose a teaching professional pathway about the importance, breadth and impact of entrepreneurial competences of teachers and school leaders should be a priority.

3. Programmes that engage other stakeholders, especially businesses, universities, families and youth organisations in the spirit of open schooling, considering the school as a learning organisation are key.

4. There is a need to invest in research as well as practice in improving teacher and school leader entrepreneurship. In the case of practice measuring impact, upscaling, mainstreaming and localising are of a large importance.

5. Incentives and methods need to be introduced to attract people with entrepreneurial mindsets to the teaching professions – especially to become teachers and school leaders -, including incentives for alternative pathways to teacher and school leader careers for those wishing to change from the world of non-profit or for-profit enterprises to education. This should be regulated by national legislation in a way that provides the possibility for smooth and easy transition while respecting quality standards reflected in teacher qualification requirements.

6. Initial training as well as in-service training needs to embed teacher and school leader entrepreneurship, and this needs to be reflected in related policies.

2.4 COMMUNICATION, LITERACIES, MULTILINGUAL AND CRITICAL THINKING SKILLS AND COMPETENCES FOR TEACHING AND LEARNING IN THE DIGITAL AGE

When bringing together research, policy and practice, we aim to offer an analysis of various approaches and frameworks in order to identify new roles and necessary competences in the wide and intertwined fields of communication, literacies, multilingualism and critical thinking for teachers and school leaders in the context of the digital age. In this regard, researchers were looking into both the relevant competences of teachers and school leaders as professional traits and the roles in and competences required for supporting skills and competences development in their students. This is specifically in the area of communication, literacies and critical thinking, using multilingualism as a scaffold, in the context of the digital age in order to go beyond existing frameworks and research.
The paper focuses on the following areas within this broad concept:
- School leaders' and teachers' competences, with the Key Competences for Lifelong Learning Framework and LifeComp at its core and specified for school leaders and teacher roles.

- Teaching and learning for developing communication and critical thinking skills and competences, multiple literacies and utilising multilingualism in the context of the digital age.

When the inspiration provided by EEPN partners was first analysed, only a handful of examples were found that focus on teacher and school leader competences while a vast majority was focusing on teaching skills in the field without considering competences and skills of the educator. Thus only a small number of inspiring practices were analysed in the paper.

Conclusions

Research presented in the first part of this paper clearly show that the wide-spread use of digital devices in communication as well as other direct and indirect impacts of the digital age have changed the realities of communication in education. Restrictions introduced under the context of the Covid pandemic can be identified as an accelerator. Teachers, as leaders of learning need to have well-founded competences to communicate well in today's realities. Firstly, they need to understand and utilise multilingualism and the digital support elements of it. Secondly, they need to lead learning in all fields. Thirdly, they need to include critical thinking in an age of misinformation and fake news. Research provides a somewhat detailed picture of what areas teachers need competence development in, but this is rarely manifested in practice and projects. While it was relatively easy to identify and analyse research and also to find relevant policies linked to new roles and competences of teachers and school leaders in the field, the overwhelming majority of case studies identified by EEPN partners was solely focusing on school students' skills and competences. Some of them had an element of teacher training aiming for better teaching of necessary skills. Impactful initiatives that allow for the teacher to learn to open up the curriculum and give students the room to take charge of their own development take time. We did not find many examples of schools that provided this time. Also, we did not find many programs for teachers to learn to co-create with students, parents and other experts or be 'agents of change' in their school. Teacher researcher teams, working with their own questions on learning are rare.

We have found research evidence supporting common sense assumptions on the need for teachers to have relevant communication and critical thinking skills to be able to help their students develop them. We found some programs to develop communication skills in the field of multilingualism and critical thinking, but these were limited. While the concept of multiple literacies is gaining ground in curriculum design, related teacher and school leader roles and subsequent training needs are not clearly identified and tackled. Available research, for example the Finnish policy implementation case study clearly show

that the best intended policy initiatives targeting school students may be side-tracked if they are not accompanied by teacher competence development. Supporting today's learners in developing transversal skills and competences is not possible without teachers developing themselves in the same field. In Europe, EPAS and Learning Studios do offer possibilities, but to ensure sufficient time for it seems to be a necessary next step.

While the differences between cultural traditions of school systems remain a driving force behind renewing education along these lines, only some school systems consider the growing cultural diversity of their students and try to redefine themselves. More and more students are hindered in reaching their full potential in various fields while struggling to navigate a linguistic environment foreign to them. Teacher training far too often still focuses on control that makes multilingual practices more difficult to become rooted in schools around Europe.

The digital age has coincided with a growing diversity in schools in Europe, with this diversity partially being made possible by the availability of digital connections and solutions. A rapid change in everyday communication and realities in general have often left the school relatively unchanged, but this cannot be maintained after school closures. Systemic problems have stepped into the limelight especially in the months of forced home schooling – for researchers, education professionals, parents, children and policy makers alike. The collaboration between the school, teachers, parents and students as co-creators can strengthen the motivation of all involved to engage in a growth mindset.

A gap identified is a clear identification of teacher roles and related skills in this crucial field. The LifeComp, together with the Key Competences for Lifelong Learning Framework offer a good scaffold to do this. This paper has made an attempt to identify some of these roles and find hiatuses in teacher and school leader professional development, but it does not go beyond awareness raising of this gap and the need to work collaboratively on this.

Specific recommendations based on research

1. There is a need to commission and finance further research on teacher and school leader roles and competences in communication, multiple literacies, multilingualism and critical thinking as well as the role of non-teaching staff in it. This includes bringing together experts on educational research, teachers and student teachers with a role for students and parents.

2. Policies should incentivise teachers' and school leaders' experiential learning, both pre-service and in-service to support the identification of roles and development of necessary skills in these fields, and thus making it possible for teachers to become role models for their students. It would strengthen the learning process if the student teachers and teachers (LLL) can develop their own learning objectives.

3. The use of languages students are proficient in is to be promoted by policy alongside the available technical solutions and relevant teacher training.

4. Policy should support a holistic approach considering teachers and school leaders as learners and also other school stakeholders - especially parents, students and local communities - as potential educators. Co-creation in innovative heterogenous learning communities with people from different backgrounds is helpful. International mobility is important to bring education stakeholders, especially teachers, school leaders, policy makers, parents and students together in order to co-create.

5. Self-reflection plays a critical role in the success of implementing inclusive, multicultural, multilingual polices, and this needs to be supported by any policy aiming for deeper changes in school.

2.5 ACTIVE CITIZENSHIP SKILLS AND ACTIVE DIGITAL CITIZENSHIP SKILLS IN TEACHING AND LEARNING IN THE DIGITAL AGE

This desk research explores the work that has been developed in the field of active digital citizenship education in terms of policies, practices and research after the year 2000 in Europe and around the world. The goal is to identify inspirational policy practices that may support the development of an active digital citizenship education. Inspirational policy practices are innovative policy practices, well documented and assessed, and with potential for replication in other contexts, "providing a contribution to a perceived need in a specific context" (Frau-Meigs et al., 2017, p. 29).

Conclusions

An active digital citizenship is a necessary condition to thrive in the transition from a nation-based modern society to a global digitalized society. It brings new hopes and challenges to the quest of social justice, human rights and democracy. An active digital citizenship education cannot rely on a specific programme, curricula or app added to the school setting. It is a lifelong process that calls for an integral approach, where regulation and emancipation flow in a complementary living system. On a regulatory strand, supporting policies (international, national and local), resources (human, financial and technical), evidence-based practices/programmes, safe digital environments and the skills and competences to navigate on those environments create the structure for an active citizenship practice. The practices described on the "Being online" cluster as well as EU policy documents support this strand. Research points to the need of further local policy development, technical resources access and availability as well as professional development in digital skills, digital emotional intelligence and active participation. On an emancipatory strand lie the more subjective dimensions of an education process: participation, solidarity, communication, socio-emotional learning, critical thinking, networking, collaboration, stakeholders' commitment and engagement, democratic learning environment and culture. The practices described in the "Well-being online" and "Rights Online" clusters create opportunities for the development of this strand. However, the need of projects that specifically address the development of these competences in teachers and school leaders is a gap found in this research, pointing to the need for approaches in teacher education that allow meaningful experiences and engagement in active digital citizenship. To surf the gap between these regulatory and emancipatory poles there is the need for a whole school approach, where material resources and human encouragement are in place, toward the development of a collaborative school culture and organization. Furthermore, reminding that citizenship education is a lifelong process that does not only happen behind school walls, but also involves parents, civil society, academia and the private sector, creating supportive networks for knowledge, dialogue, reflection and creative action. By focusing on the people, not only on their technical skills but also on their emotions, values and social literacy as well as by supporting reflection, creativity and meaning making, there is the possibility to move toward a more human digital world.

Specific recommendations based on research

Based on the desk research and literature review, this analysis points to the following recommendations:

• *Pausing:* keeping in mind that active digital citizenship education is a lifelong process that creates opportunities for positive educational and social change and not add on to existing school structure.

•*Resourcing*: providing funding for teacher education and technical resources for school digital transition, increasing its access and availability and focusing on open digital platforms that provide content and promote people-to people interaction for experiential learning.

• *Nourishing:* supporting teachers' and school leaders' professional development through initial and continuous education in:

- digital literacy, digital emotional intelligence, social literacy and cultural awareness o local/global community engagement and participation

- mentoring, tutoring and joint teaching designs for school/community peer-to-peer practices.

• *Listening:* creating opportunities for a citizen-based local policy development:

- Identifying bottom-up and regional digital citizenship initiatives to assess and envision possible pathways to sustainable systemic change;
- Providing opportunity for inside and outside school reflective inquiries, including youth and multiple stakeholders from the school and the wider community.

• *Empowering*: allowing teachers, school leaders, students, school staff and parents to act autonomously in school life and be active citizens in their own communities:

- Developing educational communities where teachers and school leaders act as role models of active digital citizens.
- Increasing youth opportunities regarding their participation in school daily life, policymaking and curricular processes.

• *Engaging:* involving schools, parents, civil society, academia and the private sector, creating supportive networks for knowledge, dialogue, reflection and creative action for local/global issues:

- Allowing conditions for skills development, research and critical thinking, dialogue and debate, online/offline community engagement and activism;
- Promoting intercultural dialogue, meaningful action and reflective inquiry.

• *Flourishing:* regarding the school as a community of guided practice in active digital citizenship, embracing technology and creating platforms to relate, research and act together in a collaborative and experiential learning environment.

REFERENCES

Detailed reference lists can be found in the relevant section of the five research papers quoted.