Chapter 4
Experiences of Moving Quickly to Distance Teaching and Learning at All Levels of Education in Finland

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Abstract In this chapter, the teaching and learning in Finnish compulsory education during the COVID-19 pandemic in the spring and autumn terms of 2020 will be analyzed and discussed. First, preconditions, such as teacher and student digi-competences and digi-infrastructure for switching to distance teaching and learning, will be analyzed. Second, the organization and experiences of teaching and learning during this time are described based on representative surveys conducted during and after the spring 2020 distance teaching period. Finally, teachers', principals' and students' engagement and well-being during the pandemic will be analyzed based on survey data. Preconditions for organizing effective distance teaching and learning during the 2020 spring term were appropriate teacher and student digi-competences and digi-infrastructure and availability of digi-tools. During the pandemic, teachers' digi-pedagogy and students' digi-competences developed. Moreover, several digi-pedagogy and co-teaching innovations were created. However, at the student level, we identified decreased engagement during the pandemic, and at the teacher and principal levels, we identified not only decreased engagement but also increased stress and even burnout. Principals suffered from teachers' stress, whereas teachers suffered from families' inequality in coping with distance learning. All in all, the switch to distance teaching and learning was organized effectively, but the distance-learning period weakened the equality of teaching and the conditions for learning.

4.1 Introduction

The COVID-19 pandemic has influenced the education sector all over the world and affected the learning of 1.6 billion children and young people in 200 countries (UNESCO, 2020). The pandemic has engaged researchers, administrators, and teachers in the development of digital pedagogy or digi-pedagogical innovations. Digi-pedagogy includes the knowledge and skills needed for using digital tools and

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platforms or digital environments for teaching and learning, as well as the knowledge and skills needed to support students' engagement, learning and well-being in digital environments (Greenhow et al., 2020). Appropriate digi-pedagogy has helped teachers with instructional design and the use of digital tools and platforms to support students' learning, engagement, and well-being.

Iivari et al. (2020) described an interesting case from spring 2020 in Finland, where two fifth-grade teachers began to work as a team and shared their workload by shifting online class responsibilities during the pandemic. The school days consisted of two to four live lessons a day via Google Meet; half of the lessons were taught by one teacher, half by the other. After a 20-min live teaching session, students had 40–50 min for individual work, after which the class gathered again on Google Meet to discuss the outcomes. All of the day's tasks were sent to students the previous evening. At the end of the school day, the teachers checked pupils' daily tasks in Google Classroom and together planned the lessons for the next day. This type of team-teaching was recognized as engaging for teachers and learners. The reason for success with distance teaching in this case was that, first, both teachers and learners were familiar with the Google Classroom format and had appropriate digital skills and tools. Second, the teachers had quality training and were able to generate solutions to new challenges. Third, the pupils had an internet connection at home, and the school loaned laptops to pupils who did not have one at home. Although the pupils were able to communicate and complete their assignments, the teachers were not able to support the engagement and well-being of all learners. In addition, the students lacked peer support and informal collaboration sessions.

The previous case provides a good example of the use of digi-pedagogy and devices during the pandemic. However, the case does not reflect the full picture of teaching and learning during the pandemic in Finland. In this chapter, teaching and learning in Finnish compulsory school during the COVID-19 pandemic during the spring and autumn terms of 2020 will be analyzed and discussed. First, preconditions, such as teacher and student digi-competences and digi-infrastructure for distance teaching and learning are described. Second, the organization and experiences of teaching and learning during the pandemic are described based on representative surveys conducted during this time. Finally, teacher, principal, and student well-being during the pandemic will be analyzed based on data collected during the pandemic. We will argue in the discussion section that the development of digi-pedagogy strategies beginning in the 1980s, the implementation of these strategies, and masters-level teacher education, which emphasizes the learning of competences needed in professional learning, have made it possible for teachers to transition to teaching online rather seamlessly.

4.2 Finnish Education Context

Decentralization and autonomy of municipalities, schools, and teachers characterize the Finnish education context (Simola, 2005). Teachers play an important role in

the Finnish educational system. They are active participants in the design of local curricula as well as physical and digital learning environments and courses and, moreover, assess both their own teaching and students' learning outcomes. This decentralization has made it challenging to formulate state-wide decisions and to provide uniform instructions during the pandemic. On the other hand, decentralization has offered flexibility in decision-making at the local level and has made it possible to take into consideration the local context, such as the current situation of the pandemic in each area or city. This decentralization, without testing and inspectors, could also be a threat to equality. However, politicians and families trust local schools and teachers. This trust is a consequence of well-educated teachers and the availability of general information on the education system. For example, according to PISA assessments, the variation between schools has always been the smallest in Finland among OECD countries (OECD, 2019b).

Educational equality and equity have been important education-related values and aims in Finnish education since the 1970s, at all levels of education. There are no private schools; instead, children and adolescents attend a nearby school. Finnish special-needs education aims to integrate all learners into the same inclusive classrooms and to support their learning. Primary and secondary teachers are responsible for monitoring the individual needs of learners and preparing a pedagogical document in the case of enhanced or intensified support, if needed. Decisions for the type of support, such as a student's integration into an ordinary class or part-time participation in a small group of students, are based on a pedagogical document, which is prepared by a teacher for a student who has special needs (Finnish National Agency for Education [FNAE], 2020a; Finnish National Board of Education [FNBE], 2014). The development of support and special-needs education practices has decreased the number of students who leave school early, from 11 to 7.5% between 2010 and 2019 (Statistics Explained, 2020). Because of decentralized decision-making and equality as a value and aim, novel solutions could be created to support special-needs students during the pandemic.

Teachers in Finland in primary, lower secondary, and upper secondary schools are required to have a master's degree. Primary teachers (grades 1–6) have been educated in master's-level programs at eight traditional universities for more than 40 years, while secondary teachers (Grades 7–12) have been prepared in master's-level programs for more than 100 years (Niemi et al., 2012). An essential characteristic of teacher education in Finland has been its emphasis on research (Eklund, 2018; Tirri, 2014). This orientation supports teachers in the local planning and assessment processes and the organization of inclusive classrooms. The use of digital tools in pre-service teacher education is integrated into the courses and teaching practice. This could support student teachers in adopting the basics of digi-pedagogy. The development of the use of digital tools and environments in teacher education has been organized through long-term strategic actions and through several research projects. For example, during 2017–2018, at the University of Helsinki, €240,000 was used for the development of digital learning environments and tools and for increasing teacher educators' digital competences.

4.3   Preconditions for Distance Teaching and Learning During the Pandemic

There have been six official national-level digital education or Information and Communication Technology (ICT) strategies and hundreds of development projects during the last 35 years in Finland. Since 2015, these strategies have been integrated or embedded in other strategies, such as government programs or curriculum documents (Mahlamäki-Kultanen et al., 2014). The national framework curriculum for compulsory education emphasizes as a part of the description of transversal competences that students should be able to do the following: learn to use digital tools in diverse and creative ways; collaborate and network with digital tools; and work with data, information, and knowledge (FNBE, 2014; Ministry of Education and Culture [MEC], 2017).

In addition to strategies and curriculum, resources have been available to aid the implementation of strategic aims. For example, during the years 2016 – 2020, just before the COVID period, the government allocated €100 million for educational improvements. These funds were used for increasing teachers' and students' digital competences. For example, 27 million euro was allocated for the development of teachers pre-service education and for strengthening the connection between faculties of education and schools. About the same amount of money was allocated to the tutor teacher model. The rest were allocated for schools, to support special education and the use of digital tools. Over the past 20 years, the Finnish National Agency for Education has annually allocated about €15 million for supporting the development of digital learning environments and for supporting teachers' professional learning of digi-pedagogy through training and development projects (Kumpulainen, 2017; Niemi, 2015). Altogether, 2,500 tutor-teacher positions were established with funding from the *Basic Education Forum* (MEC, 2018a) in year 2017, and tutor teachers were educated to support teachers in the use of digital tools, organize inclusive education and support the learning of transversal competences in their own classrooms. A tutor teacher has less teaching hours than other teachers in order to have time for supporting colleagues.

Finland has a robust digi-infrastructure, and Finnish people are active users of digi-services. According to Digibarometer 2019 (Ali-Yrkkö et al., 2019), Finland has ranked third in international comparisons over the last two years in use of the internet; people younger than 55 report using the internet frequently (Tilastokeskus, 2019). According to the European Commission (2018), Finnish people rank highly in the area of general digital skills and are global leaders in advanced digital skills.

According to the IEA International Computer and Information Literacy Study 2018 (Fraillon et al., 2019), all schools in Finland have access to the internet, and 93% of compulsory school students have an e-mail account for school-related use. Both percentages are significantly above average among the countries participating in the study. In Finland, almost all schools have versatile digital tools available, including software for working with text, numbers and pictures, as well as learning management systems. Altogether, 83% of schools reported that it is possible to have

digital tools in the classroom, and there are computers in one-third of all classrooms at all times. In the use of the internet in education, Finland ranked fourth, after Sweden, the United States, and Estonia (Ali-Yrkkö et al., 2019).

Tanhua-Piiroinen et al. (2019) conducted a national follow-up study considering students' and teachers' digital competences using a representative sample. A total of 4,513 teachers and 4,135 s-grade, 4,992 fifth-grade and 5,046 eighth-grade students completed the study. Consequently, the follow-up study provides a realistic picture of the use of digital tools in teaching and learning before the pandemic. The follow-up study included both survey questions and items measuring digital competence in real situations. The actual situations were realized in a web environment. According to the study, 66% of second-graders have access to a tablet or other digital tools at school, while 11% of fifth-graders have their own tablet and 74% of them were able to use a shared tablet or smartphone at school. However, computers and tablets are not used every day in all classrooms. The use of digital tools has too often been traditional, such as searching the internet, writing, and game-based learning. However, 43% of second-graders and 44% of fifth-graders have tried more sophisticated uses of digital devices, such as coding and robotics, at school.

According to the follow-up study (Tanhua-Piiroinen et al., 2019), eighth-grade students have, on average, used daily digital tools for communication, social relationships, and entertainment. On average, they have used digital tools 'sometimes' for producing and sharing digital content. Boys used digital tools for digital learning daily, but girls only once a week, on average. The Organisation for Economic Co-operation and Development [OECD] (2019a) TALIS 2018 survey showed similar findings related to the use of digital devices in Finland. However, there were differences between the competences related to the use of digital tools of different socioeconomic background students. This difference was recognized to increase the inequality in Finland (Ahtiainen et al., 2020; Karvi, 2020). According to PISA 2018 (OECD, 2019b; Leino et al., 2019), Finnish 15-year-old students spent an average of 74 min at school and two hours and 50 min out of school on the internet. About 50% of all students searched the internet for information; 65% of students completed their homework with a computer at least twice a month and 90% of them used the internet to complete their homework at least twice a month.

The IEA International Computer and Information Literacy Study 2018 (Fraillon et al., 2019) evaluated the level of 15-year-old students' digital skills via a digital competence test. According to the study, the percentage of correct answers was highest in Korea (77%), Denmark (72%) and Finland (70%) on various test items. However, Saarinen et al. (2019) recognized the challenges of integrating digital tools into learning. Teaching and learning methods used in compulsory education were largely based on books, and digital tools were too often used just for completing assignments.

According to the national follow-up study (Tanhua-Piiroinen et al., 2019), the digital competence of teachers has markedly improved in terms of skills. Approximately 38% of teachers feel that they have an advanced level of digi-competences, and only 10% of teachers feel that they lack digi-competences. A good command of

digital competences among teachers is still more prevalent among the younger generations and male teachers. There is also variation in teachers' competences between municipalities. Teachers reported that they used digital learning environments on average in half of the lessons and that they presented information with the help of digital tools in most lessons. According to the International TALIS 2018 survey (OECD, 2019a), Finnish teachers have made good progress with the use of digital tools in teaching and learning and in their digi-competences.

4.4   Organisation of Teaching and Learning During the Pandemic

The Finnish government, together with the president, declared a state of emergency in line with the Emergency Powers Act[1] due to the COVID-19 pandemic in mid-March 2020 to obtain emergency powers and centralize decision-making. This was the first time a decision to use this act was made since the Second World War, and it was not taken lightly in a country which is heavily committed to a decentralized decision-making process in education, health, and social care. The government decided to close schools from March 18th until May 13th and then made the transition to distance teaching and learning (Government, 2020). First-, second- and third-grade pupils were allowed to go to school. According to the guidelines of the Finnish Agency for Education (FNAE, 2020b), teaching and learning was aimed to continue according to compulsory school curricula during the distance teaching period but organized in alternative ways, including the use of various digital learning environments and solutions and, when necessary, independent learning. However, on average one fourth of the teachers lowered the level of requirements for the evaluation and grading (Ahtiainen et al., 2020). This was considered acceptable by stakeholders and families (HS, 2020a, b, c).

During the distance teaching period, the main platform for informing parents and pupils in primary school was the communication platform Wilma.[2] The platform was recommended for giving homework, providing feedback, and communicating with parents. The most common virtual learning environments or platforms used in distance teaching were Moodle, Google Classrooms, Ville,[3] Teams, O365, Skype, and Zoom, depending on the education provider (YLE, 2020a). Education technology companies provided e-learning materials at no cost to teachers, for an estimated cost of more than €10 million, which is 15% of schools' annual total budget for learning materials (Suomen Kustannusyhdistys, 2020).

According to the Finnish National Agency for Education, primary, lower, and upper secondary teachers changed their teaching to distance rather easily (FNAE, 2020b). The high levels of teacher and student digital competences and the quality

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[1] https://www.finlex.fi/fi/laki/kaannokset/1991/en19911080_20030696.pdf.

[2] https://www.visma.fi/inschool/wilma/.

[3] https://oppimisanalytiikka.fi/ville.

of the digital infrastructure in Finnish society supported this change. School laptops were commonly loaned to students during the pandemic. However, it was estimated at the beginning of the COVID-19 pandemic that tens of thousands of students were without a computer. For this reason, a large-scale project, supported by the president of Finland, was launched in which companies donated obsolete laptops directly to students (Yleisradio [YLE], 2020a, b). Another reason for the rather successful change to distance teaching was the tutor-teacher model, which was implemented in 2017 to support the professional learning of teachers, especially in learning to use digi-tools and digi-platforms in their own classrooms.

After May 13th, children and adolescents returned to compulsory schools. However, universities continued with distance learning and teaching. Municipalities (providers of education) implemented strict rules for preventing the spread of COVID-19. For example, individuals were advised to wash their hands thoroughly, and parents were not allowed to go inside classrooms. It was recommended that students spend their entire school day with the same familiar group and have their meals in the classroom, not in the lunchroom (Helsingin Sanomat [HS], 2020c).

The Ministry of Education and Culture (MEC, 2020) updated its instructions related to the coronavirus pandemic at the beginning of August 2020. The ministry emphasized that the most important measure was to prevent infections through good hygiene, avoiding unnecessary close contact between students and arranging teaching premises more spaciously than usual. Staff members were also instructed to avoid gatherings, which meant, for example, that teachers should hold their meetings remotely. Meals were advised to be arranged individually with the pupils' own group. According to the recommendations, those who show symptoms of COVID-19 infection must remain at home. The recommendations have supported local actors in seeking the best ways to organize schooling in a safe and well-functioning manner.

When the second wave of the pandemic in October 2020 was slowly coming stronger, the government emphasized that the pandemic should be controlled primarily under local and regional decisions and measures according to the Communicable Diseases Act (FNAE, 2020c). Therefore, the decisions related to COVID-19 restrictions, such as quarantines and changes to distance teaching, were allocated to the local level, as usual. At the beginning of December 2020, some compulsory schools changed, totally or partially, to the distance model. During the autumn, there have been no plans to use the Emergency Powers Act again. This was because the lessons learned during the springtime and one of the lowest infection rates in Europe.

4.5 School-Level Teaching and Learning Experiences During the Pandemic

Ahtiainen et al. (2020) collected representative data in May and June 2020 from principals and teachers from all Finnish municipalities as well as from students in grades 4–10 and parents and guardians of students in grades 1–10. According to the

survey, the rapid transition to the distance-learning period went surprisingly well. However, students experienced distance learning in different ways; some students estimated that distance learning suited them well, and they felt that learning at home was more effective than at school. One-third of primary school students estimated that they learned less than usual during the distance-learning period. Most teachers felt that the workload was higher than in a normal situation. On the other hand, teachers felt that their own digital skills had developed during the distance-teaching period. Moreover, one-third of teachers reported that they have increased collaboration with other teachers. Nearly all principals reported that the school has provided opportunities for teachers to share their experiences with distance-teaching arrangements. The challenges were most often related to students' devices and teachers' equipment and network connections. Nearly two-thirds of principals estimated that at least half of the school's teachers had reported pedagogical challenges in implementing distance learning. Parents and guardians have had to take more responsibility for their children's learning than usual, and about half of them felt that this increased their stress.

Before publishing the evaluation report on the influence of the pandemic on compulsory and secondary education, the Finnish Education Evaluation Centre (Karvi, 2020) published the primary outcomes of the evaluation on their web page and in a webinar. A representative random sample was collected from 70 compulsory school principals and 185 primary teachers in May. In addition, 1,792 students in sixth and ninth grades answered the survey in October. Students rated physical education as the easiest school subject and mathematics as the most difficult to learn during the distance learning period. Students in primary and lower secondary schools named life management, such as making a personal schedule, learning difficulties or lack of support, and lack of opportunities or space to study at home as the main challenges during the distance learning period. Also, one-fifth of the teachers estimated that students have had many challenges in planning their learning and in independent learning. However, students reported that retrieving information independently, taking responsibility for their own learning and establishing a schedule for their learning was engaging.

According to teacher and student evaluations, there was a lack of support, especially among special-needs students, and a minor lack of digital tools at students' home. There were especially challenges among students who were not native Finnish or Swedish speakers. The importance of cooperation between home and school was emphasized in all municipalities, especially for identifying the need for student support in compulsory education. However, the support offered to students varied between municipalities (Karvi, 2020).

More than half of the teachers said that they had received support from their employer during the pandemic. One-third of teachers reported that they needed more guidance on organizing lessons remotely, and a quarter felt that they had not received enough support and guidance in using the hardware and software. The role of one's home environment in supporting distance learning was emphasized by the teachers. The distance learning period accelerated the development of teachers' and students' digital skills (Karvi, 2020).

The Karvi (2020) evaluation provides good examples of how teachers have started to prepare themselves and students for the second wave of distance learning. Teachers explain how they have used digital tasks in parallel with traditional teaching methods in order to facilitate a possible transition to distance learning in the spring or autumn 2021 terms. There were also local-level decisions related to distance teaching of a school or a classroom during the autumn of 2020. One teacher explained how he had three students in the class in one of his groups while the rest of the group was distance learning. The teacher taught those in the classroom while those at home watched the video of the classroom, all at the same time.

In the research reports (Ahtiainen et al., 2020; Karvi, 2020) and in the Finnish newspapers (HS, 2020a, b) there are several examples of how teachers and municipalities have overcome challenges related to distance teaching and created digipedagogy innovations. While challenges related to the distance teaching and learning period have been discussed, examples of positive outcomes has been more common. Teachers and directors of education in the municipality level have described, for example, the following experiences:

– *Some of our students are really skilled distance learners and they are able to achieve their goals independently. There are also students who have had problems with learning or social control and self-control (director of education in a city).*
– *The readiness of parents to help students during the distance learning varied. For example, immigrant background parents, who had lack of language skills were in trouble (director of education in a city).*
– *In the spring, we were able to share laptops to all students. I always started the distance learning lessons with a video connection and checked that everyone's connection was working and students were in front of the laptop. During my lessons I used break-out-rooms and other approaches, which supported collaborative learning (lower secondary biology teacher).*
– *During autumn, I used Google Classroom in parallel to normal teaching in order to facilitate a possible transition to distance learning (lower secondary geography teacher).*
– *Remote meetings engaged second-graders in learning. It looked like they had forgotten that they were in a distance class (primary teacher).*
– *Some of the students' workload should be lightened and some would like to be given more to do. However, I try to avoid pressure to families from the school side (primary teacher).*

Students have described, for example, the following experiences:

– *After the school switched to distance learning, I got an idea and sent a suggestion to my class WhatsApp group: "I will make a discord server" (upper secondary student).*
– *We used Google Meet as a learning platform. It was working well (lower secondary student).*

4.6 Teacher, Principal and Student Well-Being During the Pandemic

Salmela-Aro et al. (2020) collected data from all Finnish principals during April and May 2020 on digital skills, work-related well-being, and remote learning (n = 644,

response rate 54%). Three groups of principals were identified: engaged (36%), high stress (46%) and burnout (18%) groups. The results further showed that the number of burnout principals had increased and the number of engaged principals had decreased. Engaged principals appraised that teachers had good digital skills and that the change to distance teaching was smooth, whereas the burned-out principals felt that teachers had challenges with their digital skills and that the transition to distance learning was challenging.

Data among teachers was also collected both in the spring and late fall of 2020 (Salmela-Aro et al., 2020). Both times, about 1,500 teachers completed the questions about remote teaching, work-related well-being, and digital skills. During the spring of 2020, the number of engaged teachers was 41.8%; engaged but exhausted, 11.2%; at risk of burnout, 37.2%; and severe burnout, 9.8%. The situation was even more stressful among the teachers in the Fall, as the number of engaged teachers was only about 30% and severe burnout about 20%. The better the teachers' digital skills, the more likely they were to be engaged, whereas the more digital challenges they experienced, the more likely they were to feel burned out. In addition, the more the teachers felt that families were suffering from COVID-19 and had difficulties with remote learning, the more likely the teachers were to feel stressed or even burned out. Thus, the inequalities among families had severe implications for teacher well-being. There is also evidence about the variation in the support families can offer to their students learning at home in Finland. The higher the socioeconomic status of the family is, it is more common for the students' engagement in online reading (OECD, 2019b; Leino et al., 2019). Unfortunately, the teachers in the burnout or risk of burnout groups were most likely to leave the teaching profession, thus demonstrating the severe implications of burnout. However, principals' support and motivating leadership was one of the key supporting aspects of teachers' well-being.

Even before the pandemic, student engagement in science, technology, engineering, and mathematics (STEM) learning was a deep concern globally, and several major reports by the OECD (2019b) connected engagement with disinterest in STEM and its attractiveness as a career option. Recently, in examining the impact of the pandemic on learning, several surveys have shown that students report feeling disinterested, bored, and socially isolated when spending long hours in virtual classes. These surveys have given rise to a new worldwide concern of not only 'learning loss,' but also well-being loss. Our view of academic engagement in STEM is situational, and not all activities are likely to have the same effect on students' social, emotional, and academic learning. The approach identifies three constructs critical for enhancing student engagement that are grounded in the psychological literature: interest, skill, and challenge. Interest is the psychological predisposition for a specific activity, topic, or object; skill is the mastery of a set of specific tasks; and challenge is the willingness to take on a difficult, somewhat unpredictable course of action. When students are fully engaged, they tend to concentrate and feel in control (Schneider et al., 2020). When academic interests, skills and challenges are in balance, these moments are called optimal learning moments (OLMs), or situationally specific times when a student is so deeply engrossed in a task that it feels as if time is flying by. This idea is similar to how Csikszentmihalyi (1990) describes flow as being completely

immersed in an activity; for this study, we restrict the definition of flow to classroom situations that elevate students' academic engagement and are positively related to social and emotional learning. Our research shows that OLMs occur about 15–20% of the time in STEM lessons; our interest is to examine how often they occur when students are learning online. However, during the COVID-19 pandemic, the results showed that OLMs happened only about 5% of the time. (Salmela-Aro et al., 2020).

4.7 Discussion

In the spring of 2020, the shift to distance teaching and learning happened rather smoothly; teachers' and students' digital competences developed, and local distance teaching, co-teaching and digi-pedagogy approaches were created. This view was emphasized, especially in the Ministry of Education and Culture and National Agency of Education reports (FNAE, 2020c). However, the distance learning period weakened the equality of teaching and the conditions for learning, especially, the teachers reported that they were not able to support the engagement and well-being of all learners, especially students with special needs. In addition, some of the students lacked parents and peer support and informal collaboration sessions. (Ahtiainen et al., 2020; Karvi, 2020). Moreover, the level of burnout among principals, teachers and students increased, and the level of engagement decreased (Salmela-Aro et al., 2020). Teachers and students experienced distance learning in different ways; for some, it was more stressful than studying at school, while others felt that their well-being improved. The most challenging situation has been among special-needs students because of the lack of support. However, these students were able to continue learning at school with the help of special-needs teachers. In addition, students who faced an educational transition period during COVID-19 suffered more, such as on evaluations and exams.

There are several reasons why the shift to distance teaching was overall rather successful, although there were challenges with equity. First, all Finnish teachers are educated in masters-level programs, and their digital skills and digi-pedagogy competences are at an appropriate level. In practice, all primary and secondary teachers are qualified and have a master's-level education and as a part of this education the teachers have developed willingness and competence for continuous professional learning. According to a recent national follow-up study (Tanhua-Piiroinen et al., 2019), about 50% of secondary and primary teachers evaluated that they have basic digital competences and about 40% advanced competences. König et al. (2020) found similar results based on a survey they conducted in May and June 2020 in Germany. They recognized that teachers' digi-competence and opportunities to learn those competences are instrumental in adapting to online teaching. Quality teachers, combined with local level decision making in decentralized education system have made it possible to make decisions at the teacher level, how to organize distance teaching, what kind of digi-pedagogy is used and how teachers are collaborating. Therefore, the pandemic provided an opportunity for teachers to experiment with

new ways of teaching. The developed digi-pedagogy methods have been used as a part of classroom teaching during the autumn. There are two main reasons for teachers' appropriate digi-pedagogy competences in addition to their master-level education. There have been digital strategies, both separate from and integrated into government programs and school curricula since the 1980s, which have guided teachers and creators of learning materials and platforms. Second, there have been resources for implementing these strategic ideas in terms of support to teachers' professional learning. However, if there was a lack of digital competences among teachers in a school, it was one of the main reasons for principals' stress during the COVID-19 pandemic.

It is clear that the digi-skills of students should be continuously developed, although the public and policy debate around students' use of digi-tools and media has long been shaped by the persistence of two myths: the perception of children as 'digital natives' who are innately tech savvy just because they grew up with digital technologies, and the contrasting preoccupation with children as innocent and vulnerable subjects in need of protection from online risks (Barbovschi & Marinescu, 2013). Accordingly, between 2000 and 2010, the research agenda prioritized topics such as children's access to and use of the internet and their exposure to online risks. The tension between children as competent users or innocent victims remained implicit and unresolved until the debate moved beyond the initial focus solely on risks and started to address the opportunities and challenges of the internet and digital technologies on children's agency, rights, and well-being (Livingstone & Third, 2017; Livingstone et al., 2018). It is within this more comprehensive framework that situates the internet as an integral component of children's everyday life through which children engage with the world (Livingstone et al., 2018) and understanding what skills enable children to fully harness online opportunities and cope with risks has become crucial. Recently, in a large European Union (EU) Horizon 2020 youth digital skills project, four key digital skills were identified: technical, information search, interaction skills, and creative production skills (ySkills, 2020). The learning of these skills is recognized as a goal in the Finnish Basic school curriculum (FNBE, 2014).

The third reason for the successful transition to distance teaching was the level of good digital infrastructure in Finland. According to the IEA International Computer and Information Literacy Study 2018 (Fraillon et al., 2019), 99% of schools in Finland have access to the internet, and 93% of students have an e-mail account for school-related use. In Finland, almost all schools have versatile digital tools available, including software for working with text, numbers, and pictures as well as learning management systems. Laptops were loaned to students who did not have a laptop at home, and companies also donated laptops to students. König et al. (2020) also emphasized the availability of digital tools as a precondition for success in distance learning.

The level of digital infrastructure at the school level could be compared to digital infrastructure in society. One recent international comparative study conducted by the International Digital Economy and Society Index (I-DESI, 2018) of EU Member

States and 17 non-EU countries aimed to measure the general level of digital infrastructure and use of digital tools in society through cross-national representative quantitative surveys. The index focuses on five core dimensions: connectivity, use of internet services, integration of digital technology, digital public service, and human capital (in terms of digital skills). Overall, findings from the I-DESI show that while on a global scale Europe compares well with other major economies, significant differences persist among European countries. Finland, Sweden, the Netherlands, and Denmark were recognized as the most advanced European digital economies, while Bulgaria, Romania, Greece, and Poland scored the lowest. Consequently, there is a correlation between the level of digital infrastructure in the education sector and in society.

The fourth reason for the successful transition to distance teaching is the strategic planning of digital teaching and learning and the use of resources for implementing these plans. As previously mentioned, Finland has had both separate digital strategies and digital strategies that have been integrated into government programs and school curricula since the 1980s. These strategies have been designed collaboratively, accounting for many stakeholders, such as teachers, municipality unions, and organizations, at the national level. The process orientation of the strategy work has included the preparation of a local-level interpretation of the national level strategy (Mahlamäki-Kultanen, et al., 2014). This local-level interpretation has supported teachers in the adoption of new ideas. There have always been development projects and support for teachers' professional learning in the context of strategies, especially digi-pedagogy. For example, the program of the current government and the Right to Learn project emphasize the importance of education equality and equity and the development of digi-pedagogy. New governments have continued the education policies and measures of the previous governments. This type of long-term continuity in policy is important for schools, teachers, and students. The policy and planned measures are to a great extent accepted by stakeholders, such as the Association of Finnish Local and Regional Authorities (2019), Finnish Education Employers (FEE; 2019) and the Trade Union of Education (OAJ; 2019). The FEE even emphasizes the importance of quality support to students with special needs or pupils at risk of marginalization/exclusion to achieve high-quality reading, writing and mathematics competences.

In order to be ready for the next crisis in education, important policy and school practice issues must be addressed. Most important is to continue to follow a long-term education policy that focuses on equity and quality of education. Equity means that all teachers, including special-needs teachers, should continuously learn digi-pedagogy skills; likewise, all students should learn digi-skills. Digital platforms and digi-environments should also be used in classroom teaching. Second, teachers and students should have easy access to digi-tools. Education providers and schools should continuously update these digital tools and infrastructure. In addition, we need to promote the socio-emotional skills of grit, curiosity, resilience, emotional regulation and social competence among students, teachers, and principals to support their engagement and well-being. These are the key resources buffering individuals from stress during future challenging demands. Preparedness for possible future setbacks

can promote both students' and teachers' well-being and engagement. Moreover, the most vulnerable groups, such as those at risk of marginalization, those experiencing educational transition or those with special needs, require more resources and support. This view was especially emphasized in the study of Ahtiainen et al. (2020): support of students who have special needs, either with virtual tools or face-to-face instruction, is essential in the learning process. The learner needs the support of both the teacher and the group, and this can be done in many different ways.

The most important aspect of the policy is the continuing of quality teacher education. Teacher education programs should be continuously improved and account for changes in society and labour markets, like the increasing use of AI in all sectors. High-quality teacher education and its continuous development is the only way to guarantee that teachers can easily switch to distance teaching or make other rapid changes at school. Teachers' continuous learning of digi-skills, including the skills needed in the use of digital platforms, could be supported by continuous learning services and teachers' collaborative professional learning activities. Similarly, Darling-Hammond and Hyler (2020) argue that investing in high-quality teacher education, transforming teachers' professional learning opportunities to match current and future needs, supporting the mentoring and development of new teachers, and creating time for educators to collaborate with each other and key partners is critical. Moreover, principal education needs to be updated to include new competencies to lead distance teaching and learning.

In addition to formal continuous learning and the support of tutor-teachers, teachers benefit from local and national networking. An example of a network is the Innokas Network.[4] It is a teacher network from 100 municipalities that encourages schools to arrange their own activities supporting the learning of 21st-century competences, including digital competences. Another important topic within the network is inclusive education through the use of digital tools and the personalization of learning (Sormunen, 2020). The Innokas Network supports schools by arranging trainings, consulting, and events in different parts of Finland. Today, the network comprises over 600 schools all over Finland. Another good example of how teachers are supported in the use of digital tools and in inclusive education is the tutor-teacher model. Some 2,500 tutor-teacher positions were established in Finnish municipalities and financed by the Ministry of Education and Culture.[5] In total, €30 million was allocated in 2017 and 2018 to help municipalities hire and train tutor teachers. Since 2018, there has been some financing available from the state, but municipalities have also financed this model of support themselves. In a similar way, Moorhouse et al. (2020) argue based on distance learning experiences in Hong Kong during the COVID-19 pandemic that school-based professional support is essential.

Based on the national surveys completed during the pandemic, practical guidelines could be offered if distance learning is implemented again. More attention should be given to supporting students individually and to guiding students in peer support and collaboration (c.f., Ahtiainen et al., 2020). Teacher collaboration and networking

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[4] https://www.innokas.fi/en/.

[5] http://www.oph.fi/rahoitus/valtionavustukset.

should also be supported. Teachers at the same grade level in primary school or those who teach the same subject at lower secondary schools could benefit from such collaboration. They can plan lessons together, and one teacher could teach the lesson to all students in the same grade. Others can support the education of students with special needs (c.f., Iivari et al., 2020). International collaboration is also needed to identify the best practices for distance teaching and learning and addressing future crises.

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