Organizational Learning and Resilience in Hungarian Schools During COVID-19 Distance Education – Study of two cases

Erika Kopp[a] and Csilla Pesti[b]

[a] *Faculty of Education and Psychology, Eötvös Loránd University, Budapest, Hungary;* [b] *Faculty of Humanities and Social Sciences, Károli Gáspár University of the Reformed Church in Hungary, Budapest, Hungary*

Corresponding author: Erika Kopp, kopp.erika@ppk.elte.hu

Erika Kopp, PhD is senior lecturer with habilitation at Eötvös Loránd University Faculty of Education and Psychology, Institute of Education. Her main research and development fields include teacher education programme design and complex development of schools. She is a senior researcher in the MoTel project, examining international trends in the professional development and learning of teachers.

Csilla Pesti, PhD is an assistant professor at the Teacher Training Centre of Károli Gáspár University of the Reformed Church in Budapest, Hungary. Her research interests include teacher education policy, teaching practicum in ITE programmes, and the notion of teachers as researchers. She acquired her doctoral degree within the framework of the European Doctorate in Teacher Education (EDiTE) project as a Marie Skłodowska-Curie research fellow at Eötvös Loránd University and the University of Innsbruck.

Word count for the paper: 7978 words (not including the title page)

Organizational Learning and Resilience in Hungarian Schools During COVID-19 Distance Education – Study of two cases

In the spring of 2020, as a reaction to the COVID-19 situation, many school systems have transitioned to distance education. This posed extreme challenges to schools that resulted in a greater need for prompt teacher learning based on knowledge sharing within the organizations. This change was particularly radical in countries where schools had little or no routine in this regard, including Hungary. Although data is available on the individual and systemic processes, there is a lack of in-depth analysis of whether/how this transition to distance education affected school processes, with a special focus on organizational resilience. Our case study compares two Hungarian schools to reveal how in-service teacher learning affected organisational resilience. The results show that there were major changes at the organizational level in both cases concerning teachers' learning solutions, and these are related to previous routines on knowledge sharing.

Keywords: organizational change, teacher learning, organizational resilience, Hungary

Introduction

As a consequence of COVID-19, the globally introduced distance education has been a huge challenge for schools, teachers and students. Stakeholders had to acquire new competences in uncertain, frightening circumstances. Based on our informal discussions with Hungarian teachers and school leaders, we got the impression that schools as organizations have gone through some major change processes in these challenging times; e.g. the importance of organizational learning got more attention: previously it was an area of the educational system that needed reinforcement (OECD 2019), however, it has become an essential precondition for work during distance education.

An emerging question grasped our attention: what lessons can be learnt from these organizational change processes that could inform schools' functioning in the long term? To explore the possible answers, we embarked on an examination of two Hungarian schools that intensively use innovative pedagogical solutions.

The world of educational research has reacted relatively quickly to the new educational situation, but the studies mostly focused on change processes and solutions either on the individual or the system level (OECD 2020a, 2020b). Studies reported on the consequences of distance education on students (Benner and Mistry 2020) and parents (Parczewska 2020). Research has also highlighted the importance of teachers' ICT competences in adapting to the changing environment (Gao and Zhang 2020; König, Jäger-Biela, and Glutsch 2020; van der Spoel et al. 2020), as well as the notion of considering teachers and schools as autonomous, professional actors (Reimers and Schleicher 2020).

Research findings on the system level have revealed that internal and external learning and knowledge sharing that is based on teacher collaboration appeared and/or got more emphasise in most systems, while informal learning also gained more importance (Azorín 2020; Reimers and Schleicher 2020). It has also become clear, that the emergency situation fundamentally transformed the *culture of teaching*, therefore the traditional *culture of individualism* has become questionable (Hargreaves and Fullan 2020), which is also expected to have consequences on teacher learning. However, we could not identify any study with a focus on organizational processes in schools in more depth.

Addressing some of these research gaps, our study aims to foster a better understanding of the change processes in schools by systematically analysing how schools responded to challenges of COVID-19 at the organizational level, as well as to identify similar and differing patterns of resilience processes among the schools.

The study is guided by three research questions:

(1) What organizational-level activities did schools performed before, during and after the emergency situation?

(2) How did the schools' prior knowledge base influence the organizational responses to the emergency situation?

(3) Which areas of organizational functioning were affected during and by distance education?

Context

In addition to the issues that the epidemic has induced generally, some schools, or even entire education systems were simply not prepared for distance education. In these systems the schools, teachers and students had to develop new processes and skills that seemed less relevant under *normal* (pre-COVID-19) circumstances, having little or no opportunity to advance these under traditional educational conditions (Reimers and Schleicher 2020). Most school systems have responded to the epidemic by shifting to distance education, mostly in the form of online education, and this has increased the need for collaboration among teachers (OECD 2020b).

Our study examines the organizational processes in Hungarian schools that were triggered by the shift to distance education during the first wave of COVID-19 in the period from March to June 2020. The schools closed overnight, with the ministry in charge announcing on a Friday that the entire school system would switch to distance (online) education from the next Monday.

The transition required quick and, in many aspects, independent decisions from schools, which created an unusual situation, as the school system is vastly centralized. The Hungarian education system (similarly to many other Central European systems) has undergone significant centralization processes in the last decade, which has been accompanied by a radical decline in both school and teachers' professional autonomy (Varga 2019; Hüse et al. 2017). This decline has manifested in, for example in a decrease in schools' management and governance autonomy, strengthened central curriculum regulations, and an increase in schools' external evaluation.

A particular contradiction is that the centralized educational governance has weakened during the emergency situation, when schools had the freedom to decide not only on digital platforms and tools, but on the frequency of synchronous/asynchronous lessons as well; schools received little professional guidance or support (OECD 2021).

There were significant differences between regions and institutions in terms of both students' and teachers' equipment and skills that distance education predetermines (European Commission 2020a; OECD 2020c). System-wide studies have long indicated, for example, the low level of students' and teachers' digital competences (European Commission 2020b; Kopp 2020), and the lack of capacity in these areas had to be remedied in a short time after the government announced the transition to distance education, relying mostly on institutional resources (Albiser et al. 2020; OECD 2021). Therefore, the importance of individual and team learning in formal and informal settings has increased in education.

From this point of view, the available knowledge on teachers' professional development in the Hungarian context has grasped our attention: as several studies revealed, teachers mostly prefer individual, formal ways of learning regarding their professional development activities (Vámos 2016; Sági 2015), and schools as organizations can also be characterized as less open for collaboration. However, when collaboration does appear in an organization, it is most common in subject-specific working teams (Kopp 2016). Overall, in the fields of learning and professional work of teachers, individual or subject-specific team processes are dominant, thus teachers have a little routine in supporting each other, neither have they much experience with learning from each other - it is therefore particularly interesting how they responded to this challenge.

Unfortunately, there is no data available on how the transition to distance education took place, what consequences this transition had at the systemic level, nor nation-wide large-sample surveys were carried out to monitor the process – even the annual measurement of

students' competences was postponed. Due to the lack of such data, it is peculiarly difficult to prepare for similar future situations (Reimers and Schleicher 2020; OECD 2021).

To summarize, in the case of Hungary, educational institutions had to develop their solutions and strategies to ensure the implementation of distance education.

Learning Processes and Resilience

Adaptation of schools to environmental challenges is an essential condition for effective teaching and learning, and it requires the constant change of schools as organizations. Transitioning to distance education has been a global challenge that most school systems had never faced before, it can be interpreted as a classic radical change. Theoretical models and research results developed to examine change processes can be used to analyse these emerging organizational change processes as innovation (Halász 2018; Rikkerink et al. 2016), as change (Holmes, Clement, and Albright 2013), or, recently, as sustainability (Hargreaves and Goodson 2006).

Organizational-level adaptation can be interpreted in the framework of organizational resilience as adaptation to radical changes. Most resilience-related research in the field of education focuses on individual aspects (students or teachers) (Székely 2015). A reason behind this can be that a significant number of educational research on organizational adaptation processes focus on the factors stimulating the change (Nguyen and Ng 2020; Holmes, Clement, and Albright 2013; Halász 2018), while resilience-related studies emphasise the importance of the balance between permanence and change within an organization. The study of resilience is an increasingly important topic in management science, which has led to the differentiation of research in the field. While initially interpreting resilience as a result and restoration of the original state was common, with the strengthening of the adaptive approach, interpretation of resilience as a process, an

opportunity to strengthen the organization has become important. In this latter approach, the capability of the organization plays a significant role and contributes to the strengthening of capability (Duchek 2020; Lengnick-Hall, Beck, and Lengnick-Hall 2011; Linnenluecke 2017). In our research we interpret teachers' learning as a component of this capability.

The change also requires new knowledge in the organization (the acquisition of the missing knowledge), which can be interpreted as organizational learning and capacity building through teachers' learning. These learning processes of and within schools as organizations can be considered as single-loop or double-loop learning. Single-loop learning happens when there is a mismatch between the planned and the achieved outcomes, it has a strong 'correction' function, therefore it does not affect the underlying routines of the organization. Contrary to this, double-loop learning does not imply only the identification and correction of the mismatch between the planned and the achieved outcomes, but it aims to realize the corrections by changing the organizational routines (Argyris and Schön 1974). Team learning and collaboration both play a significant role in organizational-level learning, and these can have various implementation forms (Kyndt et al. 2016; Meirink et al. 2009). A possible grouping of the activities is based on the creation and dissemination of knowledge during the learning process: (1) sharing, which refers to the exchange of existing materials within a professional team, (2) improving, which involves joint evaluation and development activities to create new knowledge, and (3) spreading, which refers to the involvement of new actors in knowledge sharing (Nguyen and Ng 2020). Although the importance of organizational-level learning processes concerning the learning of teachers and the success of the organizational-level changes is highlighted in the literature, individual learning is still dominant in most organizations (Mayer and Lloyd 2011; Scheerens 2010), and this is a common characteristic of teachers in Hungary, too (Vámos 2016).

There are several factors influencing organizational-level learning processes, the leader is one of these (Hallinger and Heck 2010; Holmes, Clement, and Albright 2013; Rikkerink et al. 2016). In terms of change, several elements support the effectiveness of leadership activities and attitudes: they emphasise the importance of forming organizational goals and visions related to change or sustainability, contribute to maintaining the focus, form relationships within the organization – partly for operationalization and management purposes, partly for increasing trust within the organization (Holmes, Clement, and Albright 2013).

Organizational learning itself is a kind of mapping of the institution's organizational culture as the basic condition for its successful operation (Admiraal et al. 2019; Harris, Caldwell and Longmuir 2013). The organizational culture includes trust within the organization, which is the basis for teachers to be open for sharing their knowledge, as well as to be eager to learn from their colleagues. Thus, supportive organizational culture is a prerequisite for teachers to learn from each other, while the knowledge-sharing processes are also culture-shaping factors (Kopp 2016).

Another key factor influencing the success of adapting to change is teacher characteristics and teacher learning. The way teachers think about change and what they do for its implementation are essential conditions for the occurrence, spread and persistence of change within the school. Previous research has highlighted the importance of teachers' openness to change in general, commitment to the organization, and commitment to the specific change (Rikkerink et al. 2016; Harris, Caldwell and Longmuir 2013).

We used literature-based categories in our research to identify and describe the organizational adaptation and learning processes. These categories are the following: leadership, organizational-level factors, teachers' commitment, forms of teachers' learning.

The Present Study

To explore the research questions presented in the Introduction chapter, we relied on the theoretical cornerstones of organizational resilience, which can be conceptualised as a way in which organizations respond to external threats triggering organizational processes that can lead to a functional response, influencing an organization's strategic positioning and even its survival (Duchek 2020). We aim to explore these responses with the help of the capability-based conceptualization of organizational resilience as described by Duchek (2020) due to the peculiarities of the situation: the radical changes of the environment, the accompanying uncertainty and difficulties required a fast adaptation that is vastly dependent on teacher learning, and that is greatly different from pre-COVID-19 processes. This concept is used as the analytical framework of our study.

We interpret this organizational adaptation process along with the concept of organisational resilience as a process, in which three major resilience stages can be distinguished: anticipation capabilities (before the unexpected event), coping capabilities (during the unexpected event) and adaptation capabilities (after the unexpected event), and in this process teacher learning is interpreted as an organizational capability.

The model (Figure 1.) also takes into consideration the interactions between the various capabilities (e.g. potential and realized resilience, cognitive and behavioural dimensions), as well as some antecedents and drivers (such as knowledge base, resources, or power and responsibility).

Design

The popularity of case studies has recently increased, since such design is suitable for grasping and fostering understanding of various processes on many levels, in different contexts (e.g. during COVID-19). Our research is a comparative descriptive case study (Yin 2014) of two schools.

Case Selection

To be able to analyse in more depth the organizational change processes during distance education, we sought to study schools with intensive adaptation efforts. In recent years, two data collection was conducted in a segment of the education system focusing on teachers' innovation activities and learning (Learning and Innovation in Calvinist Schools, questionnaire acronyms LICS 1 and LICS 2) in Reformed schools in Hungary. The results of these two data collections have provided a sound basis for case selection.

The first data collection (LICS 1) focused on teachers' innovative solutions, learning and knowledge-sharing practices, and it took place in 2019 (n = 405). The second data collection (LICS 2 (COVID-19)) took place in 2020 (n = 586), it was an adaptation of the questionnaire used in LICS 1 to the newly emerged situation of distance education. LICS 2 focused on pedagogical solutions, knowledge sharing and organizational learning processes during distance education. Comparing the results of the two questionnaires, positive trends could be identified in the following fields: (1) regular use of innovative pedagogical solutions, (2) change in learning, (3) knowledge sharing among teachers. These findings also served as the case selection criteria. Table 1. summarizes the numbers of respondents regarding the two LICSs.

Screening the questionnaire answers from the two selected cases revealed that the responding teachers tend to use innovative pedagogical solutions that are beneficial for both their students' and their learning. In both cases, respondents reported on using adaptive pedagogical solutions and formative assessment to a great extent. Moreover, knowledge sharing between teachers gained importance during the months of distance education: while in one of the cases teachers supported each other mostly in an interpersonal, rather informal manner, in the second case knowledge sharing occurred in formal and informal ways, both on interpersonal and organizational levels.

Data Collection and Analysis

The various data sources for both cases are summarized in Table 2. To ensure the identification of each data source throughout the document, we defined IDs in brackets next to the various data sources in the table and we use these references throughout the article (e.g. C1D1 refers to the first document (D1) of Case 1 (C1).

We first conducted a within-case study for each case, coding the data of the interviews and school documents, then, this data was summarized in Table 3. along the characteristics of the chosen analytical framework (Duchek 2020). Semi-structured interviews were conducted with teachers and school leaders allowing them to describe their experiences in detail. The schools also provided us with various school documents, which were coded for further analysis. Moreover, the findings of a questionnaire study conducted in the summer break following the first semester of distance education were also channelled in our research. To summarize, on the one hand we relied on the questionnaire study to reveal teachers' learning during the distance education, while on the other hand we relied on the interviews and school documents to map teachers' experiences – and we used the analytical framework of capability-based conceptualization of organizational resilience (Duchek, 2020) to bring these various data together. We relied on the categories of the analytical framework during coding.

Summary of the Cases

The two cases are summarized in Table 3. within the chosen analytical framework (Duchek 2020). Both of the schools have agreed to participate in present study, they have read the article and acknowledged its content being appropriate for publication.

Case 1.

Brief description of the school, contextualisation. The school is a long-established Reformed school, founded in 1664, located in a small-town environment in the southern part of

Hungary. In 2020 the school had more than 600 students, 63 teachers. The school offers lower and upper secondary education programs.

Prelude to digital education (prior knowledge, anticipation). The school launched a major pedagogical development process in early 2018, which was initiated by the representative of the maintainer. The need for this development was justified since data revealed that teaching-centredness dominated the practices of more than 60% of the responding teachers, and internal knowledge-sharing practices were limited to sharing activities within small groups, and only a small number of teachers contributed to general improvement aims (C1Q1, C1I1, C1I6). However, there was strong resistance among the teachers against the developments (C1I2).

The development was based on the utilization of existing internal resources with the involvement of external experts. The development had the following main focuses: methodological renewal, use of digital tools in education, reduction of student workload, curriculum development (C1D2). The second phase of the development started in September 2019, and it gained even more importance during the transition to distance learning (e.g. the skills acquired by teachers through methodological training on digital tools) (C1D2).

The following elements of the prior knowledge base could be identified: (1) the majority of the teachers had already encountered, one-third of them even used tools in educational contexts that were necessary for distance education, and they had the necessary basic competences to use these; (2) initial steps of formal and informal forms of collaboration; (3) the school established, and teachers started contributing to an internal knowledge-sharing platform.

First steps of digitalization (coping). As the first step of the transition to digital education, they arranged a joint discussion for the faculty, where they agreed upon the tasks, set common principles, and rationalized and reduced students' learning requirements. In addition, during

the first week of distance education, the school assessed its students' and teachers' access to ICT tools through a questionnaire, and this triggered the acquisition of the necessary tools (C1I1, C1I4).

The already established platform for supporting learning became active, and teachers also participated in a mandatory internal in-service training focusing on the development of ICT skills required for distance (digital) education (C1I3). In addition, an internal mentoring and communication system was also set up as social resources (C1I1).

Based on the experience of the first week, it became clear that online education required a lot of digital learning materials. Our interviews (C1I1, C1I3, C1I4) revealed that the role of common knowledge-sharing platforms was not only strengthened during this period, but it spread and developed; common rules and information materials fostering digital education were also developed.

Significant number of teachers also started using Google Meet or Zoom platforms for delivering synchronous online lessons (C1Q2, C1I1) and they started using them not only for lessons but for faculty meetings and discussions (C1I3).

***Reflection and learning*.** At the end of the school year, the school conducted a questionnaire study to collect students' and parents' experiences, opinions, impressions, and suggestions about the implementation of distance education, and they also arranged meetings. Based on these, the following next practices emerged:

- regular use of digital tools should be integrated into everyday teaching and learning processes (C1I3);
- school organized further training in the 2020/21 school year;
- there was a growing need identified to develop a system aiming to monitor the quantity and quality of teachers' work during distance education (C1I1);

- further development of the students' basic competences even in this period, specific tasks and responsibilities were identified to contribute to this endeavour.

One of the interviewees summarized the whole experience as if they had always been preparing for this (C1I3).

Case 2.

Brief description of the school, contextualisation. The school used to be a public institution for decades, but since 2004 it is maintained by the Reformed Church, and it is the only school in its district with this type of maintenance. It offers education from the primary level to the upper secondary level and has a special focus on Mathematics and language education. In 2020 the school had more than 600 students, nearly 60 teachers, and each year they face an increasing number of newly enrolled students (C1D1).

Prelude to digital education (prior knowledge, anticipation). In 2018, with the involvement of the school leadership, its teachers, students, and parents (in total 30 participants), the school prepared its SWOT analysis and concluded the following (C2D1):

- One of the most relevant *strengths* was the openness to innovation, and its attitude to constantly look for new possibilities. The collaboration between teachers was exemplary.
- The participants identified the slow flow of information as one of the most important *weaknesses*, which might be due to teacher overload. Concerning both the lower and upper secondary levels, the communication with parents and their involvement in school life were also urgent challenges.
- Although the development of task depositories by teachers was considered a great *opportunity*, some respondents questioned the professional quality of the materials.
- A major threat was that due to the increasing student number, the number of students with some kind of hindrances might also increase.

Although, in general, there were good relations among the teaching staff, it is important to highlight that collaboration and knowledge sharing (e.g. teachers sharing materials that they developed with their colleagues) was not very common among the teaching staff with the exception of language teachers (C2I1, C2I2).

The school is dedicated to support students and teachers in their development by offering coaching in many formal (e.g. in the framework of a school subject) and informal (e.g. walking together on the corridors) ways. Some teachers adopted numerous approaches to strengthen the personal resilience of not only students and teachers, but with some indirect methods, students' families as well (C2I2, C2I3).

First steps of digitalization (coping). Although the possible shift to distance, online education was in the air from the beginning of March 2020, but no real preparation was made to support the teachers and students (C2I2). In this initial period, the school staff 'felt like kites dancing in a hurricane' (C2I2); however, after the first shock, the school devoted the first week to establish the pillars of their digital education: every student and teacher were provided access to an online learning platform, the required resources were identified, and, simultaneously to already teaching students in the online environment during the first week, there were numerous internal training and knowledge-sharing events for the teaching staff (C2Q2). Besides the crash courses focusing on digital teaching skills and methods, the school reinforced the importance of soft skill development even in the online environment – however, participation was optional in these activities (C2I4).

The leadership continuously reflected on the problems and, about 4 weeks into the digital era of Hungarian education, the volume of problems started decreasing. They developed an organizational strategy, and by adhering and continuously reflecting on it, the school managed to take advantage of the crisis situation (C2I1). The leadership and the teaching staff proved to be flexible and adaptive enough to handle the newly emerging

challenges, and support each other, as well as their students and families (e.g. teachers were provided with a guideline on how to support their students) (C2I3).

An important outcome of the spring months was that the relationship between the school and the parents improved: before the crisis situation, some of their students' family background remained invisible, but in these challenging times the teachers and the leadership made extra efforts to establish and maintain health, empathetic partnership with the parents (C2I1).

***Developing next practices through reflection and teacher learning (adaptation)*.** The school continuously monitored their students' well-being (e.g. through questionnaires, observations and communication with parents), and although in many aspects their reaction to the crisis could be considered exemplary, one of the interviewees defined this period as 'crisis management, but not a success story' (C2I1). However, another interviewee noted that there was 10 years' worth of improvement undergoing in the first week, both on the individual and organizational level (C2I3). These two, somewhat contradictory opinions might be due to the interpretation of success.

The experiences and reflections on the first run of digital education from mid-March to mid-June 2020 empowered the leadership and the teaching staff to plan proactively and develop their next practices (C2I1, C2I2):

- even more emphasis on soft skill development, soft coaching, both for students and teachers,
- supporting students with ICT equipment if needed,
- ensuring the required technologies for teaching online,
- strengthening knowledge sharing among the teaching staff,
- collecting strategic elements that can be used in case of another crisis event,

- preparing a digital timetable for the next school year in case there will be a sudden shift to distance, online education required again.

Cross-case Analysis

The two cases are compared along the phases of the analytical framework: we analyse categories emerging from the literature before, during and after the unexpected event.

Prior Knowledge Base

Development projects can be identified as a prior knowledge base for both cases; however, their content differs: the developments in Case 1 focused on specific teacher competences required for digital education. In addition, teacher cooperation had been strengthened in connection with the developments, especially concerning knowledge sharing related to digital platforms.

On the other hand, in Case 2, teachers integrated digital tools into their practice individually. Although the development of students' social competences was among the school's priorities in recent years, these activities were not accompanied by joint learning, and they did not become routine.

Routines developed for teacher collaboration could be identified in Case 1 as elements of the prior knowledge base, in Case 2 these were partly developed during distance education.

Before the Unexpected Event: Observation, Identification, and Preparation for the Emergency Situation – Resource availability

Initially, as the government communication on distance education was controversial, the role of organizational-level leadership has increased. Both institutions made efforts to ensure resources for teachers and students, and the leaders had crucial roles in perceiving the emergency; however, there was a difference in timely terms of reactions: in Case 1, major decisions were made in the first week on several key issues (such as student workloads, use of

common platforms, systematic mapping of resources), and elements related to shared leadership also appeared. This process was a bit prolonged in Case 2: these decisions and preparations were implemented in the operational phase, during the emergency situation.

During the Unexpected Event – Social Resources

Accepting the situation

As it was stated previously, the two schools interpreted the situation in different ways. In both cases, interviewees indicated how difficult it was to accept the situation, to maintain relationships during distance education. Data also revealed that there were teachers in both schools who did not accept the situation, and this manifested in them not participating in the common knowledge-sharing and collaboration processes.

Developing and implementing solutions

There were differences between the two cases concerning the process and the content of their implemented solutions during distance education. Although the role of internal training fostering teaches' ICT competence development played an important role in both cases, in Case 2 these trainings were organized informally or spontaneously, over a longer period, while in Case 1 these were organized at the beginning of the emergency situation.

Both institutions developed solutions to monitor and manage students at risk: while in Case 1 a common register and regular consultations with teachers were introduced, in Case 2 the already functioning coaching system was responsible for this task. Moreover, in Case 2, the outreach to students' families had a noticeably positive effect on the relationship between parents and the school.

Knowledge sharing and learning were based on the positive climate and good collegial relations (therefore organizational culture) within the organization in both cases. These social resources offset the initial difficulties.

After the Unexpected Event – Power and Responsibility

In the post-emergency adaptation phase, intensive reflection processes took place in both institutions, partly through group discussions, and partly through the evaluation of in-process monitoring reports. With regard to the organizational-level changes occurring in the adaptation process, the need for regulations and regular monitoring, as well as the introduction of mandatory ICT-related trainings emerged. Moreover, the institutions identified actions for further improvements that aligned with development strategies from before the unexpected event. In addition to the changes in behaviour, there was also a change of views, in which the acceptance of the need for joint learning played a significant role

Discussion

In this final section, we discuss the results along the research questions, based on the cross-case analysis.

What organizational-level activities did schools performed before, during and after the emergency situation?

Concerning both schools' operation before the emergency situation, we have identified some elements of change and development on the organizational level, therefore the two cases are similar regarding their efforts to adapt to the environmental changes. It can also be concluded, that in the two cases the construction of the systems supporting internal knowledge-sharing processes became a priority (including a knowledge-sharing platform, a mentoring system, the facilitation of individual and team learning processes) (Azorín 2020; Reimers and Schleicher 2020; OECD 2020b). Sharing and spreading knowledge appeared in both cases (Nguyen and Ng 2020), but improvement occurred only after the emergency situation and these improvements relied on previous innovations. These internal, organizational-level processes are the conditions for efficient resilience processes. The difference between the two

cases can be seen mostly in the timely aspects of the change process, and in this, preliminary routines seem to play a significant role (this will be discussed in more detail under the second research question).

After the initial phase of distance education, (1) the attempt to formalize and institutionalize the processes emerged in the reflections in both cases. During this planned formalization process – while the schools were seeking to adapt their traditional organizational frameworks (e.g. timetables, policies) to the conditions of digital educations – they also tried to preserve their organizational traditions. Although there was a chance to use innovative solutions to adapt to the new conditions, their adaptation can be characterized by one-loop learning. (2) The lack of social relations during distance education was constantly reflected on, and it emerged as an element that strongly determines the entire education process, as well as the well-being of its actors. In Case 2 specific solutions were formulated to deal with this, however, such solutions could not be identified in Case 1.

How did the schools' prior knowledge base influence the organizational responses to the emergency situation?

Although previous research shows that preliminary ICT knowledge is a precondition for successful adaptation to distance (digital) education (Gao and Zhang 2020; König, Jäger-Biela, and Glutsch 2020; van der Spoel et al. 2020), in the two cases it had influence only on the speed of transition, on the level of individuals.

The differences between the two cases indicate that routine gained in organizational learning processes, especially in sharing and spreading knowledge (Azorín 2020; Reimers and Schleicher 2020), plays an important role in successful adaptation. The operation of internal knowledge-sharing platforms, the regular team learning activities within smaller groups significantly contributed to the speed of adaptation and the strengthening of organizational resilience (Duchek 2020). However, a change-inducing, learning-centred culture within an

organization can provide an appropriate basis for an institution to deal with the lack of knowledge arising from routine relatively quickly. Therefore, it can be assumed that in other institutions with a change-inducing, learning-centred culture, where a similar shortcoming in the knowledge-sharing routine can be identified, the institutions would be able to react similarly and create internal knowledge-sharing processes (Rikkerink et al. 2016). A question may emerge, though: what organizational-level learning processes institutions with different organizational culture would have (Admiraal et al. 2019; Harris, Caldwell and Longmuir 2013).

The preliminary knowledge base influences not only the operational process during the emergency situation, but also the subsequent reflection phase – it designates possible areas of reflection (Duchek 2020). The line of actors' thoughts in both cases about possible further solutions was guided by previous development aims. The constant time constraint during the emergency operation hinders the proliferation of multiple solutions, answers to the emerging challenges.

However, our findings have revealed that those complex (ongoing) developments of the schools that did not directly relate to the emergency operation were neglected. Thus, one may conclude that the emergency operation has a repercussion not only on the preliminary knowledge base of the organization, but it influences the areas, focuses of institution-level developments as well. While it strengthens the role of certain elements, mainly those directly related to distance education, it weakens the importance of complex developments that support the complex reinterpretation of existing operations (especially those that are not related to distance education).

Which areas of organizational functioning were affected during and by distance education?

The analysis following the first phase of distance education revealed that in institutions where the organizational culture is fundamentally characterized by trust and friendliness among the teaching staff, distance education had a strengthening influence on the learning process (Admiraal et al. 2019; Harris, Caldwell and Longmuir 2013; Kopp 2016). Undoubtedly, the finding that the school leadership and the teachers became more aware of the various learning processes could be interpreted as a positive change of attitude. Recognizing the importance of learning from each other, as well as the usefulness of designing and operating platforms for knowledge storage were particularly important changes in both organizations. We assume that these will be integrated into the organizations' operation in the long run, and thus transforming the internal learning processes within the organizations.

Comparing the two cases revealed that teacher learning was double-looped, i.e. the operation mode of the organizations was transformed. However, at the same time, those development activities that had been launched before the emergency situation but were not related directly to distance education got slowed down or completely ceased.

Conclusions

Preliminary research has shown that in-service teacher learning has become more valuable during distance education, as confirmed by the two cases examined in our research. Our data has revealed that in such emergency situation, internal knowledge-sharing processes and supporting mechanisms became priorities for the observed institutions and that these processes can also be considered as successful resistance at the organizational level. While previous studies have highlighted that the prior ICT competences play a significant role in coping with the unexpected situation, our study shows that existing knowledge-sharing processes before the unexpected situation also played a similarly dominant role. In terms of

organizational resilience, the knowledge-sharing routine has transitioned into the organizations' preliminary knowledge base.

Collective forms were common in teachers' learning during and after the emergency situation: sharing and spreading have strengthened both during and after but learning that aims to improve have strengthened only after the emergency situation. Preventive improvement processes have been reinterpreted or abandoned during distance education. Despite the stance that after the initial phase of distance education the tendency or wish to formalize and institutionalize these newly introduced processes emerged, the observed schools also tried to preserve their organizational traditions.

Although there was a lack of education policy support and governance, institutions with a strong supportive organizational culture developed their internal support and knowledge-sharing system. However, the time taken to develop this depended a lot on how much routine they had had previously in internal knowledge sharing. This result points out that prior knowledge-sharing processes do play a key role in the emergency resilience of schools. This is a relevant message not only to school leadership, but policy makers as well – establishing, developing and maintaining strategies, mechanisms and interventions that support the improvement of collaboration and knowledge-sharing among teachers on the system-level shall contribute to better management of future emergency situation. It is therefore worthwhile not only to strengthen and raise awareness of knowledge-sharing among teachers to stimulate innovation and change in general but also with regards to preparedness for future emergency situations.

Limitations

Although the results are not representative of the entire system (approximately 3,5% of the total student population in Hungary attends Reformed schools), schools' response rate to each

questionnaire was nearly 60% in proportion to the entire teacher population of Reformed schools in the country, therefore the results are of a relevance to the actors of the subsystem. The next limitation of our study is the chosen design – we followed the case study research design, which implies that the results might not be suitable for generalization. One must take this into consideration while reading this article. However, since we are not aware of other studies focusing on the capability-based conceptualization of organizational resilience from an educational perspective, we believe that this case study can serve as a steady input for further research.

Funding Details

This work was supported by the Hungarian Government Found under Grant EGYH-KCP-16-P-0127.

Disclosure Statement

No potential competing interest was reported by the authors.

References

Admiraal, W., W. Schenke, L. De Jong, Y. Emmelot, and H. Sligte. 2019. "Schools as Professional Learning Communities: What can Schools Do to Support Professional Development of their Teachers?" *Professional Development in Education* 1 (15): 684–698. doi:10.1080/19415257.2019.1665573.

Albiser, E., A. Echazarra, P. Fraser, G. Fülöp, M. Schwabe, and K. Tremblay. 2020. *School Education during Covid-19: Were Teachers and Students Ready? Hungary Country Note.* Paris: OECD. https://www.oecd.org/education/Hungary-coronavirus-education-country-note.pdf.

Argyris, C., and D. Schön. 1974. *Theory in Practice: Increasing Professional Effectiveness*. San Francisco, CA: Jossey-Bass.

Azorín, C. 2020. "Beyond COVID-19 Supernova: Is another Education Coming?" *Journal of Professional Capital and Community* 5 (3/4): 381–390. doi:10.1108/JPCC-05-2020-0019.

Benner, A.D., and R.S. Mistry. 2020. "Child Development during the COVID-19 Pandemic through a Life Course Theory Lens." *Child Development Perspectives* 14 (4): 236–243. doi:10.1111/cdep.12387.

Duchek, S. 2020. "Organizational Resilience: A Capability-Based Conceptualization." *Business Research* 2020 (13): 215-246. doi:10.1007/s40685-019-0085-7.

European Commission. 2020a. *Digital Economy and Society Index (DESI) 2020: Hungary*. European Commission. https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=66917.

European Commission. 2020b. *Education and Training Monitor 2020: Country Analysis*. Luxembourg: Luxembourg Publications Office of the European Union. https://data.europa.eu/doi/10.2766/735709.

Gao, L.X., and L.J. Zhang. 2020. “Teacher Learning in Difficult Times: Examining Foreign Language Teachers’ Cognitions about Online Teaching to Tide Over COVID-19.” *Frontiers in Psychology* 11 (2020): 1–14. doi:10.3389/fpsyg.2020.549653.

Halász, G. 2018. “Innovációs folyamatok a magyar oktatási rendszerben” [Innovation Processes in the Hungarian Education System]. *Neveléstudomány* 21 (1): 18–41. doi:10.21549/NTNY.21.2018.1.2.

Hallinger, P., and R.H. Heck. 2010. “Collaborative Leadership and School Improvement: Understanding the Impact on School Capacity and Student Learning.” *School Leadership & Management*, 30 (2): 95–110. doi:10.1080/13632431003663214.

Hargreaves, A., and M. Fullan. 2020. “Professional Capital after the Pandemic: Revisiting and Revising Classic Understandings of Teachers’ Work.” *Journal of Professional Capital and Community* 5 (3/4): 327–336. doi:10.1108/JPCC-06-2020-0039.

Hargreaves, A., and I. Goodson. 2006. “Educational Change Over Time? The Sustainability and Nonsustainability of Three Decades of Secondary School Change and Continuity.” *Educational Administration Quarterly* 42 (1): 3–41. doi:10.1177/0013161X05277975.

Harris, J., B. Caldwell, and F. Longmuir. 2013. *Literature Review: A Culture of Trust Enhances Performance.* Melbourne: Australian Institute for Teaching and School Leadership. https://www.aitsl.edu.au/tools-resources/resource/insights-literature-review-a-culture-of-trust-enhances-performance.

Holmes, K., J. Clement, and J. Albright. 2013. “The Complex Task of Leading Educational Change in Schools.” *School Leadership & Management* 33 (3): 270–283. doi:10.1080/13632434.2013.800477.

Hüse, L., M. Fónai, E. Balogh, and A. Toldi. 2017. “How does Education Respond to Social and Economic Change in Hungary?” In *The Shifting Global World of Youth and Education*, edited by M. A. Brown, 163–174. Florence, KY: Routledge.

König, J., D.J. Jäger-Biela, and N. Glutsch. 2020. “Adapting to Online Teaching During COVID-19 School Closure: Teacher Education and Teacher Competence Effects among Early Career Teachers in Germany.” *European Journal of Teacher Education* 43 (4): 608–622. doi:10.1080/02619768.2020.1809650.

Kopp, E. 2016. “A pedagógusok által érzékelt iskolai kultúra-elemek és kapcsolatuk a szervezeti szocializációval” [Elements of School Culture Perceived by Teachers and their Relationship to Organizational Socialization]. In *Tanuló pedagógusok és az iskola szakmai tőkéje*, edited by Á. Vámos, 57–78. Budapest: ELTE Eötvös Kiadó. http://www.eltereader.hu/media/2017/05/Vamos_Agnes_Tanulo_pedagogusok_READER.pdf.

Kopp, E. 2020. “A pedagógusok folyamatos szakmai fejlődése és tanulása azoktatási rendszer szintjén” [Teachers’ Continuous Professional Development and Learning at the Level of the Education System]. *Neveléstudomány* 2020 (1): 62–82. doi:10.21549/NTNY.28.2020.1.4.

Kyndt, E., D. Gijbels, I. Grosemans, and V. Donche. 2016. “Teachers’ Everyday Professional Development: Mapping Informal Learning Activities, Antecedents, and Learning Outcomes.” *Review of Educational Research* 86 (4): 1111–1150. doi:10.3102/0034654315627864.

Lengnick-Hall, C.A., T.E. Beck, and M.L . Lengnick-Hall. 2011. “Developing a Capacity for Organizational Resilience through Strategic Human Resource Management.” *Human Resource Management Review* 21 (3): 243–255. doi:10.1016/j.hrmr.2010.07.001.

Linnenluecke, M.K. 2017. “Resilience in Business and Management Research: A Review of Influential Publications and a Research Agenda: Resilience in Business and Management Research.” *International Journal of Management Reviews* 19 (1): 4–30. doi:10.1111/ijmr.12076.

Mayer, D., and M. Lloyd. 2011. *Professional Learning: An Introduction to the Research Literature*. Melbourne: Australian Institute for Teaching and School Leadership. http://www.aitsl.edu.au/docs/default-source/aitsl-research/insights/re00009_professional_learning_an_introduction_to_the_research_literature_mayer_-amp-_lloyd_oct_2011.pdf.

Meirink, J.A., P.C. Meijer, N. Verloop, and T.C.M. Bergen. 2009. "How do Teachers Learn in the Workplace? An Examination of Teacher Learning Activities." *European Journal of Teacher Education* 32 (3): 209–224. doi:10.1080/02619760802624096.

Nguyen, D., and D. Ng. 2020. "Teacher Collaboration for Change: Sharing, Improving, and Spreading". *Professional Development in Education* 46 (4): 638–651. doi:10.1080/19415257.2020.1787206.

OECD. 2019. *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*. Paris: OECD. https://www.oecd-ilibrary.org/education/talis-2018-results-volume-i_1d0bc92a-en.

OECD. 2020a. Education and Covid-19: *Focusing on the Long-Term Impact of School Closures*. Paris: OECD. https://www.oecd.org/coronavirus/policy-responses/education-and-covid-19-focusing-on-the-long-term-impact-of-school-closures-2cea926e/.

OECD. 2020b. Education Responses to Covid-19 Embracing Digital Learning and Online Collaboration. *Covid-19: Global Action, 1–3*. http://www.oecd.org/coronavirus/policy-responses/education-responses-to-covid-19-embracing-digital-learning-and-online-collaboration-d75eb0e8/.

OECD. 2020c. *School Education during Covid19: Were Teachers and Students Ready? Hungary, Country Note*. Paris: OECD. http://www.oecd.org/education/Hungary-coronavirus-education-country-note.pdf.

OECD. 2021. *The State of School Education: One Year into the COVID Pandemic*. https://doi.org/10.1787/201dde84-en.

Parczewska, T. 2020. “Difficult situations and ways of coping with them in the experiences of parents homeschooling their children during the COVID-19 pandemic in Poland.” *Education* 3 (13): 1–12. doi:10.1080/03004279.2020.1812689.

Reimers, F., and A. Schleicher. 2020. *Schooling Disrupted, Schooling Rethought: How the Covid-19 Pandemic is Changing Education*. Paris: OECD, 62–62. https://globaled.gse.harvard.edu/files/geii/files/education_continuity_v3.pdf.

Rikkerink, M., H. Verbeeten, R. Simons, and H. Ritzen. 2016. “A New Model of Educational Innovation: Exploring the Nexus of Organizational Learning, Distributed Leadership, and Digital Technologies.” *Journal of Educational Change* 17 (2): 223–249. doi:10.1007/s10833-015-9253-5.

Sági, M. 2015. “Pedagógus karrierminták” [Career Patterns of Teachers]. *Educatio* 24 (1): 83–97. http://epa.oszk.hu/01500/01551/00071/pdf/EPA01551_ecucatio_2015_1_083-097.pdf.

Scheerens, J. 2010. *Teacher’s Professional Development*. Office for Official Publications of the European Union.

Székely, I. 2015. “Reziliencia: A rendszerelmélettől a társadalomtudományokig” [Resilience: From System Theory to Social Sciences]. *Replika 94* (2015/5): 7–23. http://www.replika.hu/system/files/archivum/94_01_szekely.pdf.

Vámos, Á., 2016. *Tanuló pedagógusok és az iskola szakmai tőkéje* [Learning Teachers and Schools’ Professional Capital]. Budapest: ELTE Eötvös Kiadó. http://www.eltereader.hu/media/2017/05/Vamos_Agnes_Tanulo_pedagogusok_READER.pdf.

van der Spoel, I., O. Noroozi, E. Schuurink, and S. Ginkel. 2020. “Teachers’ Online Teaching Expectations and Experiences During the Covid19-Pandemic in the Netherlands.” *European Journal of Teacher Education* 43 (4): 623–638. doi:10.1080/02619768.2020.1821185.

Varga, J. 2019. *A közoktatás indikátorrendszere 2019* [Indicator System of Public Education 2019]. Budapest: Magyar Tudományos Akadémia Közgazdaság- és Regionális Tudományi Kutatóközpont Közgazdaság-tudományi Intézet. https://www.mtakti.hu/wp-content/uploads/2020/01/A_kozoktatas_indikatorrendszere_2019.pdf.

Yin, R.K. 2014. *Case Study Research: Design and Methods, Fifth Editio*n. Los Angeles: Sage.

1. Table. Numbers of respondents regarding the questionnaire data collection in 2019 (LICS 1.) and 2020 (LICS 2.) concerning the whole sample and the two selected cases.

	Whole sample		**Case 1.**		**Case 2.**	
	LICS 1. (2019)	LICS 2. (2020)	LICS 1. (2019)	LICS 2. (2020)	LICS 1. (2019)	LICS 2. (2020)
Number of respondents	405	586	7	3	8	20

2. Table. Summary of data sources

	Case 1.	**Case 2**
Documents	• Preliminary situation analysis (2019) (C1D1) • Institution development, Final report on Phase 1 (2020) (C1D2)	• Study on institutional innovation (2018) (C2D1)
Public statistical data*	• Basic data (C1PS1) • School Competence Assessment Report (2018-2019) (C1PS2)	• Basic data (C2PS1) • School Competence Assessment Report (2018-2019) (C2PS2)
Interview	• School leader (n=1) (C1I1) • Deputy school leader (n=2) (C1I2) (C1I3) • Teachers (n=2) (C1I4) (C1I5) • Representative of the maintainer (n=1) (C1I6)	• School leader (n=1) (C2I1) • Deputy school leader (n=2) (C2I2) (C2I3) • Teachers (n=3) (C2I4) (C2I5) (C2I6)
Results of questionnaire data collection	• LICS 1. (2019) (n=35) (C1Q1) • LICS 2. (COVID-19) (2020) (n=43) (C1Q2) • Student questionnaire (C1Q3) • Parent questionnaire (C1Q4)	• LICS 1. (2019) (C2Q1) • LICS 2. (COVID-19) (2020) (n=23) (C1Q2)

* Source: www.oktatas.hu/kozneveles

3. Table. Summary of the cases (Case 1 and Case 2)

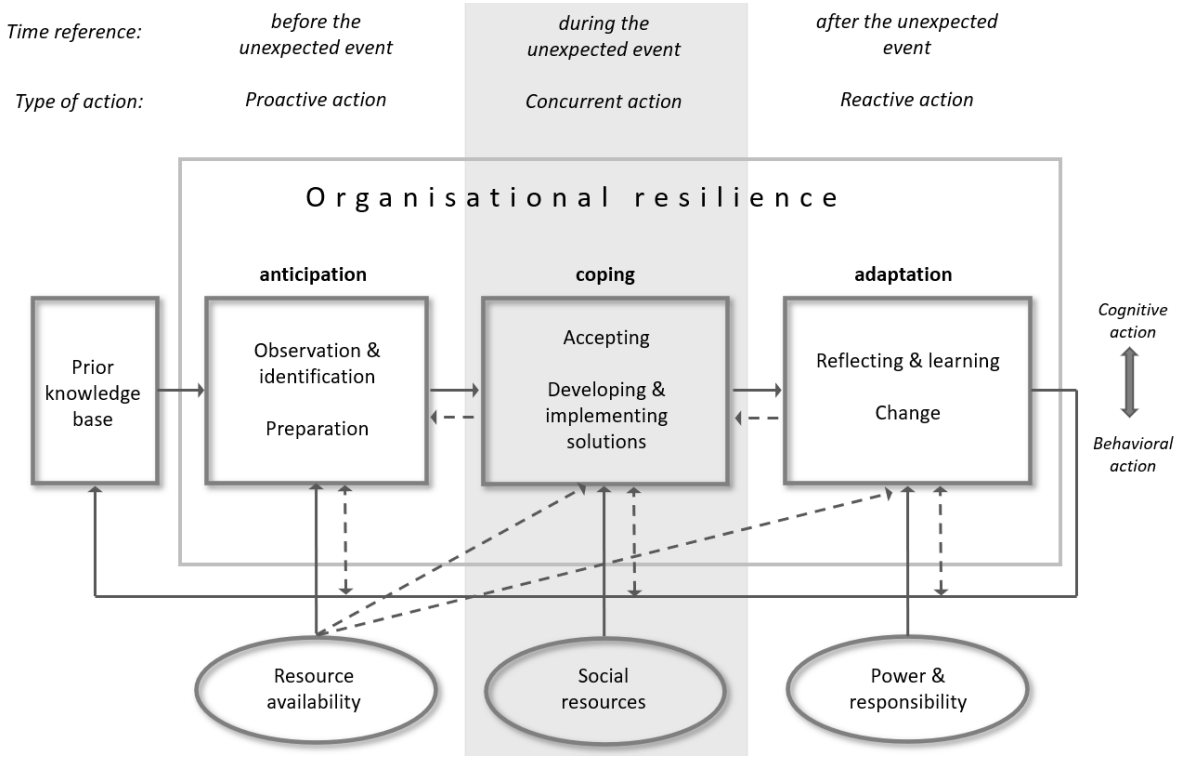
	Before unexpected event		During unexpected event		After unexpected event			
	Proactive action		Concurrent action		Reactive action			
Prior knowledge base	**Observation and identification**	**Preparation**	**Accepting**	**Developing and implementing solutions**	**Reflection and learning**	**Change**	**Cognitive action**	**Behavioural action**

Case 1	Previous project (2019) - focusing on teachers' ICT skills, collaboration	ICT knowledge base missing Lack of tools by teachers, students	ICT training for the faculty Acquiring ICT tools Forming groups (students-teachers)	Not everyone accepted They assumed it won't last long Adjustments to lifestyle	Mentoring system Intensive use of knowledge-sharing platforms Trainings on Google Meet and Zoom Monitoring system for students	Not every teacher participated Need for increasing regulations and support There is no school without the presence Need for competence	Digital school rules Teachers' workload planned for digital teaching Teacher training (ICT)	Not every teacher participated Need for increasing regulations and support Nuances of digital education Importance of	Digital school rules Teachers' workload planned for digital teaching Teacher training (ICT) Programmes for

						-based education		competence development The importance of gamification	competence development
		Resource availability: ICT tools for teachers and students		Social resources: school culture, formal and informal communities		Power and responsibility: back to leader, regulation, role of ICT teachers in knowledge sharing and mentors increased			

Case 2	School development: students social and learning skills, coaching	ICT knowledge base missing Lack of tools by teachers, students	ICT training for the faculty Acquiring ICT tools	Reinforced importance of soft skills development	Internal trainings for teachers Extra effort to maintain the relationship with families Continuous reflection Continuous monitoring	Digital education has negative effects on teachers and students Digital education shall have more specific regulations and frames	Development of different timetables for two scenarios for the next school year More specific institutional regulations on online education (e.g. ratio of synchronous	The level of involvement of teachers varied They pay attention to revealing psychological effects Collecting strategic elements for future	Development of different timetables for two scenarios for the next school year More specific institutional regulations on online education (e.g. ratio of synchronous

					of students' well-being	There is no education without being present	and asynchronous lessons) Coaching for teachers and students More emphasised soft skill development	emergency scenarios Strengthening knowledge sharing among staff	and asynchronous lessons) Coaching for teachers and students
		Resource availability: ICT tools for teachers and students		Social resources: school culture, formal and informal communities		Power and responsibility: back to leader, regulation			



1. Figure. A capability-based conceptualization of organizational resilience (source: Duchek 2020, 224)

List of Figures