Exploring School Leaders' Reflections on Professional Digital Competence. The Perspectives of Person, Profession and Position

School leaders have an important role in leading for digitalisation. The circumstance for leading have become even more complex following the COVID-19 pandemic and have now increased in with the use of Generative Artificial Intelligence (GenAI). This paper aims to explore and analyse school leaders' learning reflections regarding PDC for leading for digitalisation. Two research questions were used to meet this aim: (a) How do school leaders reflect upon PDC? (b) How do school leaders reflect on professional development for leading for digitalisation? This paper contributes knowledge regarding school leaders' reflections on PDC, and based on their reflections, their need for PDC for leading for digitalisation as a critical and emergent issue in education. Using document analysis of reflective learning journals written by school leaders (N=31), this paper explores and analyses school leaders' reflections on PDC. The school leaders saw PDC as a broad concept, which encompassed their skills as well as skills for leading teachers and students in the digitalisation process. PDC was considered necessary to support school leaders in their work for leading for digitalisation. The school leaders' reflections on PDC showed awareness of person, profession, and position in terms of personal dynamics, self-realisation, and identity. All of these aspects will be important in strengthening school leaders' PDC, including leadership for digitalisation, which is necessary for the continual, increasingly complex work in leading for digitalisation to support teachers and students. Leading for digitalisation continues to be a critical and emergent issue in education following the post-COVID-19 state of the new normal, as well as in the current impact of Artificial Intelligence (AI) on learning, teaching and leading in education.

Keywords: *Digitalisation, digital skills, principals, professional development.*

Introduction

School leaders have an important role in leading for digitalisation. During the COVID-19 pandemic, the circumstances being described as a disruption in schools and educational systems became even more complex for school leaders. This is within the context of what must be sustained and adapted in the old normal, new normal, and the next normal in the educational system. This involves identifying what has been missed and how it will have to be re-introduced. According to Netolicky (2020), the COVID-19 pandemic has led to education reform at a rapid rate. However, this reform originated in "necessity rather than deliberate and thoughtful planning" (Netolicky, 2020, p. 394). Whatever these issues are, school leaders will have an important role in this development (Netolicky, 2019; Netolicky, 2020). For example, these changes have once again put equity into focus (Harris & Jones, 2018). Further, it also

emphasizes the inequities between schools, as well as in families (Netolicky, 2020).

Following the pandemic, the use of digital technologies has become widespread. Here, the challenge will be not to just continue as before but to reflect upon experiences and changed directions (Hargreaves, 2020). Zhao (2020) argues that seeing COVID-19 as a short-term crisis may be a strategy that results in important (previously missed) opportunities to change schools and education systems (Zhao, 2020). Harris (2020) also calls for identifying and using these opportunities for school leaders to lead more effectively (Harris, 2020). This also includes the move from traditional school leadership to digital school leadership in, for example, digital meetings (Harris, 2020). The World Bank (WB) also sees new possibilities which may be advanced and even hastened (WB, 2021).

Long before the COVID-19 pandemic, schools in Sweden have seen strong investments in technology. This has been done through many efforts, for example, in one student, one laptop (1:1) initiatives and information and communication technology (ICT) systems to support teaching and learning in schools (Author, 2015a; 2015b; Grönlund, 2014; 2015b; Tallvid, 2015). To meet the societal demands on digitalisation, projects to strengthen digitalisation in schools and students and teachers' digital skills have been implemented in the Swedish context for many years (Jedeskog, 2007; Tallvid, 2015). However, these investments that have affected teaching and learning continue to be unclear despite investments and increased access (National Agency for Education, 2016; 2022). This is in line with international findings reporting that technologies do not automatically lead to high rates of use or better outcomes for learners (European Commission, 2019). Digital technologies have entered Swedish schools (European Commission, 2018); however, the strong intentions in policy for digital competence are somewhat unclear when studied in practice (Olofsson et al., 2011; Olofsson, et al., 2020).

Starting in 2002, the Swedish Ministry of Education proposed supporting strategic leadership in leading for digitalisation. Digitalisation was further in the Swedish National IT strategy (The Committee for Digitalisation, 2014) and the Swedish National Digitalisation Strategy for Schools (Swedish Government, 2017). The concept of *adequate digital competence* was introduced, which extended responsibility for digitalisation in the school organisation, that is, all school staff are now responsible for supporting students' adequate digital competence. Moreover, the Swedish National Agency for Education (NAE) highlighted the necessity for professional development (PD) in the area of digitalisation for all levels of Swedish schools (NAE, 2016). The NAE (2018a) stated that digital competence could be divided into four areas: to understand the impact of digitalisation on society, to be able to use and understand digital tools and media, to develop an approach that is critical and responsible, and to be able to solve problems and translate ideas into action. With the responsibility for supporting these four areas, school leaders' role and their digital competence to lead strategically for digitalisation and pedagogical development was clearly placed in focus.

Several national efforts in professional digital competence (PDC) for school leaders. One of these efforts is a module on leading for digitalisation, which the NAE implemented and called *Leading Digitalisation* (*Leda Digitalisering*; NAE, 2018a). The module provides increased knowledge and competence regarding the possibilities of digitalisation to support more efficient school development and administration as well as to develop and strengthen students' learning environment (NAE, 2018a). Beyond the NAE's module, one other effort in meeting the new demands in digitalisation has been to add digitalisation in the Swedish national principal training program (NAE, 2018b) and the 2021–2027 steering document. School leaders must identify needs in their organisation from three perspectives: *pedagogical, administrative*, and *technical* (NAE, 2020). These changes are in line with Norberg's (2019) description of the national principal program as a program in constant change.

To provide a national overview of the results of modernising schools through digitalisation, the NAE followed up teachers', preschool teachers', and school leaders' work with digitalisation during spring 2021. This overview's results showed that work remained to achieve the digitalisation strategy's aims. The most important results were that access continued to be good, although teachers lacked access to digital tools or supporting students with special needs (NAE, 2022). There needed to be improved conditions for students to develop digital skills in searching for information and critical thinking. The overview reported that the effects of COVID-19 pushed the pace of digitalisation in schools, but it remains uncertain which effects will linger post-pandemic as well as the effects on the quality of teaching. Moreover, school leaders need to take on a more systematic approach to developing digitalisation, including formulating and following up digitalisation plans, mapping the current situation regarding PDC, and exploring how digital tools and textbooks function in teaching (NAE, 2022). Thus, the need for PDC for school leaders leading for digitalisation has again been accentuated.

The focus on digital technologies in schools has continued. A proposal för a new digitalisation strategy has been put forward (NAE, 2023). However, the proposal has not been implemented by the government. Instead, the NAE received a new task to develop advice and recommendations for digitalisation in school and this work has been delayed. In general, there has been a shift from the digital to the analogue or as described as in other Nordic countries as a shift "which has experienced a pendulum swing in its approach to educational technology post-COVID" (Kucirkova et al., 2026, p. 446). Kucirkova et al. (2026) describe the changes in the Swedish context such as mobile phone restriction and limited use of digital books in schools.

Despite shifts in policy and political intentions, digital technologies continue to have an ongoing impact on all aspects of school and education now in the form of Artificial Intelligence (AI) and Generative AI (GenAI). This includes teaching, learning, and the organisation of education (Karakose & Tülübas, 2024). The debate and discussions regarding AIED have focussed on whether or not to use AI (e. g. ChatGPT) in education. This has now shifted more towards the need for more research on how AI tools can reflectively,

critically and effectively be adopted, used and advanced for teaching, learning, and leadership (Strzelecki, 2023). Although AI can serve as a teaching and learning tool to stimulate reflection, create ideas, assist in assessments, and correct language, there are also challenges. Lack of control, cheating, decreased creativity, and the advance of academic dishonesty (Neumann et al., 2023) are all complex challenges. While early research on AI appears to provide a picture of opportunities and challenges for teachers and students (Neumann et al, 2023; Rudolph et al, 2023) research on the impact of AI on school leadership is limited, presenting only early findings regarding leadership in schools (Fullan et al., 2024; Wang, 2021). Simultaneously, Fullan et al. (2024) concluded that the limited research that exists may provide opportunities for school leaders to reduce administrative tasks and focus on "more productive and creative issues that demand their human skills and their social intelligence" (p. 342). At the same time. Educators, including school leaders, need PD on how to critically evaluate digital resources, as well as to adapt the use of AIED to their specific context (Rudolph et al, 2023).

This paper aims to explore and analyse school leaders' learning reflections regarding PDC for leading for digitalisation. Two research questions were used to meet this aim: *(a) How do school leaders reflect upon PDC? (b) How do school leaders reflect on professional development for leading for digitalisation?* This paper contributes knowledge regarding school leaders' reflections on and understanding of PDC, and based on their reflections, their need for PDC for leading for digitalisation as a critical and emergent issue in education to support and advance the use of digital technologies in schools.

Literature Review

For school leaders, international research has long called for strategic leadership for school development. According to Leithwood and Riehl (2005), successful school leadership includes four functions: *setting the direction, developing the organisation, developing people,* and *developing teaching and learning.* Embedded in these four functions is the process of formulating goals and putting these goals into action as well as exploring how these goals are implemented, which can drive organisational and educational change and development (Fullan, 2015; Leithwood & Jantzi, 2006; Petersen, 2014, 2016). As in school leadership in general, these functions are strongly important for school leaders in leading for digitalisation to promote and advance digitalisation in school. Williams (2008) also emphasized school leaders' role at a time of rapid growth of digital technologies. Further, Dexter (2008) described the role of the school leader as vital for students' digital competence. Overall, the most important issue for school regarding digitalisation in schools is the presence of informed and effective school leaders (Dexter, 2008).

How school leaders took on educational reform regardging ICT was described in a study by Chua Reyes (2015). Here, school leaders described what was noted as shifting identities, emerging roles, and ambivalent capacities

in the roles as school leaders when leading for technologies. These school leaders indicated that a change in leadership was needed, going from a role to learning "a team of teachers who have been deliverers of knowledge toward leading a team of teacher facilitators" (Chua Reyes, 2015, p. 378). For teachers, this new role involves supporting students' knowledge and skills for future schooling and work within a society where digitalisation is key and where school leader support is necessary. Starkey et al. (2017) reported that an education leader or system aiming to minimise the digital divide is a "complex problem" (Starkey et al., 2017, p. 10). How school leaders choose to support teachers in this work may also differ. In a study by Tolwinska (2021) two examples of school leaders' behaviours that supported teachers use were described.. One group of school leaders focused on infrastructure and ensuring teachers had easy access to modern equipment. The other group of school leaders promoted a sharing culture that facilitated the development of PDC.

The school leader's role may either facilitate or impede complex change (Sheppard & Brown, 2014). McLeod et al. (2011) described the intersection of school leadership and digital technology as using technology to teach and that it involved the traditional content of educational leadership. In this context, school leaders' work with leading for digitalisation is complex (Author, 2019). Furthermore, school leaders' use of digital technology relates to the technological and pedagogical support as well as the technology infrastructure available (Ottestad, 2013) Support for school leaders, that is, that school leaders receive adequate support for their work, is important as well, even at the school organizer level (Pettersson, 2018a, 2018b; Pettersson, 2021; Reis Andersson, 2022).

When studying preservice teachers' PDC, Instefjord and Munthe (2016) identified three knowledge areas: technology proficiency, pedagogical compatibility, and social awareness. Using the concept of PDC, Instefjord and Munthe (2016) saw teacher education intuitions and teacher educators as being responsible for helping preservice teachers to develop the sufficiently high levels of PDC. Lund et al. (2014) note a shift from generic skills "toward skills suitable for all situations, both personal and professional, and toward an understanding of PDC that includes both generic and specific teaching-profession skills" (Lund et al., 2014, 283). However, in the case of teacher education, this also involves teachers necessarily appropriating the skills in teaching preservice teachers, which is regarded as an "extremely demanding, dual endeavor" (Lund et al., 2014, p. 284). Lindfors et al. (2021) call for an urgent need to improve the conditions supporting educators' dual didactical task. This involves a strong focus on PDC, easy accessibility to PDC, and support from leaders on an organisational level in teacher education institutions (Lindfors et al., 2021). These findings are most likely transferable to the dual didactical task that school leaders experience and their need for PDC for leading for digitalisation.

Brockmeier et al. (2005) describe a threshold regarding PDC that school leaders must cross before feeling prepared for leading for digitalisation. Flanagan and Jacobsen (2003) report many school leaders are hesitant

regarding leading technology implementation because they lack experience and formal training. Flanagan and Jacobsen (2003) state if school leaders are expected to lead their organisations toward using digital technologies, school leaders need PDC. Schiller (2003) also discusses this line of thought regarding the need for PDC. Anderson and Dexter (2005) report that school leaders need adequate technology skills for their leadership roles. Schiller (2003) reports wide variations in what school leaders understand as technology competences and skills in practice, and therefore, the need for PDC for school leaders. A school leader needs to be able to read, interpret, and analyse data because these are becoming "increasingly becoming…critical [skills]" (Schiller, 2003, p. 179). Recent research addresses the need for PDC for school leaders as well. According to Acton (2021), school leaders experience that they have received very little professional development for being a leader of change.

Programs for educating new school leaders take time to develop and adapt, and it is possible that these programs have not kept up with new pressures on school leaders (Hess & Kelly, 2007). This is perhaps also the case regarding in-service school leaders with many years of experience. Research on PDC for school leaders in practice has been limited (Acton, 2021). This is in line with Matthews and Crow (2010) who state there is a lack of research that addresses the importance of a school leader as a learner, which is most likely necessary because school leaders need the opportunity to update knowledge and skills continually. In a study on international leadership development, Bush (2012) finds a new emphasis on how school leader programs are designed and delivered. School leaders prefer to build on existing individualized experience and knowledge (Bush, 2012).

Seeing the school leader as a learner, Saarukka's (2017) model provides an interpretation of *principalship* that takes its starting point in the "school leader being a person, working as a professional and occupying a specific position in the education system" (p. 11). Using the categories of *person, profession*, and *position,* and relating these three to intrapersonal and interpersonal processes, generates multidimensional outcomes. The components of personality dynamic, self-realisation, and identity integrate into these three categories. All three also offer a possibility to have a developed and nuanced understanding of the outcomes of leadership processes, which can be reached by identifying and understanding the leadership through communicating the outcomes. Saarukka's (2017) theoretical model can support and provide understanding of a principal's professional leadership identity for leading for digitalisation. Thus, Saarukka's (2017) model and its categories may provide deeper insights into the different aspects PDC than other models provide.

Saarukka (2017) uses the model to identify the phenomenon and the person in principalship by understanding "the individual also from a professional perspective and how the individual interprets the context. As school leadership is a social mission, the professional perspective needs to be broadened to include the position" (Saarukka, 2017, p. 35). In this paper, Saarukka's (2017) framework describes and explores how the school leaders' professional identity can be understood in relation to leading for digitalisation.

The categories of person, profession, and position are in relation to the three components of personality dynamic, self-realization, and identity.

Table 1. *Interpretation of Integrating the Components in Categories via Saarukka's Model*

Components/Categories	Person	Profession	Position
Personality dynamic	Understanding oneself and individual capacities	Understanding others, interacting and managing as a professional	Ability to communicate, make decisions, and take responsibility
Self-realization	Increasing self-knowledge	Acting with professional manners in practicing leadership	To have awareness of and being able to fulfil responsibilities as a principal
Identity	Awareness of personal identity and ability to develop it	Identity develops through the profession, internal and external confirmation, and professional skills	Identity develops through trust and respect to fulfilling the mission

Source: Saarukka (2017).

In Saarukka's (2017) model, *personality dynamic and the person* relate to the individual's understanding of themselves and their abilities. *The personality dynamic and the profession* regard the individual's understanding of others as well as the interaction and management as a professional school leader. *The personality dynamic and the position* relate to the individual's ability to communicate, make decisions, and take responsibility for these decisions. *Self-realization and person* relate to increased self-awareness. *Self-realization and the profession* include acting with a professional approach in exercising principalship, while *self-realization and position* regard being aware of and having the ability to fulfil the responsibility as a school leader. *The identity and the person* comprise the awareness of the personal identity and being able to develop this awareness. *The identity and the profession* are how the profession develops through internal and external affirmations and professional abilities. *Identity and position* are developed through trust and respect to fulfil the

mission. According to Saarukka (2017), for a school leader all of these components can be developed simultaneously.

Methodology

With Saarukka's (2017) model as a point of departure and an inductive approach, this paper focuses on school leaders' reflections of PDC for leading for digitalisation. The data were gathered from learning reflections (N = 30) inspired by Moon's (2006) idea of learning journals. The learning reflections aimed to provide school leaders the opportunity to reflect on PDC and further deepen insight into these reflections as understanding PDC. This includes what PDC is and what about PDC is necessary in promoting the work in leading for digitalisation according school leaders. The learning reflections were based on two questions concerning what PDC meant for them in their profession as school leaders and what PDC they understood would support their work in leading for digitalisation. The learning reflections were written in the fall of 2021 by school leaders in the final term of the Swedish National School Leader Programme. The school leaders represented all levels of school, from preschool to upper secondary school. The school leaders had time to reflect on these questions for a short period during a lesson. The learning reflections were short texts, which varied in length, at the most about three hundred words, the shortest was some 38 words, and the average some 160 words. The learning reflections were analysed using reflexive thematic analysis (Braun & Clarke, 2019), involving reading and re-reading in a reflective approach in which themes emerged in reflection. Thereafter, the themes which emerged were analysed with the application of Saarukka's (2017) framework and presented within the categories of the framework The school leaders' texts are identified as "School leader" (School leader 1–30).

Findings

In this section, the findings are presented according to the themes: PDC from the perspectives of a school leader as an individual, in a profession, and in a position.

For many of the school leaders, PDC was seen as an individual competence. One school leader summarized this as, "Digital competence for me is the ability to use different digital tools/programmes to do my job, my studies, and to make my daily life work" (School leader 18). Several school leaders reflected on the importance of their own digital competence. "It is important that, as a leader, you also have a certain competence in the area to be able to lead certain processes or take on support from more competent staff" (School leader 19). For one school leader, their PDC meant, "I also need to be a role model" (School 18). One school leader expressed a similar idea of being a role model, along with accepting the idea of not being an expert. "I do not need to

know everything about digitalisation, but I should be a role model and a pioneer" (School leader 5).

Another school leader focused on tools for achieving digital literacy, stating, "this is about having the ability to use digital tools to make everyday life easier" (School leader 7). One school leader expressed that digital competence meant developing teaching. "[Using] digital tools in teaching to improve teaching, not because everyone has a computer and they have to work with it" (School leader 20). For teachers, one school leader saw the importance of feeling confident. "Digital competence is about feeling confident and being able to use digital tools that can be used to develop student learning or peer learning and structures in the school" (School leader 14).

The school leaders expressed several important aspects for leading for digitalisation from a professional perspective. One aspect was the professional role of creating conditions and supporting teachers' PDC.

> To be able to lead professional development, I think it is important that we [school leaders] work on our learning regarding leading teachers' learning in digitalisation... ‘modelling” and starting from research while it is important to have a bottom-up perspective to have a good impact. (School leader 4)

For one of the school leaders, leading for digitalisation regarded leading the staff, which could be challenging. "At the moment, the staff are at different levels, have different interests, and therefore, have chosen different ways" (School leader 2). This work involved support teachers’ different levels of PDC. One school leader reflected on the need to lead and create structures, stating they would do so "by leading work on implementing digital tools and programs, being attentive to the skills needed by staff, [and] using support functions and knowing how to get support” (School leader 13). Furthermore, the same school leader saw that leading digitalisation could also be seen as, "ensuring that employees are 'forced' into the use of digital tools" (School leader 13).

From the perspective of position, several school leaders reflected on the broader goals of digitalisation in the steering documents regarding PDC and digitalisation. One school leader described the possibilities of digitalisation. "Great opportunities for increased accessibility and equality, for all students regardless of their abilities.... Digital competence and use are part of the school's compensatory task" (School leader 10). One school leader reflected on seeing PDC as a way to support the issue of equity in school.

> Digital literacy is now one of the basic competences that all individuals must have in order to participate on equal terms.... Schools need to develop a more long-term and coherent approach, and the development of skills needs to be developed. (School leader 1)

Another school leader expressed the idea of improving the quality of teaching to provide students with strong opportunities in society.

> [The] competence to use digital tools, platforms, and so on to raise the quality of the activity. In schools, it is a question of democracy that everyone in society can understand the digital world we live in to be active agents in society and societal development. (School leader 16)

Expression a similar line thought, one school leader reflected PDC for supporting students: “Digital literacy is also a qualification or key to society; it can also be a formal qualification. In order for it to become formal, skills development efforts are needed" (School leader 18). This school leader saw PDC as important for students and their qualification for future studies and work.

Discussion

This paper explores and analyses school leaders’ learning reflections regarding PDC for leading for digitalisation. Two research questions were used to meet this aim: (a) How do school leaders reflect upon PDC? (b) How do school leaders reflect on professional development for leading for digitalisation? Saarukka's (2017) model visualises the school leader in a multidimensional and complex leadership role in terms of understanding PDC and leading for digitalisation.

As a person, the school leader needs to develop individual PDC. In this study, the school leaders reflected on the personality dynamic, that is, how they understood themselves and their abilities, had an increased self-knowledge, and had an awareness of the personal identity and the ability to develop this identity. This may involve passing over a threshold (Brockmeier, et al., 2005) or supporting school leaders who hesitate in using digital technologies (Flanagan & Jacobsen, 2003). Several school leaders reflected on the need for their skills in terms of basic knowledge and the ability to keep up to date in the field of digitalisation. There was also the ability and need to develop in terms of leading to support others, that is, leading digitalisation for employees by acting as a model and being one step ahead. This PDC was noted as necessary, and should most likely be individual (Bush, 2012). However, there is the need to advance this competence to catch up (Hess & Kelly, 2007). In order to advance and catch, the need for PDC is most likely even more pressing with the impact of AI and school leaders’ needs for new skills and competences (Rudolph et al. 2023). This can be link to PDC which leads to reflective, effective and ethical use of AI (Strzelecki, 2023).

As professionals, the school leaders’ actions and activities in leadership for digitalisation to develop schools as organisations can be seen. Here, personality dynamic regards the individual's understanding of others and their interactions and leadership as a professional school leader. Self-realization includes acting with a professional approach, and the identity of how the profession develops through internal and external affirmations and professional skills to facilitate or impede change (Sheppard & Brown, 2014). The school leaders' reflections described a professional approach to digital literacy and leading for digitalisation, sometimes through further skills and relevant PDC and support (Ottestad, 2013;

Schiller, 2003). Most likely, this type of professional development goes beyond the one-size-fits-all model and needs to be individualised (Bush, 2012). Here, pedagogical leadership is important for developing the teachers' professional approaches to digital competence and collegial learning (Tolwinska, 2021) in leading for digitalisation. This may involve strongly encouraging teachers to create beneficial conditions for students, that is, leading the way (Dexter, 2008; Williams, 2008) and formalising goals (Leithwood & Jantzi, 2006). As professionals, school leaders will need PDC to lead for digitalisation as change agents (Acton, 2021) and to navigate change (Chua Reyes, 2015). Acting as changes agents will continue to be important, as well as school leaders' prioritization of the use of AI to support own use and students' and teachers' use (Fullan et al., 2023; Strzelecki, 2023).

Furthermore, the school leader's position is based on the steering documents. Personal dynamic is the ability to communicate, make decisions, and have accountability for these decisions. Here, self-realization refers to being aware of and having the ability to fulfil responsibilities as a school leader. Identity and position are developed through trust and respect to fulfil the mission of leading for digitalisation (NAE, 2016; 2022). School leaders reflected on their mission to create the conditions for teachers' PDC and peer learning through their position to achieve the goals of digitalisation (Tolwinska, 2021). The school leaders highlighted the importance of steering, management, and the need for short-term goals. In teaching students, they must achieve the intentions of the steering documents in terms of democracy, equity, the compensatory mission, and to create beneficial conditions for students as citizens of society (EC, 2019; OECD, 2022; UNESCO, 2017). PDC will be needed in this position to take advantage of new possibilities (Harris, 2020; WB, 2021; Zhao, 2021)

In summary, when school leaders were asked to reflect on PDC, they understood it as a broad concept that included digital skills, supporting teachers and students' skills, and leading the school to this aim as well as the need for PDC to lead for digitalisation. This form of PDC has long been called for in the literature. Post-pandemic, the need for school leaders' PDC will most likely increase as school leaders seek PDC for learning and leading with AI (Fullan et al., 2024; Neumann et al., 2023; Rudolph et al., 2023). The post-COVID-19 state as the new normal, has swiftly shifted to AIED and will continue to have a strong impact on school leaders' professional use of AI.

Conclusions

In conclusion, the school leaders' reflections on digital competence showed awareness of person, profession, and position in terms of personal dynamics, self-realization, and identity. Saarukka (2017) suggests that a school leader can develop in all these components at the same time. The need for development can thus be seen in the school leaders' reflections on these components being necessary regarding their own digital competence to lead for digitalisation and

to support staff and students in working with digitalisation. According to the school leaders, PDC is an important aspect of professional development to further and advance PDC in the categories of person, profession and position. As a contribution to the field, the use of Saarukka's model provides insight into how school leaders' PDC is intertwined within the three categories, and how all of the categories need to be expanded and advanced in order so support school leaders' work with PDC. This is true for the post-pandemic state of the new normal as well as in times of AI. In turn, this competence will be important for the school leaders' continued work to lead for digitalisation as a complex task and thus strengthen the school leaders' professional identity and professional security in their role as school leaders to take on new technologies.

Future Research

Regarding limitations, the sample size in this study was small, both regarding the length of the learning reflections and the number of school leaders who participated. However, these short reflections provide an important picture of how school leaders reflect upon and understand PDC. These results are interesting for school leaders, school organizers, and school leader educators. The reflections the school leaders as understandings of PDC provided can be used to further the development of training programs for school leaders as well as for continuing PDC. Using Saarukka's (2017) model was fruitful as it provided the framework to explore the need for competence development in all categories and components for school leaders in general in profession and position and as persons as individuals. The findings in this paper warrant future studies, such as in-depth interviews or focus group interviews with school leaders to explore further school leaders' reflections on the complexities of leading for digitalisation and AIED as well as the need for PDC in AI to carry out this task.

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