

Educational Changes and Crisis Management

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Abstract

The paper provides an insight into the results of large-scale research aimed at investigating educational change through empirical analysis of schools in Hungary. In the final phase of the research, the coronavirus pandemic provided an opportunity to analyze emergency changes. An important question was what organizational conditions, leadership strategies, development knowledge and previous pedagogical practices can effectively support expeditive steps in the changing environment. The presumed links between the pre-pandemic school characteristics and crisis-responses are illustrated by innovation cases. The paper also discusses how the exploratory activities of the research team have been shaped by social distancing.

Keywords: school management | COVID | educational change | sustainability | research design

Spremembe v izobraževanju in krizno vodenje

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Povzetek

Prispevek predstavlja rezultate obsežne raziskave, ki z empirično analizo šol na Madžarskem preučuje spremembe v izobraževanju. V zadnji fazi raziskave je pandemija koronavirusa ponudila priložnost za analizo sprememb v izrednih razmerah. Pomembno vprašanje je bilo, kateri organizacijski pogoji, strategije vodenja, razvojno znanje in predhodne pedagoške prakse lahko učinkovito podprejo hitre ukrepe v spreminjajočem se okolju. Domnevne povezave med značilnostmi šole pred pandemijo in kriznimi odzivi so ponazorjene s primeri inovacij. Obenem prispevek obravnava tudi, kako je omejevanje socialnih stikov vplivalo na raziskovalne dejavnosti raziskovalne skupine.

Ključne besede: vodenje šole | COVID | spremembe v izobraževanju | trajnostni razvoj | raziskovalni načrt

Introduction

In recent years, the COVID-19 pandemic and related emergency restrictions have required serious adaptation in most sectors. During this period, countless new innovative solutions were created, which can help organizations increase their competitiveness even in the post-covid period. Schools had to close, so students learned from home. With the introduction of remote home learning in the education sector, solutions for imposing the curriculum were created in many institutions, the interpretation, analysis, and examination of which logically attracted the attention of those interested in workplace learning.

In this study, we rely on the results of two larger-scale studies,¹ which examine the theoretical connections of educational changes for a decade, through a qualitative and quantitative analysis of implementation and innovation processes in Hungary. The coronavirus pandemic in its final phase opened up the possibility of analyzing emergency changes. An important question arose, for example, as to what organizational conditions and previous pedagogical practices could best support individual institutions in responding to the changed environment with the rapid and efficient development of new solutions.

This study aims to provide insight into how educational research, which had been conducted according to a proven protocol for many years, was transformed because of the emergency transition: how research questions and theoretical frameworks were supplemented, and what new data collection and analysis solutions appeared. In addition, relying on empirical data, it illustrates the presumed relationships between the post-covid operational and leadership characteristics of educational institutions (e.g. management strategies, development practices) and their reactions to the emergency. These research results were an important background source for a presentation of the same title given at the ENIRDELM 2022 conference.

National research on educational changes

The research behind this study was aimed at exploring the theoretical connections of educational changes, to which two essential perspectives were

¹ The research was carried out at Eötvös Loránd University (research ID.: OTKA 101579, 115857), the secondary analysis of its results was financed by the Learning Institute of Mathias Corvinus Collegium.

connected: the investigation of the implementation of major changes and the exploration of the implementation mechanisms of innovations at the local level. In the following, we describe the development of these research focuses, and the related tools and methods.

Researchers of educational changes have known for a long time that there is inevitably a severe gap between the curriculum proposed according to central ideas and the curriculum implemented in individual schools. The planning and development frameworks, regulations and goals appear in practice as adaptable possibilities, on the basis of which the teachers and students together create genuine, real and infinitely different learning processes, i.e., the implemented curriculum (Ben-Peretz, 1975; Deng, 2011). Since the concept of “possible curriculum” took root in the 1970s, more and more curriculum theory treats the issue of changes in the learning environment as a priority problem area. In the field of educational changes, school development and educational innovation research, there have been many works that focus on the relationship between the planned and implemented curriculum (Clamadinin-Connelly, 1992; Mischke, 2010; Lieberman, 1998; Hopkins – Reynolds, 2001; OECD, 2013). The increasing importance of the problem area is also shown by the fact that numerous professional forums, conferences, workshops, or professional and development policy documents focus on the relationship between theory, policy, and practice.

Embedded in this context, our research into the implementation of educational development interventions that began in 2010 (Fazekas, 2021a) was carried out, which sought the answer to the question of which conditions can prove to be the most decisive from the point of view of the implementation of development programs, when non-linear systems of influence come into focus. By reviewing previous empirical results, they undertook to describe the complex world of the phenomena shaping the implementation of interventions along the lines of a few easy-to-grasp key factors. Based on these and related to them, they revealed new correlations through the qualitative and quantitative examination of the central curriculum development programs implemented in Hungary with EU funding between 2004 and 2012. An important feature of the research was the simultaneous focus on the individual (teacher), organisational (school) and systemic (public education) levels, combining the perspectives of the object (development programs) and subject (innovators, implementers) (OECD/Eurostat, 2018; Halász- Fazekas, 2021), the search for non-linear relationships, and the analysis of regression periods and harmful effects generated by the interven-

tions. It became clear: educational practices in a critical mass of schools are actively shaped by innovations that arise at the local level, often hidden, the commitment to which can significantly influence how external influences prevail. Mapping of the system of educational changes continued between 2016 and 2020 by exploring the birth, spread and systemic impact of interventions at the local level. The research design was constructed in the same way as the previous phase; after the theoretical foundation phase, the specifics of the innovative activities of the institutions and teachers who responded voluntarily were obtained through questionnaire data collection and case studies. A serious difference is that the questionnaire survey took place at two data collection points, enabling longitudinal studies. According to the results, learning-organisational characteristics and the innovative behaviour of individuals can significantly determine whether innovation can take root, spread and help the pedagogical processes in the long term. However, we cannot speak of linear relationships in these cases either (Fazekas, 2021b). An important discovery of the research is that a significant proportion of the innovations observed were inspired by the educational development programs and tools of private sector companies, primarily in the IT sector, which gained a prominent role during the pandemic period.

The epidemic started in the last year of the latter research and had a significant impact on its finalisation, in terms of content and management. It expanded the theoretical framework of the research with important new focuses; in addition to the implementation of centrally developed interventions and the birth and spread of local innovations, the framework for interpreting educational changes was also extended to the world of crisis innovations. In addition, special attention was paid to digital educational solutions in the former (implementation and innovation) areas. The empirical implementation of the research, tools and focuses also expanded. The suddenly accelerated innovation practice in schools offered an area of analysis that a research group examining educational changes could not outdo. In addition, the tools we used, including our case study protocol, which was used by the research group for almost ten years, and which was based on personal visits, could not be followed due to the restrictions caused by COVID-19.

According to our original protocol supporting the qualitative part, our research pairs spent a week in each educational institution and, in personal presence, first examined the specifics of the implementation of further developments and then the nature of the birth and spread of innovations.

During the school closures caused by the coronavirus epidemic, the research group could not continue this activity, so it developed a new type of case study protocol, that was adapted to remote education. This data collection procedure was based on online interviews, observation sessions (workgroup discussions, classes), and media content and documents. Within the framework of the research, two types of qualitative research were developed using online survey analysis.

In the first case, we worked with institutions whose operations we knew well from before, which were the locations of case studies in the first and/or second research phases. We conducted online interviews and class observations in a remote form, collected and analysed the most important related documents, and further, we asked the heads of institutions to provide written answers to a well-structured set of questions. This data collection method allowed us to examine what kind of crisis management systems were developing in those organisations that we previously - during our investigation - positioned on the axis of learning organisation operation, and organisations with development, implementation, and innovation knowledge. The case study model used in the second emergency included a parallel examination of several institutions' practice previously unknown to us. Here, too, the protocol was based on a combination of interviews, observations and media and document analyses. Compared to the previous case study protocol, there was a difference in that here we did not ask the institutions connected to the research to fill in the questionnaire about experiences during closures due to the coronavirus, but to complete our questionnaire about the institution's operation and innovation practice. Although we still gathered a wealth of knowledge about the functioning of individual schools, this new procedure did not allow us to get to know a particular organisation sufficiently. Thus, here the focus shifted from the subject to the object (Halász-Fazekas, 2021). In other words, the focus was no longer on the innovative activity, knowledge, and practice of a school and its teachers, but on a specific educational or management problem and its creative responses. In this case, these were institutional responses to the management of remote education. Both types of case studies can be considered proven research practices born out of the crisis, which, thanks to their many advantages in terms of resources, are expected to be included in the design of new research in the longer term (now, regardless of the coronavirus epidemic).

The qualitative data collection stages had already been completed by the time of the school closures caused by the emergency. Nevertheless, the re-

search group was motivated to enrich its knowledge in the field of crisis innovations by using the method of statistical analysis. To this end, they analysed the quantitative indicators of the locations of the case studies, aiming at investigating the nature of crisis innovations, that is, they examined what institutional and innovation specificities were reported by the organisations whose crisis responses were analysed in more depth during the questionnaire survey. Given that a significant proportion of innovations related to crisis management were digital educational solutions, special attention was paid to the analysis of data describing the birth and spread of innovations with a digital profile collected in the post-covid period (Lukács, 2020). In addition, it was also possible to join the quantitative data collection of two companion studies. One of them, in the final phase of the research, i.e. after the first wave of the epidemic, examined the relationship between the functioning of learning organisations, innovative and developmental activities, the solutions used during the closures caused by the virus, and digital competencies in the institutions of the Southern Hungarian Region (Baráth et al., 2021), while the other conducted international data collection concerning the above topics, specifically regarding innovations related to STEAM (Kersánszki, 2020). These two data collections contained institutional identifiers corresponding to our research and repeated many questions. Thus, it became possible to create a consolidated database: (1) which contains the cases of national institutions responding to several (1-5) data collection points, giving the opportunity for longitudinal investigation, which (2) includes national and international data, allowing for international comparison, and which (3) includes implementation, innovation, learning organisation, STEAM and crisis innovation focused issues, thus enabling complex content approaches that go significantly beyond the practical limits of the specific study. The research coordination practice that emerged due to the crisis offers long-term opportunities that, like the renewed case study protocols, are expected to be organically integrated into future research designs.

Crisis management and digital innovations

As we alluded to above, in the additional phase of the research, we expanded our conceptual frameworks used for examining educational changes in such a way that we supplemented our originally applied innovation and implementation approach with the examination of innovations created as a response to the crisis. The regularities of the birth, implementation, spread,

and viability of the latter may fundamentally differ from those whose purpose is general modernisation or some kind of response to a problem existing in the system's normal operation. In addition, we deepened our knowledge in the field of digital innovations, separating the problem area from the issue of crisis innovation. Pedagogical processes offer many opportunities to use digital tools and procedures, so for example, exciting exercises can be created through the educational use of video, gamification, simulation applications, statistical analysis programs, or international social media. The purpose of the development and adaptation of related exercises can be both to strengthen the motivation to learn and develop specific competencies, and to manage an emergency, such as the development of remote education caused by the coronavirus (Balázs et al., 2010; Halász, 2021).

In addition to digital solutions for pedagogical purposes, we must also mention digital innovations at the organisational level. Organisational innovations can be identified as an independent category that affects the organisation's business practices, workplace organisation or external relations. Such are, for example, innovations affecting the teachers' division of labour, external-internal communication or the conditions of administrative work (e.g., network operation, platforms enabling horizontal knowledge sharing, data collection and analysis systems, data collection, hosting systems), the effective operation of which in most cases requires digital support (OECD, 2005; OECD/Eurostat, 2018).

There are many forms of the birth and spread of educational changes, including processes supported by digital tools. As mentioned earlier, in our theoretical model applied research we distinguished from the beginning those that are, in the classical sense, self-initiated local-level innovations and those that are changes arising because of some central influence (regulation, reform, development). The latter include centrally initiated innovations that (1) expect faithful compliance with regulations ("top-down"), those that (2) are centrally initiated, but plan to give a large scope to the shaping effect of the change at the local level ("bottom-up"), and those in which the process of policymaking and implementation cannot be separated from each other ("joint creation") (Altrichter, 2005; Datnow–Park, 2009). Within the framework of these category systems, it was challenging to interpret the system of crisis innovations, although it mostly coincides with the third – open and multi-level – approach. According to this interpretation, based on network operation, the planning and implementation processes are blurred; both the central and school actors are interpreted as the creators of the developments, and the operation of the networks plays a prominent

role during the entire development. However this interpretive framework is also typically applied where an intention to innovate can be assumed, and the main starting point is not a state of emergency created by some crisis. Characteristics of the latter changes are that significantly less time is available, supporting resources are less available, but at the same time, the sense of responsibility and cooperation of the local participants is solid, and there is a large number of people in a similar situation who are willing to (or are forced to) cooperate. The number of institutions, teachers, and the nature of contact with partners (maintainers, parents, public administration bodies) can be drastically transformed, new relationship systems can be formed, and the intensity and form of cooperation of the existing ones can undergo profound transformations.

During the coronavirus pandemic, most education systems were transformed in a drastically short time, which is expected to permanently impact the operation of educational systems and everyday pedagogical practice at the international level (Tingzhou, 2020; United Nations, 2020). In most educational systems, the support effect of the mid-level could not take effect in time, so the individual schools had to develop their creative procedures themselves, in applying which it became possible to organise school learning and teaching even in the epidemic situation. The development of new forms of education and the introduction of the digital work schedule suddenly required leaders and teachers to have professional (digital, curriculum planning, management) competencies, which would take several years to develop or strengthen in the familiar environment (Schleicher, 2021; OECD, 2020). Many groups of those dealing with educational changes have started a project that tried to collect these solutions, innovations and changes, and whereby, in addition to directly supporting the adaptation of schools, understanding the nature of crisis innovations has also become a significant issue (Ferdig et al., 2020, Clark, 2020, Horváth et al., 2020). To this end, special attention was paid to previous research results that could help understand the innovations generated by reality (van Twist et al., 2013; Taalbi, 2017, Halász, 2014).

The related research – including our related data collection – clearly pointed out that there were big differences between schools and their teachers in terms of how they were able to solve the remote home learning issue and how well they were able to develop their professional knowledge in the right direction (both affective, and from a cognitive point of view). There were schools where the crisis triggered a tsunami of innovation, where

gamification, knowledge sharing platforms, and the appeal of the digital world captivated the participants, there were schools which transformed their whole learning program online, while there were schools where the teaching materials were sent to their students in electronic or paper form via mail without fundamental changes. It is shown that this (latter) group of schools could not adapt to the new situation and could not change their traditional system. It is a long-known fact that we can think of organisations capable of effectively developing their pedagogical practice – whether it is about adapting external developments or developing local innovations – as those that operate as learning organisations with high absorption and dynamic capabilities. According to our model, created in our empirical data collection, this organisational nature can be described with the following characteristics: (1) school management that encourages knowledge-creating and knowledge-sharing activities and applies effective management, (2) an atmosphere of trust that supports learning and knowledge sharing among teachers, (3) teacher learning in school, (4) data wealth and data processing, (5) development activity, and (6) horizontal cooperation of leaders and teachers within the school and with other schools, (7) openness of the stakeholders who influence the operation of the school. Although we can think that each of these factors may have played a major role in the responses to the crisis, based on the results of the research focusing directly on crisis innovations, we can consider that some of them may be particularly important to focus on, while others should be put in a new perspective when examining crisis innovations. Thus, for example, cooperation for a common goal, breaking away from routines, more flexible organisational arrangements, systematic institution-level research and development activities, analysis of technological possibilities, external communication and resource mobilisation practices, and the timing of strategic steps are valued (van Twist et al., 2013; Taalbi, 2017, Clark, 2020).

Crisis innovations and their characteristics

With our previous theoretical framework, during our case studies focusing on crisis innovations, we examined both the “seriousness” of developments we encounter (object approach), as well as under what conditions and in which organisational environments they were formed (subject approach).

An important question was how well the investigated innovations could provide adequate answers to the problems that arose, how well we can think that they can remain viable in their environment in the long term, and how well they can spread and have an impact in other contexts. From the perspective of the subject approach, we were primarily interested in those learning organisation characteristics which proved to be the most important in creating significant crisis innovations.

We analysed the practices of a total of eight educational institutions. In the selection of the said institutions, in addition to accessibility, an important aspect was to collect data in the most diverse areas possible, according to crisis responses and organisational functioning, different types of institutions (primary schools, secondary schools and higher education institutions, as well as reform pedagogy and foundation institutions, were also included in our sample). It can be stated that each of the examined institutions operated as an innovative institution from some point of view even before the closures due to the coronavirus pandemic, so without exception we can identify a major innovation in all of them, which we can think gave a real answer to the problems that arose, or that within the framework of the organisation it can be integrated into practice for the long term. In some cases, there is also the possibility of spreading. In the table below, we highlight one defining innovation from each institution.

One of the essential messages of the case analyses was that each of the characteristics of the learning organisation we identified could be important in terms of whether serious crisis responses like the ones above were able to arise in an institution. In addition, among the organisational characteristics, the strategic quality of leadership proved to be the most decisive in our cases. That is, how quickly the leaders managing the operation of the institution reacted to the crisis, how they monitored the environmental changes, analysed the expected government actions, and whether they reacted proactively to all this knowledge and information. In those organisations where the management reacted proactively with a strategic approach, students were typically ordered to have an extraordinary break even before the government announcement. Together with the teaching staff, the leadership started the transition to remote education, the technical preparation of the digital platforms, planning of the new work schedule and the implementation of the necessary intensive training and preparations (cases I, III, IV, VII).

Table 1: Identified innovations and their

Number	Area of innovation	Innovation	Description	Institution
I	Curriculum	Virtual school	A virtual school constructed by students during the closure, which is a digital copy of the "real" building, and within which each student and teacher could continue teaching with their own avatar in online synchronous form	Private school ISCED 2-3
II	Organisational operation	Digital Working Group	An organisational innovation, which led to the creation of a digital work group, and which also ensures a prominent role for digital content in the operation of the institution in the longer term.	Public school ISCED 1-2
III	Curriculum	Method of slowed observation	Video usage procedure in observation-based educational situations, which helps to better illustrate phenomena with the help of slowing down and focus.	Private school ISCED 1-2
IV	Organisational operation	Mentor system	A mentor system structure that was created to strengthen network knowledge sharing, such is the organisational level.	Public school Higher Education
V	Curriculum	Digital gamification	A wave of digital gamification spreading at the organizational level, which meant the transfer of diverse previous games existing in the organization into an online form.	Public school ISCED 1-2
VI	Organisational operation	Digital form of applying the Complex instruction Program (DigiCIP)	The Complex instruction Program is a pedagogical method developed by Stanford University and adapted to the Hungarian context by an innovative teaching staff (see OECD, 2008). Today, CIP is widely used in Hungarian schools. One of the organizing principles of the CIP method is that the teacher gives students a great deal of responsibility, which is strongly present in the digital form of CIP too.	Public school ISCED 1-2
VII	Organisational operation/ Curriculum	Parents' school	Preparing parents for the mathematical development of lower school students through homework.	Private school ISCED 1-2
VIII	Organisational operation/ Curriculum	Remote learning simulation	In-person remote learning simulation to support teachers' digital and professional competencies.	Church school ISCED 1-2

“A few days before the government decision, we decided to stop students going to school for some days. We sent the children home, and we were in the school from morning to night, looking for a way to continue. We knew the closures were coming and we had to be prepared.” (head of school - case I.)

From the point of view of the organisational characteristics, it was also particularly important whether there was more serious development experience and knowledge in an organisation. Those organisations that were not unfamiliar with more radical shaping of the organisation's operation (cases I, II, IV, V, VI, VII) were able to quickly activate the professional tools of change management, which represented a significant positional advantage over those institutions where management and teachers had to learn how to use these tools. We have seen that the definite presence of one of these two organisational characteristics (proactive leadership, development

knowledge) can be assumed to be a necessary and sufficient condition for the organisation to create adequate and viable crisis responses (innovations) in the longer term. Responses can be very different (panic reaction, a formal solution which helps the school to stay alive during the crisis period, strategic response, etc.). We focus on responses that are based on innovation; thus, the stakeholders consider the crisis not (only) as a threat but as a possibility as well. This approach relates to the proactive leadership style and the experience in development, which constitute characteristics of the learning organisation.

In accordance with our current knowledge of educational changes, spontaneous transformations, and direct development interventions, our case studies also highlighted the importance of internal and external relations and the intensity of knowledge-sharing. We have seen several examples where there can be considered a serious innovation aimed at building or strengthening the internal-external knowledge sharing system (cases II., IV. VI). However, it is important to emphasise, that among the institutions that created such innovations, there was also an institution (case IV) where most colleagues operated in an isolated manner when the crisis situation arose. Notwithstanding the fact that there were previous attempts to horizontally share the pedagogical procedures proven in the practice of individual colleagues, no truly functioning practice of internal knowledge sharing was developed. Here, the top-down mentoring system structure, the related platforms, and the clarified participation expectation from the management, which were launched following the leadership decision due to the crisis situation, provided the conditions that created a structured reflection on pedagogical practices and offered a viable space for horizontal knowledge sharing. In this case, two very prominent factors were behind the success of top-down innovation. Even before the crisis, the leadership of the organisation had serious theoretical and practical development knowledge, which is clearly shown by the fact that it had previously successfully (without much resistance) managed such top-down redistributive changes that required the application of complex change management. Furthermore, the crisis situation created an organisational atmosphere in which most participants could experience the planned intervention as an adequate response to their problems. This case made visible what was also supported by our previous research results: although internal and external knowledge sharing is an unquestionably important element of the context supporting the creation of serious innovations and possible crisis responses, if the innovation itself includes horizontal knowledge sharing elements, a remarkable and lasting

long term pedagogical innovation extending to the organisational level can also be imagined in institutions where professional collaborations did not work in the beginning.

In addition, our cases drew attention to another important organisational characteristic: the innovative professional knowledge of the teachers, including primary proficiency in the use of digital technologies, experience gained in innovative pedagogical procedures (e.g. gamification, project method), and innovation and risk management knowledge in general. Our cases showed that these three dimensions were particularly decisive in terms of whether the schools and their teachers could create viable and adequate innovations in their crisis responses for the longer term. Although a significant increase in the educational application of these procedures has been observed in Hungary over the past two decades (Fazekas, 2021, Anka et al., 2016), thanks to EU-funded interventions aimed at the development and dissemination of the new pedagogical solutions mentioned above, even together with the amount of classroom application, its level did not reach the international average before the start of the pandemic (OECD, 2014). The crisis innovations we identified clearly showed that the most significant pedagogical changes were typically based on advanced professional practice. Thus, for example, the structure of the virtual school (case I) was born in a school where the previous practice of teachers was characterised by a particularly high level of digitalisation, the online gamification of lessons (case V) was created in an organisation that had previously heavily utilised gamification, and the school that gave the students responsibility for their group learning process also had a strong tradition of using a special cooperative method well known and widespread in Hungary, namely the Complex Instruction Program (CIP) (school VI).

“I also did a CIP class. Tasks for developing text comprehension were created for a (...) short story in the LearningApps application. The tasks assigned to the positions were different. The task of the ‘mentor’ was to organise which platform the group would use, the ‘scribe’ wrote the usual summary of the joint work, the device manager prepared LearningApps, and the ‘time manager’ paid attention to the timing. They were enthusiastic and skilled.” (school VI teacher)

Our case studies show that the experience of change, the strategic nature of leadership (proactive/reactive), the innovative professional preparation of the teaching staff, including digital, innovation and learning organisation competencies, as well as the strength of external/internal relations, form the

force field within which it can be well appreciated that organisations are able to create quick, adequate and long term changes in crises. The following matrix presents this innovation force field, indicating the place of the innovations we have learned about and highlighted in the system.

Table 2: Identified innovations according to the characteristics of the institutions that created them

Organizational characteristics			School management			
			Radical change experience		No radical change experience	
			Proactive leadership	Reactive leadership	Proactive leadership	Reactive leadership
Teaching staff	Innovative professional knowledge	Strong external/internal relationships	Innovation I Virtual school	Innovation V Digital gamification	Innovation III Method of slowed observation	Innovation VIII Remote learning simulation
		Weak external/internal relationships	Innovation VI Digi CIP	Innovation II Digital Working Group		
	Traditional, mainstream professional knowledge	Strong external/internal relationships	Innovation VII Parents' school			
		Weak external/internal relationships		Innovation IV Mentor system		

Virtual school – case presentation

In the following, we present the remote operation of an ideal institution from the point of view of an innovation powerhouse, in which the organisation (1) has a radical change experience, (2) is characterised by proactive leadership, (3) is innovative and (4) has a teaching staff with strong internal networking capacities. This is an inclusive, student-centered school in Budapest with a fundamentally socio-constructivist approach to learning, a

democratic operation maintained by a foundation, and provides education at ISCED levels 5-12.

The school operates as a learning organisation with high absorption and dynamic capabilities, with a school leadership that encourages knowledge creativity and knowledge-sharing activities, applies effective management, and has an intense atmosphere of trust between teachers and students. The teachers share their knowledge with joy and openness. The institution's basic approach is that it is okay to make mistakes and that it is important to support each other with constructive criticism. Part of the basic operation of the school is that the teacher is an independent, self-determining individual who is responsible for their actions and work and is given freedom in terms of the chosen methods and tools and in the selection of further training. Much emphasis is placed on the order of the procedures, despite the fact that, or precisely because, the institutional structure is characterised by a flat structure. Problem-solving is characterised by a bureaucratic approach, which helps in bringing problems to the surface and thinking about them together.

With the announcement of remote education, teachers were faced with a new challenge, which was extremely motivating for many, as they had to look for solutions different from the usual ones, and learn new things. In this stage of the process, there was extremely active cross-institutional knowledge sharing, with real learning processes. Several people reported – especially when thinking back to the spring of 2020 – the excitement of experimenting and learning new things:

“Spring was characterised by brainstorming and euphoria...we, the children, were very excited” (Teacher)

The operation of the school during remote education can be described as a dynamically changing, adaptive, resilient organisational operation (Figure 1).

The first step of the crisis response at the institutional level was the leadership's decision, that the institution should be closed prior to the government's decision. This decision was preceded by a longer discussion and was accompanied by communication to all parties concerned. The closing marked a new beginning, which is clearly shown by the fact that the period that followed was also given a project name: it was announced as the Home Study Program.

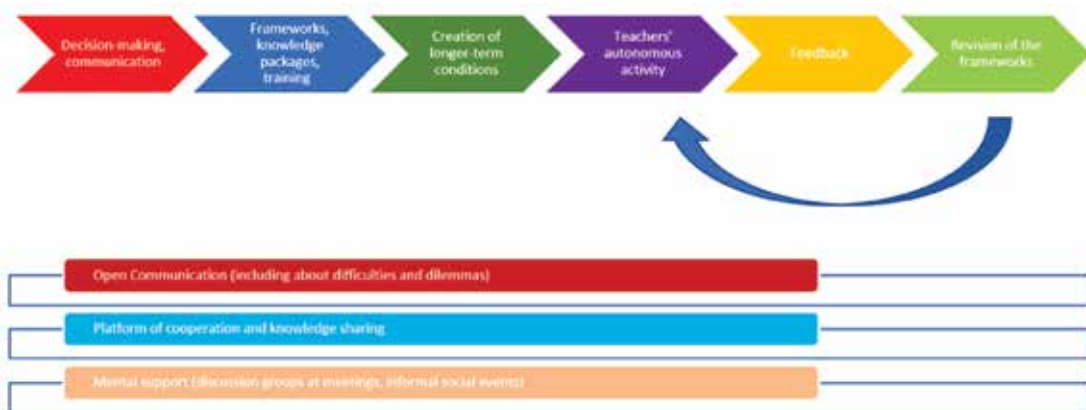


Figure 1: The functioning of the high school during remote education – example of resilient organisational functioning –

During the first weekend, a smaller group of teachers experienced in digital solutions systematised their knowledge, which they shared with the whole teaching staff as part of internal training. The knowledge was thus provided from an internal source, exploiting the organisation's resources, and making use of the knowledge and abilities of the organisation's members. The related training was implemented in a hybrid way on the first day of remote education, for which the management ordered a working day without teaching. On the preparation day, the teachers were given a "starter package" and defined the leading frameworks which they envisioned for the period ahead of them. According to the teachers interviewed, there was a real sharing of knowledge, they managed to calm down and see more clearly, which helped them to settle down. After that, internal knowledge sharing took place within an organised framework at meetings, in online community groups, in the form of joint professional discussions, sharing of best practices, and discussing cases.

The leadership of the institution also considered it important to create the infrastructure conditions to make it possible to use the institution's tools – both on the part of the teachers and the students. For this, they also acquired new tools, as well as specific platforms (e.g. Zoom, Discord) and additional task creation programs (which the teachers required for work) and subscribed for unlimited access. After creating these frameworks, the teachers worked independently and prepared their lessons (similarly to before remote education), so space was given for the autonomy of the teachers.

Students were also particularly active innovators in the crisis. The students provided a helping hand to their teachers in many areas: they helped their teachers with personal advice and educational materials, and they also created the online version of the institution on the Discord interface (in the list above, the operation of this interface appears as the most forward-looking innovation). This support gave extraordinary “strength” to the teachers. It is worth noting here that the institution has a long tradition of mutual learning, even in traditional circumstances, and the involvement of students in educational processes, a practice which provided the main basis for the students’ involvement in the crisis resolution.

Mental support for teachers helped the adaptation process. At the working group meeting, special attention and time were devoted to one another’s well-being; several people mentioned during the interviews the sustaining and empowering function of the initial “how are you?” circle. In addition, informal leisure meetings were also organised to support the connection and cooperation of the teachers, for mental strengthening and stress relief (e.g. online beer drinking, joint celebrations and mindfulness meditation training). Several interviewees emphasised – as we also experienced – that the leadership communicates openly about their dilemmas, difficulties, and possible mistakes. This creates a safe environment for teachers to experiment and make mistakes.

The conscious management of the process made it possible to create a safe, relatively predictable environment even in this uncertain situation. In order to summarise the experiences of the first quarter, the school collected questionnaire data from the various stakeholders (parents, students and teachers), and the educational framework was modified based on the results. Thus, for example, the number of platforms used was reduced and unified, class attendance was made mandatory, and teachers were provided with targeted professional support. As the remote education period progressed, the need to create rules decreased and the possibilities for developing routines and individual solutions became stronger. However, some dilemmas remained for the high school even during remote education, such as, for example, the question of camera use, the proportion of real-time classes versus the amount of remote learning assignments. These questions often also required the consideration of not strictly pedagogical issues (personality rights, financial opportunities).

The case clearly illustrated how the innovative professional knowledge of the teachers, including primarily proficiency in the application of digital

technologies, the experiences gained in innovative pedagogical procedures, as well as the knowledge of innovation and risk management in general, can support resilient organisational functioning and quick and effective crisis responses.

Summary

In this study, we have presented two studies exploring educational changes that have been going on for nearly ten years, and whose content and on whose methodological approaches we rely heavily in our exploration of workplace learning. In the study, we focused firmly on the research method and tool solutions that occurred in the wake of the crisis, as well as the crisis response aspects of the results. This unexpected change in the context provided a unique opportunity to analyse the organisational and educational learning processes of the institutions participating in the research. The new situation raised new research questions, and moreover, it made it necessary for research work based on a standard design for a long time to find new ways of collecting and analysing data at short notice. Accordingly, in the final (emergency) phase of the research, we extended our theoretical models to include crisis innovations (in addition to local innovations and development adaptations), conducted online case studies focusing on COVID-19 responses among the schools participating in the research, and added to the questionnaire data collection of companion research with some focused questions. The new research methods and tools are expected to be helpful in non-emergency research designs, including workplace learning research. Among the organisations we examined, remarkable crisis responses were observed in those that had more serious development knowledge, i.e. they had previous experience in managing more radical organisational or pedagogical changes and/or were able to utilise proactive crisis management tools that, firstly extended to finding crisis responses, acquiring the necessary competencies, and time frames for the organisation that could be used for communication with partners. In addition, the preventive level of digital and innovation competencies and the use of innovative learning organisation procedures proved particularly important. In accordance with our case studies, it was also possible to set up a hierarchical order between these factors, according to which digital competencies prove to be particularly important, and the most major crisis responses were usually connected to institutions that previously had outstanding practice in the development of digital and mathematical competencies.

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