The teacher as innovator during a pandemic:

Changing practices and culture

Ylva Lindberg, Jönköping University, Sweden
Therése Haglind, Jönköping University, Sweden

Abstract

Gymnasieskolans övergång till digital undervisning våren 2020 visade på svenska skolors beredskap att ställa om till undervisningen på distans (Skolinspektionen, 2020). Processerna i förloppet avslöjade att tekniken inte bara tog plats, utan även tog över. I syfte att skapa fördjupad kunskap om förutsättningar och praktiker som underlättat omställningen, har ett data-set konstruerats utifrån gymnasielärares berättelser om sina personliga upplevelser av övergången. Sammantaget bygger analysen på 52 berättelser. Den narrativa ansatsen (Riessman, 1993; 2008) tjänar till att komma åt kvalitativa aspekter och olika dimensioner av praktiken i förändring. Teoretiskt beskriver Kemmis (2019) betydelsen av att uppmärksamma praktiker i rörelse och att nära och stödja praktiker i vardande, eftersom mänsklig utveckling, samt individens och kollektivets lärande, bygger på ständigt förändrade praktiker. Datamaterialet har analyserats tematiskt (Cohen et al., 2011; Lincoln & Guba, 1986) och belyser tre övergripande tematiska praktiker: *kollaborativa*, *kommunikativa*, och *kreativa praktiker* som avgörande i utvecklingsarbetet av undervisningen på distans. Analysen ger indikationer på att om dessa tre praktiker samverkar och stöds gemensamt och likvärdigt inom lärarkår och organisation utvecklas också undervisningens kvalitet.

English abstract

The upper secondary school system's transition to remote education in the spring of 2020 demonstrated the Swedish school system's preparedness to adopt distance learning (Skolinspektionen, 2020). The processes of change that took place during the transition revealed that technology not only replaced the walls of the classroom but also informed everyday learning practices. Against this background, we constructed a data set based on 52 upper secondary school teachers' stories about their personal experiences of the transitional period. Our aim is to create in-depth knowledge about the conditions and practices that facilitated, hindered, or generally emerged in conjunction with the said transition. To this aim, we employed a 'narrative approach' (Riessman, 1993; 2008) to access the qualitative aspects and other dimensions of 'practice in change'. Our theoretical framework is informed by Kemmis (2019), who describes the importance of (i) paying attention to practices in motion and (ii) providing for and supporting 'practices in the making' since human development, as well as individual and collective learning, are based on constantly changing practices. The data set was analysed thematically (Cohen et al., 2011; Lincoln & Guba, 1986), and our results reveal three overarching practices: *collaborative*, *communicative*, and c*reative practices* as crucial to development work with digital and distance learning. Our results indicate that if these three practices are equally and jointly supported, then the quality of teaching and learning will improve.

Introduction

2020 has already become a historical milestone within the school sector, in the northern countries and globally. The plethora of studies and reports published during the last year about the transition towards remote education (because of the pandemic) testifies to how teachers worldwide have experienced rapid change and significant challenges in their everyday teaching work. Many of the restrictions that have been put in place in response to the pandemic have been conceived and adopted differently in different parts of the world. However, studies from around the world underscore the fact that educational institutions and their teaching staff have responded in similar ways to new teaching and learning demands (see, for example, Limon Quezada et al., 2020; Robinson and Rusznyak, 2020; Van Nuland et al., 2020). The challenge of switching over to a remote and digital education system is pragmatically summarised by Mutton (2020) regarding the need to get relevant support and include all students. Mutton also points to opportunities for pedagogical development due to the fact that it has become necessary to reconsider established educational practices (see also Howard et al., 2021) because of the disquieting effects of the pandemic with respect to (i) the provision of equal quality education and (ii) the teachers' and students' mental health. These opportunities are nuanced by research results that highlight how teachers' competencies and their creativity have contributed positively to a disruptive and extremely high-speed school development work context (Kim et al., 2020; Kalloo et al., 2020). In summary, worldwide digitalisation processes during the pandemic have allowed for the identification of overarching common denominators in educators' everyday practices. These are practices that are shared across national borders, thus, underscoring some of the global characteristics of the profession. Consequently, the somewhat precarious situation that the profession has found itself in has contributed to a heightened awareness of problem areas that unite teachers and researchers, independently of their nationality. The shared set of challenges that educators have been faced with during the pandemic motivates our small-scale investigation of Swedish teachers' experiences of the changes associated with education becoming 'virtual'. Our study explores the developments that took place in the teachers' everyday life and aims to identify changing practices in times of transformation and global crisis.

In the context of the pandemic in Sweden, the 18th of March, 2020, was the date when school students started to be instructed at home. In comparison to its neighbouring countries, Sweden chose to be less restrictive regarding the physical shutdown of schools. The government primarily ordered the shutdown of upper secondary schools and higher education institutions, whilst other categories of educational institutions were subject to fewer restrictions. In the ordinary course of events, upper secondary school is characterised by face-to-face instruction on a daily basis to a larger extent than at university. Thus, differences in the provision of education between before and after the shutdown have been particularly sharp for upper secondary school teachers. Consequently, we have selected this category of teachers for our study. Our aim is to acquire in-depth insight into the activities and emerging practices which either facilitated or hindered the transition from face-to-face instruction to virtual instruction. To this end, teachers across several upper secondary school disciplines at a regional school were asked to write down (freely or with the support of guiding questions) their individual stories of what took place in their professional teaching practices during the transitional period that was caused by the pandemic. As we will explain further in the section "Theory and Method", the 'narrative approach' (Riessman, 1993; 2008) enables us to identify the qualitative aspects and different dimensions of practice in change.

The narratives included in this study were collected at an upper secondary school with an enrolment of 1500 students. The school's teachers were requested to voluntarily participate in our research at the end of the spring semester, 2020. Our request resulted in 52 narratives. Informed consent was also obtained from the teachers, including information about the protection of the participants' integrity and anonymity and a note that they were free to withdraw their participation in the study at any point in time. To assist the participants to start writing down their narratives, we provided them with several guiding questions which addressed the following areas: (i) their emotions during the moment of transition, (ii) the actions they took to convert to remote teaching, (iii) their experiences regarding what

facilitated and what hindered the transition to remote teaching, and (iv) observations regarding themselves and reactions from colleagues and students. These four areas are partly informed by the ongoing Nordic public debate on this topic, reflecting variations in the teachers' emotional and practical approaches to the transition towards distance education (see, for example, Salo, July 15th, 2021), and partly by the large-scale studies conducted in the team lead by Sarah Howard and Jo Tondeur (Howard et al., 2021). Their research distinguishes between different 'readiness profiles' regarding the adoption of technology in secondary education. The teachers' emotional perceptions and practices and a description of the support functions that they are offered are included in Howard and Tondeur's surveys on how teachers work with technology. However, this particular research team also argues for using qualitative approaches in this area (see Tondeur et al., 2021) that elucidate how overall arrangements should take variations in teacher practices into consideration. The guiding questions in the present study are precisely aimed at assisting teachers to express their nuanced personal experiences of the transition, including emotional and practical dimensions, at an individual, collegial, and institutional level. Most of the content of the narratives included in this study is based on the guiding questions we gave the teachers. The narratives retrace diachronic moments, summarised as *pre-*, *during*, and *post*-pandemic moments, covering the months between March and June 2020. The length of the narratives is in average 552 words, while the longest narrative consists of 2767 words and the shortest of 263 words. The documents were made anonymous before processing and analysis, and one narrative was excluded from the analysis for reasons stated in the anonymous teacher's text contribution.

On an overarching level, the narratives highlight the contrast between the 'emergency' conditions of remote teaching as imposed on teachers in the spring of 2020, on the one hand, and regular online instruction, on the other. Even though most Swedish schools manifested a technological readiness to switch over to online instruction (Skolinspektionen, 2020; Åkerfeldt, 2021), the relevant structures, practices, and support functions common to the successful provision of distance education were not necessarily in place. The narratives bear witness to how several of the benefits and rewarding aspects of distance education that experienced online educators have reported on (Hodges et al. 2020) were overshadowed by an additional workload related to the management of the physical aspects of the technology that was used, certain digital functions and digital uses, and a workload related to modified ways of planning for and providing teaching. As previous research confirms (Choi & Park, 2006; Conceição, 2006), such challenges "tend to occur with any transition to online teaching, no matter how gradual" (Marshall et al. 2020). It is also noted that the implementation of operational practices that are mediated by technology is a complex process that takes time (Willermark, 2018). Against this backdrop, the narratives that were collected report on various challenges in a transition period that was perceived as being highly intense. At the school included in this study, two competence development days were provided to prepare the teachers to deliver their lessons from home.

Naturally, such a radical change is characterised by complex states of mind as reflected in the narratives. These include references to emotions that ranged from negative to positive extremes. Since we wish to provide a nuanced view of the various emotional responses to the teachers' participation in engaging in technology-enhanced teaching practices, we find it incumbent upon ourselves to present a thematic analysis of the attitude profiles that emerged during our analysis of the narratives before we present the practices that were adopted, during the transition to distance education. To this purpose, our analysis focused on passages in the narratives where feelings were expressed. This analysis leads to a characterisation of four general attitudes, presented below. The quotes that we share were chosen by virtue of how distinctly they illustrate the four general attitudes that we identified in our thematic analysis.

In response to the announcement of an imminent transition towards distance education, some teachers joyously exclaimed: "Finally!" (N1)[1]; "a golden occasion for competence development" (N13), or "this is how the implementation of digital education will make teaching fun again" (N12). In parallel to these enthusiastic comments, several other teachers confronted the situation with a realistic approach, focusing on the challenging tasks at hand. For example, one teacher asked: "Well, is there something in my lesson plans that needs to change?" (N2), while another teacher constructively stated that: "this is something I have never experienced before, and it will be fun to see how we solve it" (N49). The narratives also expressed conflicting emotions, as reflected by a teacher who reported that: "when the message arrived there were mixed feelings" (N37). Both a sense of anxiety and expectation could be read between the lines in the narratives, as well as a feeling of surprise and shock at the announcement of the school's shutdown, as described in the following statement: "I thought he was joking with us" (N5). In contrast to these relatively positive reactions to the sudden change that was imposed on the teachers, we also found narratives where negative feelings were dominant. As one teacher wrote: "Since nobody can accuse me of being a technology-optimist, I honestly got a stomachache. I imagined how all this technology would mess up for everybody exactly all the time" (N7). This feeling of stress is further underscored by a teacher who expressed "nervousness", "inexperience", and "fear" (N8). These selected excerpts highlight how the consequences of the pandemic partly undermined professional confidence and established practices. They also reveal how the different attitude profiles that tentatively are formulated here as: "the pure enthusiast", "the cautious enthusiast", "the ambivalent sceptic", and "the pure sceptic", were made manifest during the transition period.

We examined the evolution of professional practices during the extraordinary circumstances caused by the pandemic and how teachers proceeded to develop functional working modes in online settings. The current multitude of quantitative studies from around the world that report on how the transition was staged often focus on skills and technological availability and not on the actions and measures that were taken on a micro-scale. Howard et al.'s (2021) study on secondary school teachers' readiness to go online is one such example in which the quantitative data supports a model that contains four profiles, ranging from high, medium, mixed, and low profiles of readiness. Their study correlates the teachers' perception of their readiness with institutional readiness and underscores the importance of organisational support. Even though the study does not mention Roger's (2003 [1962]) model of 'diffusion of innovations', which includes the following profiles: innovators, early adopters, early majority, late majority, and laggards (as representing chronological steps in the implementation of technology), there are overlapping features between Howard et al. and Roger's models. Both models highlight profiles of readiness that exist at every institution, even though they are not always made manifest. Taken together, Roger (2003[1962]) and Howard et al.'s (2021) models reveal discrepancies in several approaches to (and integration of) digital technology, but they do not sufficiently elucidate the fact that the profiles that models contain do not evolve in isolation, but rather, they evolve in close connection with each other at the workplace.

The attitudes (categorised as profiles) towards online teaching that we identified in our data can very easily be connected to the models mentioned above. These attitudes also reveal different degrees of the teachers' inclination to engage with new digital tools. However, the narrative methodology adopted in this study also enables us to make qualitative observations of emergent 'ways of working' with technology across individual, collective, and institutional levels. Our characterisation of these profiles in terms of 'readiness' is thus supplemented by collective modes of working that were progressively constructed within and across an educational institution. Our holistic approach to understanding

---

[1] Henceforth, "N" stands for "Narrative". Translations from the original Swedish by the authors.

'readiness' with respect to technology through emergent practices in times of crisis is confirmed by the claim that: "we were all in the same boat and were sailing forward on the digital sea" (N13). In line with this teacher's observation, the current study used a practice-oriented lens that allows us to focus on emergent practices that (i) included the different profiles and (ii) aimed at facilitating the transition to online teaching. In this context, we pose our overarching research question: *Which practice categories were crucial in the transition towards distance education, and how did they emerge and develop during the transition period?* The research question was answered by an analysis of the activities that dominated the teachers' narratives of the transitional period. These activities were thematically divided into three practice categories (see the section "Rethinking practices in times of change and uncertainty"). These categories outline emergent aspects of collaborative, communicative, and creative practices in the transformational work that was entailed by a shift to teaching online. Our analyses are framed by recent literature in the field of practice theory and digital educational practices, as described in the section "Theory and Method".

Theory and Method

Inspired by recent literature in educational sciences and practice theory (Bagga-Gupta et al., 2019; Bonderup et al., 2020; Cerratto-Pargman & Jahnke, 2019a; Hampel, 2019; Hager & Beckett, 2019; Kemmis, 2019), our analytical method is anchored in contemporary conceptualisations of 'practice(s)' that target different school subjects, practice theory, and emerging practices that employ digital tools and resources. In this framework, 'practices' are conceived of as means for (i) situating and transferring knowledge and skills in and between (digital) contexts (Bonderup et al., 2020), (ii) participating in formal and informal learning across analogue-digital sites (Bagga-Gupta et al., 2019), and (iii) understanding how humans exist in a constant state of becoming through their doings in socio-material contexts (Cerratto-Pargman & Jahnke, 2019; Kemmis, 2019). Moreover, as Hager and Beceket (2019) explain, different understandings of identified practices in a specific context cannot only be based on the individuals' performances of these practices, since they are shaped in relation to other human beings and things and to neighbouring practices. In this respect, we are inspired by Kemmis' (2019) theoretical framework of a *practice architecture*, in which various practices and sub-practices are held together in an overall construction of *sayings*, *doings*, and *relatings*, which are shaped by the intertwined dynamics of *cultural-discursive*, *material-economic*, and *social-political* dimensions (Kemmis 2009: 466). This framework serves our analytical observations of the relationships between emerging practices within an institutional structure (in our case, the school that participated in this study).

The theoretical aspects addressed in the recent literature on practices related to digital contexts in evolution are apparent in the narratives that we collected for this study in the teachers' detailed recalling of chronological events during the weeks before and after the school's shutdown. In this way, the teachers' narratives reveal how an upper-secondary school experienced the immediate crisis. A narrative methodology allows us to grasp "an experiential dimension of practice that includes the potential to be sensitive to movements, transitions, and transformations that make social practices crucial for learning and becoming" (Lindberg, 2020). As we approach the multifold aspects of emergent practices associated with using digital technology in a specific school context, the narrative method enabled us "to understand the experiences of participants and cultures" (Cohen et al., 2011: 553). The narratives provided us with information about what the teachers focused on (Creswell & Creswell, 2018; Riessman, 1993). In this context, the *sayings* are related to how the teachers linguistically addressed "what was going on" in the transitional phase, while their *doings* were related to what the teachers centre-staged in their narratives as important activities in changing their practices. The teachers' *relatings*, in turn, addressed how they formulated their perceptions of the relationships between different groups and practices in the institution where they worked and beyond. Notwithstanding these distinctions, our analysis focused on the teachers' *doings*, i. e., on the narratives of the evolution of activities with people and things that facilitated or hindered the transition towards remote teaching during a limited time period.

The experiences that the teachers reported touched on how practices were either organised, self-regulated, or left unmanaged, thus presenting the context within which certainty and uncertainty became interwoven. As Wenger-Trayner and Wenger-Treyner (2020) observe in their conceptual work on social learning spaces, 'uncertainty' is a necessary ingredient to learning, even though it is a concept that is sometimes associated with weakness and incompetence. In their view, the engagement of uncertainty implies that:

> "[E]veryone is at the edge of knowing. No one owns the final destination or has a claim to fully knowing. No one can simply stay unengaged from not knowing. Uncertainty is distributed, though not necessarily equally or fairly." (Wenger-Trayner & Wenger-Treyner, 2020; 22)

The emergent practices that arose during the transitional period of the pandemic allowed for the creation of spaces where uncertainty could be addressed and where teachers could figure out how they should proceed in order to change their practices. This occurred even though the limited time that was provided to the teachers precluded them from reflecting on what these changes meant and to what extent these changes served their fundamental teaching values. In this regard, the retrospective view involved in the narrative method created an arena (for the teachers) for "seeing the world in motion" (Kemmis, 2019: 5), thereby allowing the teachers to cognitively process the different steps that they had taken during the transition to construct a new working order and functional practices for new situations. By retelling the story of "how I/we went about with things and what I/we did" at a crucial moment of transition, the teachers became engaged with their own learning on a reflective level. Thereby, we acknowledged the teachers as agents who possess the competence and ability to meaningfully reflect upon chains of events from their own lives (Polkinghorne, 1995; Stroobants, 2005), and who can interpret a recent personal past whilst taking both individual and collective meaning-making into account (Flick, 2009).

The analysis of the narratives was carried out in four distinct stages. The first stage followed the principle of researcher triangulation (Cohen et al, 2011; Lincoln & Guba, 1986; Patel & Davidson, 2011; Ahrne & Svensson, 2013), implying, in our case, that four different researchers individually processed the data. The readings that the individual researchers developed were focused on the activities that were reported on in the narratives and features that were seen to either facilitate or hinder the transition to distance teaching. This stage of the analysis resulted in four categorisations of practices. In the second stage, the research group jointly compared the individual analyses. The aim at this stage was to identify overlapping characteristics across the four categorisations. In the third stage, the authors processed the data by using MAXQDA (Oswald, 2019). Our purpose with this tool was to verify the categories that had emerged during the second stage of our analysis. In the fourth stage, we developed a framework for three overall practice categories towards which the activities described in the narratives converged. These practice categories are labelled as *collaborative practices*, *communicative practices*, and *creative practices*. These categories are presented as essential to the changes that took place during the transitional period towards remote teaching. However, it should be noted that these practices do not appear isolated from each other in the narratives. Instead, they should be interpreted as interdependent categories, emerging simultaneously and in intertwined ways. In the following section, these overarching categories will nevertheless be presented separately in three sub-sections and illustrated by means of quotes selected from the data. These quotes reflect the categories that we have identified and the teachers' perceptions of the activities that they thought were central to the transitional period.

Rethinking practices in times of change and uncertainty

To shed light on how the overarching practice categories: *collaboration*, *communication*, and *creativity* emerged via the activities that were performed at different levels of the organisation, we present an

analysis of the narratives that we collected from the teachers. Our analysis is divided into three sections that reflect how sub-practices were formed and clustered within the overarching practice categories. We have taken into consideration the relationships between the individual and collective dimensions, as well as chronological aspects that reveal how practices emerged progressively over time. In addition, we demonstrate how the emergent practices that we identified in the narratives also offer insight into how established relationships, for example, between formal and informal settings, structured and unstructured activities with tools, pre-existing skills, and new skills, as well as the role of the student, the teacher, and the management, were disrupted and were in flux during the transitional period. Our findings and a specification of the relationships between the three overarching practice categories are discussed at the end of the paper.

Collaborative practices: The reinvention and reinforcement of collegial structures

The school management prepared for the shutdown weeks before the teachers and students went online. Leaders at different levels implemented an organisational framework that established vertical collaborative practices. First, a bottom-up approach was embraced, from the teachers up to different leadership positions, and also a top-down approach, from school conferences to workshops across subjects, down to the practical work performed by the subject teams. The bottom-up strategy is reflected on in the excerpt below (N18), where the teacher reports how some teachers who possess some experience of digital tools and resources were identified by the school management and offered the opportunity to test these tools from home in advance of the school shutdown:

> "The fact that we are a huge school, with many students and teachers moving over large spaces, contributed to the anxiety, and led to that I was one of the teachers that 'went home' beforehand to test digital teaching from home two weeks before, in order to report on my experiences to the school management." (N18)

For these teachers, "digital class books, shared documents, interactive apps and programs such as Nearpod, Quizlet, Mentimeter and digital exams on Exam.net, podcasts, movies and recorded seminars were nothing new" (N18). These teachers already possessed somewhat developed digital practices that they could re-activate and share with their less experienced colleagues. The remarks made in the narrative (N18) touch on how the prevailing material-economic conditions, such as the size of the school and the available digital resources, affected the situation. The extract also reveals how the teachers perceived the relationship between management and staff, where the former prompted the staff to take action. In this way, knowledges and skills were transferred between contexts, and the formal and informal learning activities that the teachers were engaged in supported change.

In conjunction with the above, several top-down strategies were enacted by the school's management team to establish collaborative practices. According to a funnel principle, these strategies were enacted and had their starting point in general information conferences and study days organised by the school management. One teacher reported these experiences as follows:

> "I use to be relatively active during study days regarding treated topics (the concentration among colleagues is usually varied!), but now everyone was super motivated and on edge, listening carefully." (N14)

This positive tension that built up towards the general shutdown is further remarked on in the same narrative, where the teacher recalled: "the big meeting in the lecture hall that finished with an encouraging song by a teacher, 'I will survive'" (N14). The general meetings were later narrowed down to "chaotic workshops" (N14) that revealed themselves to be "necessary and a key to functional distance education" (N35). Even though the organisation of the competence development initiatives by the school

management was not perceived as perfect, the narratives bear witness to a sense of trust in the school's leadership and underscore their responsiveness and contribution to "a good start in the transition from regular teaching to distance teaching. [The school management] prioritised teachers' needs well" (N37).

As time went by, the management team also identified activities and processes that needed further support. Focus was placed on assisting the teachers and keeping this group of professionals who possessed different levels of digital competence and confidence together, even though they were physically separated from each other. The school management team, the "first teachers"[2], the ICT instructors, special needs educators, as well as teachers who were experienced with using digital tools and resources were identified as key actors in this implementation process. These individuals were fundamental to ensuring a smooth transition to online teaching in both structured and unstructured settings. We note that these supportive initiatives were crucial to the teachers' gaining trust in the organisation, which is reflected in the following extract:

> "The school management has been forgiving and has understood that [teaching preparation] can be time-consuming at the start of a distance education program." (N41)

> "Being a team player and the support among colleagues and school management simplified the transition." (N40)

> "The service team and the IT technicians have offered support regarding practical issues. For example, we have been able to get a document camera whenever needed. They have generously offered help." (N48)

The teachers also stressed that constraint and necessity in the transition period contributed to their professional development. Not one of the teachers was allowed to sidestep the collective learning process, which is explicit in the following excerpts:

> "Something that facilitated the process was that everybody was obliged to shift to distance teaching and develop digital competencies. If the process had been optional, there would probably not have been as many teachers that would have developed the same skills and had the same experiences." (N37)

> "The fact that the school management 'forced' all of the teachers to be present at [the school] during the first weeks was good. Then you could ask those colleagues who were more advanced and vice-versa [sic]. They also arranged workshops, which was good." (N49)

These quotes that illustrate the implementation of top-down strategies underscore the existence of a changing cultural-discursive dimension, where different professional practices in the school structure were coordinated with each other to create favourable conditions for the teachers to learn about the digital tools that they would use during their online teaching. No teacher could remain unengaged from this process and, regardless of professional roles, knowledges, or skills, the whole school staff seemed to confront the then prevailing uncertainty on an equal footing.

---

[2] A 'first teacher' [*Förstelärare* in Swedish] is a school role that is filled by particularly skilled teachers at the primary and secondary school level. It is seen as a career advancement and was implemented in Sweden in 2013, in order to enhance teachers' career opportunities and make the profession more attractive.

The vertically organised collaborative practices were combined with the horizontal strategies and teachers' (self-organised) collaborations at a school subject level (e.g., maths, history, and Swedish). The teacher teams that focused on developing subject teaching online appear in the narratives as fundamental on an interpersonal and professional level. The social function of the teams emerges as an important function in a situation where the teachers, "of course, miss the personal contact with students" (N42). Contact with one's closest colleagues, for example, via Teams or Messenger groups, was perceived as essential support and "invaluable" (N32). As one teacher reported: "We have shared experiences, frustrations, joys, and have kept in regular contact" (N32). The teachers offered moral support to each other at a critical moment in their careers by showing a "calm and fighting spirit" (N33) and by sharing "a whole lot of laughter and discussions about methods and tools" (N33). At the same time, they also shared their competencies with each other, perhaps in ways that had never occurred before. This idea is explicitly expressed in the following excerpts:

> "We got help from each other within the school subject crew and shared things that had worked well and those that had worked less well. During the entire period, I was in daily dialogue with colleagues to get support and to give support." (N43)

> "Everybody shared their experiences, and we rapidly found a common structure at the school. In addition, we contacted colleagues to a much larger extent than before regarding these specific issues. Contacts that would not have existed otherwise. This also led to subject and pedagogical discussions." (N50)

The teachers also shared a number of comments on the horizontal strategies implemented at the school to indicate how informal learning processes and the social dimension across analogue-digital sites played an important role in the transfer of knowledge and skills during a transition period of relatively radical change in their teaching practices. In parallel to the informal collaborations that were established among the subject teachers, formal settings for collaborative activities also appeared as crucial. The extract below (N10) describes the subject team-leaders as being in charge of formalising collaborations:

> "We have had outstanding subject team leaders who have stayed strong and calm in this challenging situation. This has, in itself, been massively relieving and minimised the stress level for many of us." (N10)

The collegial, ongoing learning that took place in the subject teams emerged as a context where the teachers could develop new ways of designing and delivering their lessons. The systematic work that they did to create new teaching practices in these settings is described in the following excerpts:

> "In my other subject, social science, we initially compiled a list of which functions we knew, what we needed, and what we could learn from each other. For example, I could present the logbook function in V-klass [the school's web-based platform]. Something I know that several colleagues have used frequently during their distance teaching." (N51)

> "What has been most important to me is the ongoing discussion with colleagues. Those who teach the same subject as I do have discussed a lot together—everything from planning, lesson content, assignments, and technology. When we shifted to distance teaching, we all had many questions about how to proceed, but after some joint reflection, we found different strategies to use." (N38)

These comments indicate that the teachers exercised some degree of acceptance of 'not knowing' and of being involved in a situation characterised by uncertainty and change. The emergent, horizontal collegial practices also included the student level. Students were, obviously, the target of the distance teaching. Their feedback and reactions to online learning appeared in a new light and served as a source of information that was used for the continuous development of the teachers' competencies. This aspect of student feedback is highlighted in the following excerpts:

> "It was facilitating that [...] even the students showed excellent comprehension and adapted fast." (N40)

> "During this time period, I noted that the mentor's time was important since it revealed what worked for the class and what did not work at all." (N32)

> "I benefited greatly from my colleagues' experiences and tips. Sometimes I also got tips from students." (N49)

The students are often mentioned in the narratives as the main concern for the teachers. The caring relationship that the teachers strive to establish and maintain in their everyday professional life is presented as a core professional skill in the newly-adopted digital environments, while this skill is often backgrounded in 'regular' teaching contexts and is confined to being classified as 'silent knowledge' (Åman et al., 2021). The teachers also paid attention to the students' "unfair conditions" (N4) in the students' different home environments. Again, this resulted from the shift to distance teaching and the necessity of including the students' 'private' environment in the digital classroom. This student-centred perspective and indications of a renewed awareness of the students' different cultural and socio-economic conditions are present in the following excerpts:

> "In school, you meet people, but some students became very lonely in this situation. I have had conversations with students about pulling up blinds and going out for a walk after lessons. There were also students who had nowhere to go without being disturbed because of a lack of space at home." (N6)

> "In the evaluations that I let them do after their achievements, many students have written that they have had positive experiences with working from home in peace and calm with their school assignments, without being disturbed by their less motivated classmates." (N19)

These quotes (N6 and N19) also highlight an emergent digital practice, namely, to remain in contact with the students and interact with them to support them in their learning and get feedback from them regarding new teaching methods with digital tools. The teacher-student relationship is presented in the following excerpt as a fundamental motivation for the profession:

> "I also observe that distance teaching cannot be compared to classroom teaching regarding the social and relational aspects between students and between teachers and students. Many teachers say that we miss the exchange of energy when we meet IRL [In Real Life] with our students – in other words, this is what motivates us and makes us have the courage to do a little more." (N11)

The above (N11) is a comment on the students' role in the transition towards distance teaching. This role is seen as a source of inspiration and encouragement "to do a little more". Other narratives bear witness to how the teachers found strategies to maintain teacher-student relationships on a distance basis and include their students in the collaborative and transformational work that teaching and learning entails. Making contact with the students and receiving the students' feedback emerge in the narratives as a vital component to the development of new teaching and learning practices.

The progressive formation of collaborative practices within and across different constellations and different practices (including school leaders, staff, and students) reveals how vertical and horizontal organisational strategies served to link groups and practices in new ways and thereby reshape the overall practice architecture. Vertical strategies operated between the school management team and the students, via the teachers, while horizontal strategies created collaborative practices within and across subject teams and different professional groups. The reinvention of certain social structures generated new social needs and revealed several functions of social relationships in everyday collaboration at the

school that had not been prominent before the pandemic. The vertically- and horizontally organised practices illustrated below (Figure 1) capture the constant movement along two axes and how these directed strategies functioned in parallel and interdependently of each other.
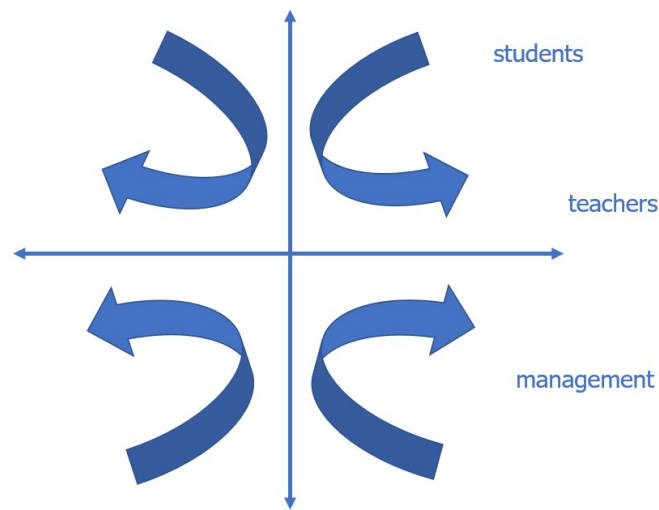

Figure 1. The evolution of vertical and horizontal collaborative practices.

The teachers are positioned in the middle of Figure 1. This position illustrates their mediating function of receiving and developing strategies and practices that are decreed by the school's management. Note too that the teachers report back to the school's management concerning the results of implementing said strategies and practices. The teachers also instantiate the mediating function of providing teaching to the students and also receiving feedback from the students. This feedback is then used in the revision of established and emergent practices. The arrows in Figure 1 indicate the circular nature of the information of which the teachers are in charge. The arrows also show how the teachers are responsible for the movement of information along the horizontal axis, as they distribute practices within the teachers' collegium and to support functions at the school. The teachers' collaborative activities (organised by themselves) that developed horizontally benefited both the school management team and the students. The development of the teachers' practices with digital tools was fed back to the management level, as illustrated by the loops in the lower part of Figure 1. This feedback loop enabled the school's leadership team to continue with their informed decision-making. The students, in turn, both benefited from the teacher's development of their online teaching skills but were also consulted for feedback on the same. This relationship of exchange is illustrated by the circular shape of the arrows in the upper part of Figure 1. In summary, with the support from both the school's management team and the students, the teachers formed a hub for collaborative practices where nascent innovative learning took place. Thus, the narratives included in this study shed light on significant relationships that grew organically at the school. These relationships enabled the teachers to take on the central role for school development that included creative collaboration for renewed teaching practices. In the following section, we present how changing collaborative contexts and practices implied a transformation of communication at the school.

Communicative practices: A challenge for teachers

In regular upper secondary school settings, communication that is related to teaching and learning is centred within the classroom and is characterised by face-to-face interaction, whereas communication via digital mediating tools and resources is embedded within those tools. Teachers "have the benefit of having students in the same space at the same time, offering a wealth of opportunities and options for instructor-student and peer interaction" (Kaufmann & Vallade, 2020: 87) in the regular school context. The transition to remote teaching disrupted this established perception of teacher-student relationships

and placed new demands on the teachers' communicative practices. This was true for the school as a whole and the organisational communication that took place during this time of intense technology appropriation. Questions regarding what, when, and how to communicate with others were previously not central issues. However, such questions became the focus of attention in conjunction with the necessary shift to digital means of communication. One teacher recalled that during the pre-pandemic times, in the spring semester of 2020:

> "A big icon was displayed automatically on the computer screen every time you started work. Super irritating. [...] Later on, when we had started to work with Teams and distance teaching, I wondered why nobody even told us what 'Teams' was from the beginning."
> (N14)

The extract (N14) reports that there had been meetings and conferences where the staff could have been informed about the new digital tool, so, at least, they "could have had the possibility to explore the programme" (N14). This circumstance indicates how the pandemic problematised and restructured communicative needs within the organisation. Note that the teachers were responsible for changing established communicative practices in concrete and sometimes radical ways. Situating, contextualising, and developing new communicative skills was primarily the teachers' responsibility. One teacher reported that this transformation was one of the major challenges in the transition towards distance education:

> "The biggest difference between carrying out distance teaching and meeting a student group in a classroom is the communication." (N35)

Communication that was related to the learning situation online contained similar dimensions as classroom communication, including unilateral, bilateral, and multilateral communication. Unilateral communication is the provision of information from the teacher to the students. This may take place orally in the classroom and even be supported by analogue-digital devices, or it may take place remotely and digitally on the school's web-based platform. Bilateral communication refers to interactive communication that is face-to-face or uses of digital means between teacher and student. Multilateral communication refers to the teachers' interactive communication with groups of students, *in situ* or online. In addition, unilateral, bilateral, and multilateral communication can be synchronous or asynchronous. Regular pre-pandemic educational communication worked as an integrated system in which analogue communicative practices were often supported by digital means, allowing teachers to stay in contact with their students. However, we note that these pre-pandemic practices were reported on as being relatively unstructured and unmanaged and varied from teacher to teacher. The transfer of knowledges and skills with the use of digital tools and the transfer of socio-cultural codes of communication seemed to form a practice area that could have benefitted from a more focused engagement by the school management (Bonderup et al., 2020; Kemmis, 2019).

The intersection between synchronous and asynchronous communication was renegotiated during the transition to distance teaching. For example, the narratives offer a view of how teachers modified their perception of distance teaching as asynchronous by changing it into a flexible concept that included a range of different communicative practices to maintain the synchronous dimension of the regular classroom. As Neville Miller et al. (2021) observe, "little research exists to date on the effectiveness of these relatively new synchronous and blended learning models" (203), even though these new communication circumstances became evident and pressing during the time of transition. As one teacher reported:

> "Students think that I am available twenty-four hours a day. One more channel to use for information is too much to handle, for example, Teams, e-mails, messages on Vklass [the school's web-based platform], submissions, events etc." (N36)

The excerpt (N36) indicates the frustration involved with the adoption of new means of communication. Since regular online and offline communication practices were not subject to consistent reflection before

the pandemic (neither from an individual, collegial, nor institutional point of view), these practices were also the most challenging for transformational work during the shutdown. The number of digital channels teachers reported that they needed to manage, without a common policy in place concerning what and when communication should take place and via which platform seems to have resulted in 'overcommunication' and an excessive workload for the teachers. This indicates the presence of a disruption in the relatively unproblematic communicative relationship identified in the collaborative practice category between the teacher level and institutional level (Kemmis, 2019).

The teachers' lack of experience with specific forms of digitally-mediated communication became clearly articulated in the narratives. For instance, according to one narrative: "the feeling of talking 'to a computer' without knowing what it looks like 'on the other side' is indeed strange" (N6). The exploration of new "ways-of-doing" (Bagga-Gupta et al., 2019) communication is accompanied by feelings of estrangement and, in some cases, frustration regarding the lack of foresight by the school's leadership and the necessity for competence development. One narrative is explicit on this second point:

> "We should have been trained to do this earlier – we have had enough study days for that – why haven't we been trained for a similar scenario? We have been talking about the digitalisation of the school for a long time, but talk is not enough in a really intense situation!" (N22)

The excerpt (N22) argues that the vertical communication within the organisation at different leadership levels down to teachers' everyday practices was not entirely satisfactory; the teachers expected professional support and training, perhaps less so regarding the technological functionalities of the digital tools and more regarding communicative practices as such. In the narratives, a chronological development can be observed regarding how communicative practices with the use of technology evolved among the teachers. This development can be summarised as a movement from analogue and synchronous working methods towards digital and asynchronous teaching. At the beginning of the transition period, the teachers tended to adopt asynchronous meetings and pre-recorded lessons, i. e., teacher presentations uploaded on the learning platform. Progressively, they became aware that this mode of working was quite time-consuming – it was "not sustainable" (N4) – and that there was an urgent need for live sessions in order to maintain communication and interaction with their students. The teachers also became more comfortable with live teaching online as time went by, and they began to blend asynchronous and synchronous modes of communication. In addition, as technology functionalities improved and additional devices became available at the school, multimodal and asynchronous-synchronous solutions for different elements of the teachers' teaching practices became more frequent. This evolution depended on the teachers' functional collaborative practices, as described earlier in this article. This evolution was reflective of a constant state of becoming through teachers' initiatives and doings in socio-material contexts (Cerratto-Pargman & Jahnke, 2019a; Kemmis, 2019).

Reconstructing the classroom's walls through communicative practices

The teachers' transition to remote teaching was associated with a loss of communicative tools that had previously been taken for granted in the regular classroom. The narratives bear witness to the teacher's difficulties in relating socially to others online and how it was "difficult to capture how they [students] had understood from the expression on their faces since many chose to turn off the camera" (N4). In the narratives, it is mentioned that the camera constituted an issue relevant to power plays in the teacher-student communication that took place. For example, on a somewhat resigned note, one teacher reported that:

> "You invite them, of course, to choose another background, but despite that, they choose not to show their image." (N47)

Turning off or on the camera seemed to be a source of conflict between the teachers and students since turning it off allowed the students to set limits on their degree of engagement in the digital environment, while the teachers lost their primary tool for interpreting what was going on in the learning context. The teachers thereby lost sight of the boundaries of their classroom. The following quote illustrates this feeling of loss:

> "What I am usually able to understand from facial expressions and body language in the classroom – and what has helped me to capture reactions of different kinds – has been something that I have had to do without." (N22)

On the other hand, one material-economic arrangement, namely the mobile phone, which had previously been a source of controversy (see Kemmis 2019), was transformed and became a useful tool for documentation and creative activities (Ott et al., 2014; Ott et al., 2017). This positive change is confirmed in the following excerpt:

> "In distance education, we had no disturbing problems with mobile phones, which is a problem in the classroom." (N13)

In this way, the transition to remote teaching underscored the relationship between the material management of technology and the emerging practices of digital communication. According to the teachers, the knowledge and skills in this area were unequally distributed among diverse student groups, which led to situations where teachers, in parallel with their distance teaching, had to instruct students on campus about basic functions of the communication platforms; such as, "log in, click, link, share screen" (N45). The new classrooms that evolved online apparently excluded some learners, especially those without a "reliable internet connection" (N48).

In this reconstruction of a classroom without physical walls (Alerby, 2019), silence, which had not been problematic before, emerged as a dilemma for the teachers. This is made explicit in the following:

> "I could ask questions, but few answered. When the 'raise hand' function occurred, it became easier to manage who spoke and also to observe who [among the students] were more attentive." (N4)

According to Duran (2020), "silence is a complex, multifaceted phenomenon". The results of Duran's study on students' perception of silence in online environments show that students valued hearing the instructor's voice, but they felt that there were barriers to occupying the digital space with their own voice. However, the students did not feel that they were merely allowed to listen and follow a lesson. Established structures of and codes for classroom communication were disrupted in the sudden shift to remote teaching since silence was seen as a challenge to supportive and constructive learning interactions. According to the narratives, the teachers responded to the loss of communication by constructing a variety of communication modes, for example, regular group discussions, both for schoolwork and socialisation, collaborative documents, and creative ideas for delegating student contributions using tools on webtools.itgonline.se, for instance. Employing these different communicative practices with digital tools demanded structured lessons, however. The narratives emphasise the importance of providing lessons that had a clear design which was used repeatedly by the teacher. The progressive development in the structure of the lessons that the teachers provided is commented on in the following excerpt:

> "I have introduced most of the lessons with a meeting in Teams, even though it has happened that students only have got written instructions. The meetings have begun in a similar way as in the classroom, with an introduction to today's lesson, perhaps followed by some kind of lecture. When students have worked with something on their own, I have usually followed up the work with the support of an assignment or the logbook mentioned above." (N28)

Most of the teachers included in this study seem to have adopted a lesson structure that is supported by a variety of different digital tools and functions, including attendance management, information, and introduction, opportunities for the students to ask questions, engaging with the lesson, and, finally, an evaluation of what had been achieved during the lesson. The teachers reported that they had discovered several functions in the digital tools that can be used to improve individualised pedagogy. For example, one teacher recalled that:

> "One positive thing is that I have been able to communicate with many students via chat directly on Teams. I could not imagine this from the start, but I have had just as much personal contact with the students in this way as in the regular classroom." (N48)

The provision of guidance and supervision seems to have worked out well in Teams, since the teachers adopted several modes of communication, namely, talking with the students through the chat function and in live camera sessions using the "share screen" function. These modes were adopted to give relevant feedback.

The teaching staff at the school managed to transform their analogue practices into digital practices that included unilateral, bilateral, and multilateral communication. This communication was both synchronous and asynchronous. This transformation, or evolution, is illustrated below (Figure 2) on a meta-level.
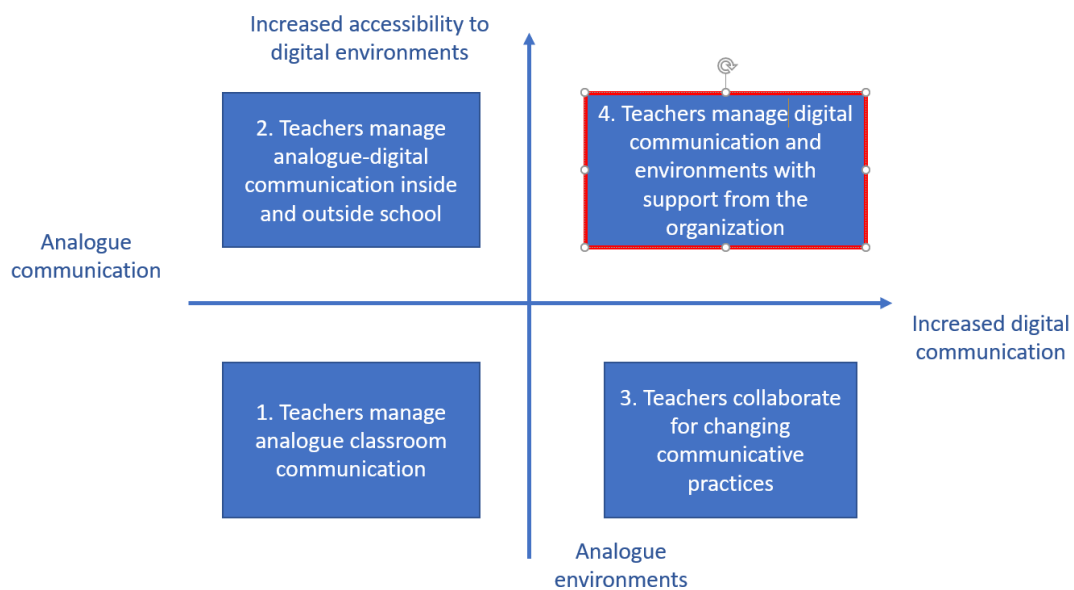

Figure 2. The evolution of communicative practices in increasingly digitalised environments.

Figure 2 captures how the teachers moved from engaging in communication that was dominated by analogue modes, represented by the two quadrants to the left of the vertical axis, towards digital communication, represented by the quadrants to the right of the horizontal axis. In this transition, some of the teachers had to move directly from box '1' to box '3', while other teachers who were experienced with the integration of digital communication modes inside and outside the classroom could move more smoothly from box '2' to box '3'. This latter category of teachers became key actors with respect to communicative changes in collaborative contexts (see the section "Collaborative practices"). However, to establish an efficient digital communication structure that encompassed dimensions beyond the classroom, the teachers stated that they needed organisational support. This level appears as a critical level in the narratives, and, therefore, it is represented by a box with red outlines (box '4' in Figure 2). While the organisation seemed to have adopted a structuring strategy for collaborative practices during the transition period, the aspect of communication does not appear in the narratives as an aspect that

was subject to strategic reflection, which in many cases led to a situation where communication management took up valuable time from the teachers' work with developing good digital pedagogical designs.

Creative practices: The teacher as innovator

At the intersection of changing collaborative and communicative practices, the teachers had to face a number of unprecedented challenges and find solutions to their problems quickly. These circumstances prompted the teachers to test and try out new ways of doing with tools (Lindberg, 2019a). The narratives included in this study bear witness to the fact that the teachers did not possess established practices in their regular professional lives that they could fall back on to develop their teaching in a digital environment creatively. This observation is confirmed by the following:

> "What I found difficult was precisely to invent activities that worked digitally." (N10)

Consequently, the transition was perceived as abrupt and a circumstance that forced the teachers to (i) develop creative skills, i. e., skills to envision, design, and plan for new ways of doing with digital tools, and (ii) invent, i.e., concretise and implement, solutions rapidly in response to immediate, burning problems. Such problems included conducting digital tests to prevent students from cheating, and how to design assignments and ensure fair and legally defensible grades in an unexplored wasteland of digital practices. During the period of uncertainty that the transition entailed, where assessment was conducted entirely online, "collaboration before and during examination [was] intense and supportive. Sometimes, we surveilled [exams] together to support and help each other" (N48). Moreover, the situation was described in the narratives as one that was utterly creative and collegially maintained in a spirit of testing, changing, and sharing pedagogical methods, tools, and approaches. The following excerpts reflect this centre-staging of creativity:

> "Creativity has been flowing, and as soon as someone found out a new solution, it was transmitted to others, either spontaneously, face-to-face, by mail, or in the subject team on V-klass [the school's web-based platform]." (N12)

> "My opinion is that pedagogical tips, lesson designs, content, and assessments have never been so much discussed as during distance teaching." (N37)

The circumstances brought about by the covid-19 pandemic actualised how the teachers' creative ideas constantly generated value in their provision of education. In the narratives, we note how the teachers retold stories of becoming productive in new ways and inventing concrete solutions that made a difference (see Wenger-Trayner, 2020). Thus, the role of the teacher was transformed from being passive, receiving, and executing, to a role that was active, organising, and creative. Thus, the teachers could be said to be innovators of inclusive and social practices with digital tools and resources. This active role emerged in a process associated with "new ideas and thoughts about design in education" (N41), as well as through active workplace learning about "technology and pedagogy" (N32). The creative minds of the teachers appeared in this context as the 'power of many' who were able to establish a 'situated know-how'. Subsequently, at the end of the semester, new teaching practices had emerged. Initial "concerns about their ability to handle distance education" (Kayaduman & Demirel, 2019) changed into a sense of professional confidence about how one might systematically develop and conduct teaching in the future. As one teacher observed:

> "The ability to adapt education in such a short time shows the power of the teaching staff [...] to find solutions that worked and not to complain about the situation." (N11)

In addition, because of the creative work that was done by the staff, "many teachers found alternatives and resources that also could be used in regular classroom teaching" (N16), such as, "group discussions

online, working on joint documents, and creating increased interactivity [among the students] with the support of digital tools" (N11).

These examples point to a cultural change in the teaching profession since they highlight how the transition period made teachers blur the demarcation line between analogue and digital teaching and become innovators of sociotechnical practices for learning in their respective specialisations. The close study of 'creativity' and 'innovation' in the teaching profession remains an emergent research field, and efforts to define the relevance of these concepts to education have taken different research pathways. For example, Griffiths (2014) claims that, as an educational goal, "creativity is clearly a concern for teachers, but innovation is not, except for some vocational education" (p. 120). Glăveanu et al. (2021), in turn, point out that "the question of what technology 'does' to our learning and creativity is perhaps one of the biggest questions we will have to tackle in a transformed, post-pandemic world" (p. 1). It is notable that, in these references, creativity is associated with the artistic and creative disciplines, thereby excluding the term *innovation* as belonging to the sphere of economics and industrial development. From the perspective of transformations in the social-digital sphere, we should adopt a neutral conception of *creativity* and *innovation*, which does not confine the terms to a specific social sector. From this more neutral perspective, a "creative work is a novel work that is accepted as tenable or useful or satisfying by a group in some point in time" (Stein 1953: 311), and an innovation is a product that can claim to be innovative, original, to have a value, and be meaningful (Glăveanu, 2014). A product is not necessarily a thing but may include a new service or a new way of organising things.

Existing research on creativity in education often focuses on teachers' individual skills and how teachers can develop their students' creative thinking and creative doing (see Kelly, 2016). However, we argue that in view of the emergent creative practices that we have identified among the teachers who participated in this study, the focus of 'creativity in education' seems to be somewhat broader. The process of realising a creative idea is collaborative and embedded in social structures. For example, the narratives express concerns regarding what will happen in the future but also the hope that "those things that render work efficient can be maintained and not fall into oblivion" (N30). This goal cannot only be the sole responsibility of the teachers. On the contrary, we argue that creativity needs to be legitimised and cared for at an institutional level as well so that structures can be established that support innovation and the teachers' creative endeavours. The emergent practices described in our study show how creative ideas can be born and grow into useful concepts, tools, and ways of doing if there are functional and supportive strategies for collaboration and communication within the organisation. These structures are also valuable tools for ensuring that teacher innovations that are implemented during the pandemic remain active during the inevitable transition back to regular teaching conditions. In order to support the creativity and innovation (that the teachers reported that they enjoy in their everyday working-life), school management should promote practices that strike a balance between freedom and control, playfulness and seriousness, collaboration and opportunities for individual focused work. This includes finding a balance between different teacher profiles and, finally, between stability and change (Lindberg, 2019b). This awareness of the importance of cultural change and continuous development is in harmony with one teacher's suggestion that continuous improvement through more "non-regulated working hours instead of the current 35 h – 10,5 h" (N3) be provided. A continuous legitimisation of creativity and innovation at work will encourage teachers to embrace a state of uncertainty and becoming on an everyday basis. According to Wenger-Trayner and Wenger-Trayner (2020) and Kemmis (2019) these are necessary conditions if social learning and change are to take place.

Concluding remarks: Supporting practices in continuous construction

The aim of this study was informed by a need for a more profound understanding of how teachers and educational institutions have proceeded in the transition to remote education during a pandemic. This

understanding is relevant to our continued delivery of equal quality education for all. The challenges that the transition entailed were many and included issues relevant to the teachers' competence development, the provision of adequate technology, infrastructures, and the students' ability to adapt. The narrative method adopted in this study allowed the participating teachers to recall and retell what took place in their professional lives during the transition towards distance education. The emergent practices that we have identified through our close reading of the narratives have been categorised at an overarching level as *collaborative*, *communicative*, and *creative* practices. The first two categories involved both vertical and horizontal strategies and doings among different groups within the institution. These strategies paved the way for a variety of supportive group constellations. Within these structures, teachers could gain agency and develop sociotechnical practices that included (i) unilateral, bilateral, and multilateral digital communication in both asynchronous and synchronous modes, (ii) constructive pedagogical relationships with tools, and (iii) the creation of engaging digital environments for students. The organised and self-regulated collaborative practices that the teachers engaged in are crucial to the development of functional communicative practices with digital tools. The practices allowed for testing and trying out how one might transfer knowledge and skills between analogue-digital contexts. They also included different profiles of teachers who co-existed in a creative, non-judgemental and sharing climate. Finally, we note that the activities that were commented on in the narratives in relation to these practice categories required the teachers' participation in both formal and informal group settings.

However, our findings also show that individuals and the institution developed collaborative practices in close relationship with each other, while the communicative practices, in contrast, became a central focus for the teachers only. According to the narratives, the school management team seemed to have little support to offer in this specific area, even though the narratives reported that their strategic work with communication at different levels was needed. The creative practices that emerged, in turn, were analysed as the outcome of the collaborative and communicative practices that had been put in place. These practices generated pedagogical innovations that were directly applied to ongoing teaching and, in part, innovations that can be maintained in a post-pandemic context. The linkages between the three overarching practice categories that we identify as crucial for educational change in the transition towards distance education were expressed throughout the teachers' narratives. Nevertheless, the communicative and creative practice categories enjoy less recognition at the institutional level than the collaborative practices. Figure 3 presents a model of what we consider to be a balanced focus on all three categories (hence the similar size of the circles used in the figure). The interdependent character of each category gives rise to the ideal conditions for educational change in times of uncertainty:
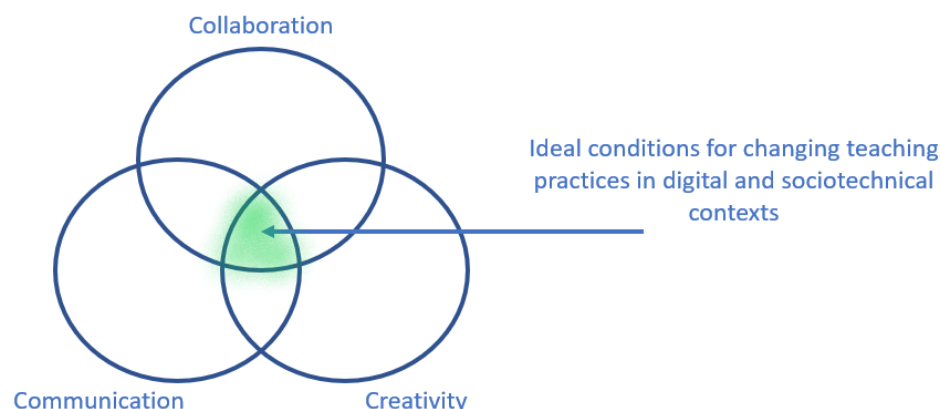

Figure 3. The CCC-model. Interdependences of practices for sociotechnical transformation.

The central space in green (Figure 3) illustrates the intersection between Collaboration, Communication, and Creativity (CCC), and conditions where the three main practice categories exist in equilibrium — supporting and strengthening one another. Our findings suggest that if these practice

categories are equally legitimised and nurtured within the organisation and are recognised by the teachers as such, then the conditions are propitious for relevant sociotechnical school development and for the teachers' continuous learning. The three practice categories are not static but are in constant movement, contributing to building a practice architecture that is subject to modification and revision in response to changing needs within and outside institutional boundaries. The CCC model (Figure 3) is also intended to illustrate how cultural change within a school can be supported. This cultural change may include the transformation of the teachers' professional identity as they move towards active, creative, designing, learning, and innovative positionings.

This small-scale study does not suggest that the model that we present here is applicable in every context. However, the patterns that we have identified are representative insofar that research in international contexts also report on common challenges that teachers are faced with and on issues related to changing school culture during the pandemic in different parts of the world. The 52 narratives present an image of emerging practices in a period of transition that is generalisable to institutions with similar structures. Consequently, we claim that the models that we have generated in our analyses can be applied and further developed in settings that resemble features that are present in this specific study. Given that, we hope that this study may inspire more extensive studies, specifically regarding areas of communication management, creativity, and innovation. These are areas that will deserve more attention in educational research in a post-pandemic period.

References

Alerby, E. (2019). Skolans rum: fyllda av minnen, känslor och pedagogiska betydelser. In I. C., Berndtsson, A. Lilja, & I. Rinne, (Eds.), *Fenomenologiska sammanflätningar: till minne av Jan Bengtsson*. Göteborg: Daidalos. (pp. 83–104).

Bagga–Gupta, S., Dahlberg, G. M., & Lindberg, Y. (Eds.) (2019). *Virtual Sites as Learning Spaces: Critical Issues on Languaging Research in Changing Eduscapes*. Basingstoke: Palgrave Macmillan.

Bonderup Dohn, N., Børsen Hansen, S., & Hansen, J. J. (Eds.) (2020). *Designing for Situated Knowledge Transformation*. London: Routledge.

Cerratto–Pargman, T., & Jahnke, I. (Eds). (2019). *Emergent Practices and Material Conditions in Learning and Teaching with Technologies*. Cham: Springer.

Choi, H. J., & Park, J. H. (2006). Difficulties that a Novice Online Instructor Faced: A Case Study. *Quarterly Review of Distance Education*, 7:3 (pp. 317–322). URL: https://www.learntechlib.org/p/106761/.

Cohen, L., Manion, L., & Morrison, K. (2011). *Research Methods in Education*. London: Routledge.

Conceição, S. C. O. (2006). Faculty Lived Experiences in the Online Environment. *Adult Education Quarterly*, 57:1 (pp. 26–45). DOI: https://doi.org/10.1177/1059601106292247.

Creswell, J. W., & Creswell J. D. (2018). *Research Design. Qualitative, Quantitative, and Mixed Methods Approaches*. London: Sage Publications.

Duran, L. (2020). Distance Learners' Experiences of Silence Online: A Phenomenological Inquiry. *International Review of Research in Open and Distributed Learning*, 21:1 (pp. 82–99). DOI: https://doi.org/10.19173/irrodl.v20i5.4538

Flick, U. (2009). *An Introduction to Qualitative Research*. 4th edition. London: Sage.

Glǎveanu, V. P., Ness, I. J., & de Saint Laurent, C. (Eds.) (2021). *Creative Learning in Digital and Virtual Environments. Opportunities and Challenges of Technology–enabled Learning and Creativity*. New York and London: Routledge.

Glǎveanu, V. P. (2014). The Psychology of Creativity: A Critical Reading. *Creativity: Theories – Research – Applications*, 1:1 (pp. 10–32). DOI: https://doi.org/10.15290/ctra.2014.01.01.02

Hager, P., & Beckett, P. (2019). *The Emergence of Complexity: Rethinking Education as a Social Science*. Cham: Springer.

Hampel, R. (2019). *Disruptive Technologies and the Language Classroom: A Complex Systems Theory Approach*. Cham: Palgrave Macmillan.

Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The Difference Between Emergency Remote Teaching and online Learning. *Educause Review* 27. March 2020. URL: https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Howard, S. K., Tondeur, J., Siddiq, F., & Scherer, R. (2021). Ready, set, go! Profiling Teachers' Readiness for Online Teaching in Secondary Education. *Technology, Pedagogy and Education*, 30:1 (pp. 141–158). DOI: 10.1080/1475939X.2020.1839543

Kalloo, R. C., Mitchell, B., & Kamalodeen, V. J. (2020). Responding to the COVID–19 Pandemic in Trinidad and Tobago: Challenges and Opportunities for Teacher Education. *Journal of Education for Teaching*, 46:4 (pp. 452–462). DOI: 10.1080/02607476.2020.1800407

Kaufmann. R., & Vallade, J. I. (2021). Online Student Perceptions of their Communication Preparedness. *E–Learning and Digital Media*, 18:1 (pp. 86–104). DOI: 10.1177/2042753020950873

Kayaduman, H., & Demirel, T. (2019). Investigating the Concerns of First–Time Distance Education Instructors. *The International Review of Research in Open and Distributed Learning,* 20:5 (pp. 85–103). DOI: 10.1177/2042753020950873

Kelly, R. W. (2016). *Creative Development: Transforming Education though Design Thinking, Innovation, and Invention*. Edmonton, Alberta: Brush Education Ltd.

Kemmis, S. (2019). *A Practice Sensibility. An Invitation to the Theory of Practice Architectures*. Singapore: Springer.

Kemmis, S. (2009). Action Research as a Practice–Changing Practice. *Educational Action Research*, 17:3 (pp. 463–474). DOI: 10.1080/09650790903093284

Kim, L. E., & Asbury, K. (2020). Like a Rug had been Pulled from Under You: The Impact of Covid–19 on Teachers in England During the First Six Weeks of the UK Lockdown. *British Journal of Educational Psychology*, 90 (pp. 1062–1083). DOI: 10.1111/bjep.12381

Limon Quezada, R., Talbot, C., & Quezada–Parker, K–B. (2020). From Bricks and Mortar to Remote Teaching: A Teacher Education Program's Response to COVID–19. *Journal of Education for Teaching*, 46:4 (pp. 472–483). DOI: 10.1080/02607476.2020.1801330

Lincoln, Y. S., & Guba, E. G. (1986). But is it Rigorous? Trustworthiness and Authenticity in Naturalistic Evaluation. *New Directions for Program Evaluation*, 1986:30 (pp. 73–84). DOI: 10.1002/ev.1427

Lindberg, Y. (2020). Review of T. C. Pargman and I. Jahnke (Eds.). (2019). Emergent Practices and Material Conditions in Learning and Teaching with Technologies, *Postdigital Science & Education*. DOI: 10.1007/s42438-020-00200-w

Lindberg, Y. (2019a). On Methodology and the Educational Sciences–Reflections on the ViLS Contributions. In S. Bagga–Gupta, G. Messina Dahlberg, & Y. Lindberg (Eds.), *Virtual Sites as Learning Spaces: Critical Issues on Languaging Research in Changing Eduscapes* (pp. 383–401). Cham: Palgrave Macmillan.

Lindberg, Y. (2019b). Creativity at the Workplace. In H. Ahl, I. Bergmo Prvulovic & K. Kilhammar (Eds.), *Human Resource Management: A Nordic Perspective*, (pp. 72–85). London, UK: Routledge.

Marshall, D. T., Shannon, D. M., & Love, S. M. (2020). How Teachers Experienced the COVID–19 Transition to Remote Instruction. *Phi Delta Kappan*, 102:3 (pp. 46–50). DOI: 10.1177/0031721720970702

Mutton, T. (2020). Teacher Education and Covid–19: Responses and Opportunities for New Pedagogical Initiatives. *Journal of Education for Teaching*, 46:4 (pp. 439–441). DOI: 10.1080/02607476.2020.1805189

Miller, A. N., Sellnow, D. D., & Strawser, M. G. (2021). Pandemic Pedagogy Challenges and Opportunities: Instruction Communication in Remote, HyFlex, and BlendFlex Courses. *Communication Education*, 70:2, (pp. 202–204). DOI: 10.1080/03634523.2020.1857418

Oswald, A. G. (2019) Improving Outcomes with Qualitative Data Analysis Software: A Reflective Journey. *Qualitative Social Work*, 18: 3 (pp. 436–442). DOI: 10.1177/1473325017744860

Ott, T., Magnusson, A.G., Weilenmann, A. & Hård af Segerstad, Y. (2018). "It Must not Disturb, it's as Simple as That": Students' Voices on Mobile Phones in the Infrastructure for Learning in Swedish Upper Secondary School. *Educ Inf Technol*, 23 (pp. 517–536). DOI: 10.1007/s10639-017-9615-0

Ott, T., Haglind, T., & Lindström, B. (2014). Students' Use of Mobile Phones for Schoolwork. In M. Kalz, Y. Bayyurt. & M. Specht (Eds.), special issue: Mobile as Mainstream–Towardss Future Challenges in Mobile Learning Communications. *Communications in Computer and Information Science*, 479, (pp. 69–80). Cham: Springer. URL: https://link.springer.com/chapter/10.1007/978-3-319-13416-1_8

Patel, R., & Davidson, B. (2011). *Forskningsmetodikens grunder. Att planera, genomföra och rapportera en undersökning*. Lund: Studentlitteratur.

Polkinghorne, D. E. (1995). Narrative Configuration in Qualitative Analyses. *Qualitative Studies in Education*, 8:1, (pp. 2–23). DOI: 10.1080/0951839950080103

Robinson, M., & Rusznyak, L. (2020). Learning to Teach without School–Based Experience: Conundrums and Possibilities in a South African Context. *Journal of Education for Teaching*, 46:4 (pp. 517–527). DOI: 10.1080/02607476.2020.1800408

Roger, E. M. (2003 [1962]). *Diffusion of Innovations*, 5th edition. New York: Free Press.

Riessman, C. K. (1993). *Narrative Analysis*. Newbury Park: Sage Publications.

Riessman, C. K. (2008). *Narrative Methods for the Human Science*. London: Sage Publications.

Salo, C. (2021). Distansundervisningen har sett liknande ut i Sverige och Finland. *Hufvustadsbladet*, July 15.

Skolinspektionen (2020). Utbildning under påverkan av coronapandemin [Education under the influence of the corona pandemic]. Rapport. Diarienummer: 2020:5177. URL: skolinspektionen.se/globalassets/02-beslut-rapporter-stat/granskningsrapporter/ovriga-publikationer/2020/covid-19/utbildning-under-paverkan-av-coronapandemin-i-grundskolan-och-grundsarskolan.pdf

Stein, M. (1953). Creativity and Culture. *Journal of Psychology*, 36 (pp. 311–322). DOI: 10.1080/00223980.1953.9712897

Stroobants, V. (2005). Stories about Learning in Narrative Biographical Research. *International Journal of Qualitative Studies in Education*, 18:1 (pp. 47–61). DOI: 10.1080/09518390412331318441

Svensson, P., & Ahrne, G. (2013). *Att designa ett kvalitativt forskningsprojekt*. In G. Ahrne & P. Svensson, (Eds.). *Handbok i kvalitativa metoder*. Stockholm: Liber.

Tondeur, J., Petko, D., Christensen, R. *et al.* (2021). Quality Criteria for Conceptual Technology Integration Models in Education: Bridging Research and Practice. *Education Technology Research and Development*, January 11. DOI: 10.1007/s11423-020-09911-0

Tracy, S. J. (2010). Qualitative Quality: Eight "Big–Tent" Criteria for Excellent Qualitative Research. *Qualitative Inquiry*, 16:10 (pp. 837–851). DOI: 10.1177/1077800410383121

Van Nuland, S., Mandzuk, D., Tucker Petrick, K., & Cooper, T. (2020). COVID–19 and its Effects on Teacher Education in Ontario: a Complex Adaptive Systems Perspective. *Journal of Education for Teaching*, 46:4 (pp. 442–451). DOI: 10.1080/02607476.2020.1803050

Wenger-Trayner, E., & Wenger-Treyner, B. (2020). *Learning to Make a Difference. Value Creation in Social Learning Spaces*. Cambridge: Cambridge University Press.

Willermark, S. (2018). Digital Didaktisk Design: Att utveckla undervisning i och för en digitaliserad skola (Doctoral dissertation). Trollhättan: Högskolan Väst, Sweden. URL: http://www.diva-portal.org/smash/get/diva2:1174749/FULLTEXT01.pdf

Åkerfeldt, A. (2021). Gymnasieelevers uppfattningar om fjärr- och distansundervisning. Web site: *Ifous – innovation, forskning och utveckling i skola och förskola*, January 11. URL: https://www.ifous.se/gymnasieelevers-uppfattningar-av-fjarr-och-distansundervisning/

Åman, P., Lindberg, Y., & Rapp, S. (2021). Prövad eller beprövad? Praktiker för prövande av lärares yrkeserfarenheter i skolan. *Educare – Vetenskapliga Skrifter*, 2021: 3, (pp. 1–31). DOI: 10.24834/educare.2021.3.1

Authors

Ylva Lindberg

Professor i Pedagogik med inriktning mot språk och litteratur

Jönköping University, Sverige

Lindberg är forskningsledare i miljön CCD – Communication, Culture, and Diversity, leder det strategiska investeringsprojektet LeaDMe – Learning, Digitalization and Media (2018-2022) och sitter i styrelsen för den svenska nationella forskarskolan UPGRADE – digitalisering i lärarutbildningen. Lindberg leder även den nationella forskarskolan CuEEd-LL – Culturally Empowering Education through Language & Literature (2021-2026)

Therése Haglind

Licentiand i Utbildningsvetenskap med inriktning mot Tillämpad IT

Jönköping University, Sverige

Haglind har en licentiatexamen från Göteborgs Universitet och är för närvarande affilierad som forskare till forskningsmiljön CCD - Communication, Culture, and Diversity vid Jönköping University.