Received: 8 February 2023 | Accepted: 6 March 2024

DOI: 10.1111/1471-3802.12662

ORIGINAL ARTICLE

Expanding the special education professional toolbox: A case study of a digitalised special education practice in Sweden

Martin Holmgren

The Department of Education, Umeå University, Umeå, Sweden

Correspondence
Martin Holmgren, Department of Education, Umeå University, Mediagrand 14, 901 87 Umeå, Sweden.
Email: martin.holmgren@umu.se

Funding information
Vetenskapsrådet

Abstract

Two educational trends that have had major impacts on school policies of the last few decades are inclusive education and digitalisation. To that end, the purpose of this study is to examine how inclusive education and the digitalisation of education are related, understood, and represented in one case of Swedish special education practice. Using activity theory as a theoretical framework, the results of this study suggest that the meaning of inclusive education has shifted, and that digitalisation has entailed both congruencies and contradictions in special education activities aiming for inclusive education. Although digitalisation was described as providing alternatives for inclusive school practices, new expectations and work assignments sometimes exceeded the special educators' professional knowledge.

KEYWORDS
activity theory, digital technology in education, digitalisation, inclusive education, special education practice

Key Points

- The case study highlights a shift in the interpretation of inclusive education, moving from a group-centred perspective to a person-centred one, which emphasises individual rights and needs. This shift challenges previously accepted notions, such as the centrality of placing all students in general classrooms as a basic requirement for inclusion.
- Digital technologies are described as an expansion of the professional toolbox for creating inclusive learning environments. However, a challenge was identified in the shape of informants' experienced lack of knowledge in this area. This can be interpreted as the digitalisation of education similarly expanding the required special education professional competence.
- The expanded professional toolbox that digitalisation enables is described as providing tools for motivating and meeting the students' preferences for how to be taught and how to learn.

INTRODUCTION

This article is framed by two major educational trends that have had a significant impact on educational policies in Europe over the last few decades: inclusive education (IE) and the digitalisation of education. Two shared features are that they have both been accepted in policies and regulations as concerns for 'every child' but at the same time they are being critically discussed in terms of benefits and how they can/should be implemented in practice. While the amount of research about each educational trend has grown massively (Chen et al., 2020;

Hernández-Torrano et al., 2022), there is less known about the relationship between the two. Their affinity is problematised in UNESCO's (2020) 'Global Education Monitoring Report: Inclusion and Education', where it is concluded that digital technology has considerable, but largely unused, potential to encourage inclusive learning environments. To address such claims, knowledge from and about school practices in digitalised contexts is needed; hence, this article aims to contribute such knowledge. Specifically, this mixed-methods study examines how IE and the digitalisation of education are understood by, and represented in, one case of a Swedish special education practice. Sweden makes an interesting case due to its school system's strong digital infrastructure (Mori et al., 2019) and its historical role as a model for providing 'a school for all' (OECD, 2011).

The Swedish school system has two occupational groups specifically trained to provide special education: special education needs coordinators (SENCOs) and special education teachers (SETs). In simple terms, the difference between the professions can be described as being that SENCOs are trained to work *for* students in need of support, while SETs are trained to work *with* students in need of support (for details, see Lindqvist, 2013). However, this imagined division of labour has proved to have little impact on actual professional practice as both usually work with similar tasks shaped by local contexts (e.g. Göransson et al., 2016; Klang et al., 2017). Therefore, this article uses the term 'special educators' to refer to both professions.

Experiences and perspectives from special education practice are important for understanding how inclusive education and digitalisation coexist and interact, with the object of providing equitable learning environments that meets the needs of all students. This study adds empirical knowledge to this field, and examines how the concepts are understood and experienced in the case of a special education practice. Below is a summary of research on IE and the digitalisation of special education, followed by a description of the theory that guided the study.

Inclusive education

Since the Salamanca Statement of 1994, many scholars have devoted their efforts to understanding and contributing to the theorisation of inclusive education, and most western countries have acknowledged IE as a political goal to strive for (Schwab, 2020). Although accepted in many policies, the exact meaning of the concept seems to be vague and open to interpretation. Haug (2017) argues that 'In spite of an overriding formal normative consensus, it is not possible to find one universally institutionalised definition of inclusive education' (p. 207), which could explain the apparent gap between 'idealistic policies' and practice (Finkelstein et al., 2021). Evidence of this definitional ambiguity can be found in a meta-analysis in which four different definitions of IE were identified: (A) the placement definition, often referred to as 'integration', (B) the specified individualised definition, (C) the general individualised definition, and (D) the community definition (see Göransson & Nilholm, 2014, p. 268 for details). According to Ainscow et al. (2006), definitions (A) and (B) are examples of narrow individual (traditional special education) definitions, while (C) and (D) are characterised as broad because they concern all students. Special education has historically focused on marginalised individuals or groups in need of, or at risk of needing, special support, whereas IE came with a focus on all students.

There are arguments that inclusive education should be viewed as an idea and practice of its own, separate from special education (e.g. Vislie, 2003). Richardson and Powell (2011, p. 274) even advise developing countries to implement the ideas of inclusive education directly, without taking the detour into special education. A more unitary approach, as Schwab (2020) concludes, is for the field of special education to 'shift the question from how we can identify students with special education needs to how we can create best support for all students' (p. 816). In that sense, it could be argued that special education must take a broader stance within educational research in order to overcome the boundaries between general and special education by embracing the ideas of inclusive education.

Implementing inclusive education in school practice is not an easy task. Specific contextual factors must be considered (Magnússon et al., 2019) which means that 'inclusive practices are as fuzzy as inclusive education' (Schwab, 2020, p. 812) and can be organised and arranged in different ways based on different ideals. But, regardless of how it is organised, research has found school practitioners' professional knowledge, skills, and positive attitudes to be important factors in the successful implementation of inclusive education (see Finkelstein et al., 2021). Literature reviews have outlined 'good inclusive practice' as an approach involving adaptive and accessible curricula, universal design for learning, individual planning, administrative support, the involvement of caregivers and—of specific interest to this study—technology (Alquraini & Gut, 2012; Forlin et al., 2013). To strengthen teachers' proficiency in these areas, pre-service and in-service training and professional development are highlighted as promising and vital strategies for more inclusive practices (Donath et al., 2023; Van Mieghem et al., 2020). Even though special educators are closely associated with, and involved in, the process of implementing inclusive education, and cooperation between teachers and special educators can nurture inclusion (Paulsrud & Nilholm, 2023), their perspectives are surprisingly underrepresented in research (Mihajlovic, 2020). Examining special educators' understandings and experiences of inclusion provides

empirical insights into their knowledge and beliefs concerning the challenges and opportunities inherent in inclusion as a practice.

To conclude, inclusive education is a widespread, well-accepted, but also widely interpretable concept which has proven difficult to implement given that contextual and local factors such as school staffs' knowledge, skills, and attitudes influence the process.

Digitalisation of (special) education

Another educational trend is the digitalisation of education. Just like the concept of IE, it has been alleged to be more policy-oriented than practice-oriented, and thus difficult to define, implement and assess. Since 2006, digital competence has been considered one of eight key competencies for lifelong learning, essential to all European citizens (European Parliament, 2006), which makes digital competence an educational matter (for a review, see Pettersson, 2018) that has influenced Swedish school and curricula.

The Swedish school system is one of the most technologically dense school systems in the world (IMD, 2021; Mori et al. 2019; Wastiau et al., 2013), and several government initiatives to implement digital technology in education have been launched since the late 1960s (Gu & Lindberg, 2021; Karlsohn, 2009). As educational organisations became increasingly digitalised, special educators faced new expectations and recommendations concerning digital teaching and learning from the National Agency for Special Needs Education and Schools (NASNES, 2020). This development raises questions about what factors support and/or hinder the implementation of digital technologies in special education. In a study by Börnert-Ringleb et al. (2021), it is concluded that special educators' self-efficacy and attitudes towards digital learning are strongly correlated to perceptions of using digital technologies, and that both aspects need to be addressed in both pre-service and in-service training. Other studies argue that frame factors, such as time for learning and access to technology, are significant (Siyam, 2019), and that structural factors, like how the special education role is included, supported and respected, are barriers or enablers for technology integration in special education (Starks & Reich, 2023).

In contrast to these examples, the majority of research combining digital technologies and special education has focused on examples of implementation or interventions using a specific technology, and the learning outcomes of students categorised into specific disability groups (Istenic Starcic & Bagon, 2014; Olakanmi et al., 2020). Less is known about special educators' experiences during their everyday practice in digitalised schools, and research on what enables and/or constrains special educators' technology use is described as a small but growing field (Inci & Köse, 2023; Starks & Reich, 2023).

Cultural-Historical Activity Theory (CHAT)

To analyse how structural and educational changes transform object-oriented special education activities of special educators, this article uses the theoretical framework CHAT (Engeström, 1987, 2015). This theory focuses on changes and developments in collective activity systems with historical heritages, which are described as the results of human action driven by an object and mediated by cultural tools (e.g. methods, books and digital technologies). Vygotsky (1978) described this human action as a subject-object interaction, whereas Leontev (1981), and later Engeström (1987, 2015), expanded the model to also include mediating tools, rules directing the activity, the community in which the activity takes place, and the division of labour between actors within the activity.

CHAT can be, and has been, applied to research from several different disciplines, and can be used with a variety of approaches that share some basic principles but differ in their implementation within research (Kaptelinin, 2005). This article focuses on the concepts of *contradictions* and its counterpart *congruencies*. Contradiction is a key concept within activity theory, and is described as the evolving tensions within and between activity systems (Engeström, 2001), which are recognised at the action level (the top triangle in Figure 1), but rooted in the activity level (the base of the triangle). Contradictions can emerge in an activity system due to factors such as societal changes and/or new tools that affect the idea of how the activity is organised and practised. In a school context, new visions and guidelines about teaching and learning can emerge alongside previous norms and ideas that still exist within the system, causing contradictions. It is important to stress that contradictions are not seen as problems within activity theory, but as 'the source of movement and change' (Sannino & Engeström, 2018, p. 49) or 'the motor of change' (Allen et al., 2013, p. 840).

Congruence, on the other hand, is not a concept typically connected to activity theory. However, in order to highlight states of balance and stability within a system, which encourage reproduction rather than change, Allen et al. (2013) stress the importance of also recognising congruencies within and between activities. By doing so, research can identify areas in which changes improve efficiency or generate new, improved ways of working with the object of an activity (Karanasios & Allen, 2014). In this article, congruencies refer to changes within the special education practice that special educators described as opportunities enabling improved ways of working.

In research based on activity theory, the object of the activity plays a key role. This concept provides an opportunity to understand why people are doing things in the way they are, and can be considered as the sense-making reason behind the behaviours of individuals, groups or organisations (Kaptelinin, 2005). Drawing on

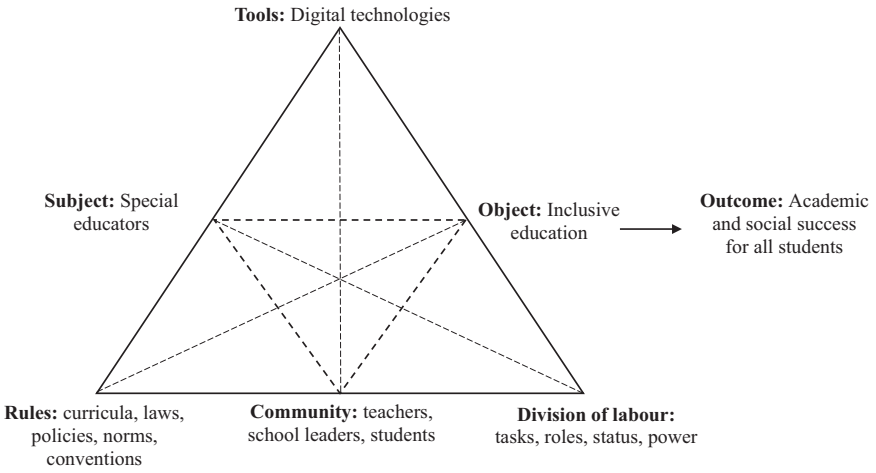

FIGURE 1 Second-generation CHAT model adapted for analysing a digitalised special education practice (adapted from Engeström, 2015).

Engeström's (1987, 2015) works, this article defines the object as the collective reason behind cultural-historical activities. Thus, the analytical focus is on how the municipality's special educators (subjects) describe the object of inclusive education in a digitalised special education practice (system), as visualised in Figure 1.

Against this background, this study aims to examine how inclusive education and the digitalisation of education are related, understood, and experienced in one specific case of special education practice. The study is guided by the following research question:

- How do special educators in one Swedish municipality experience the digitalisation of education in relation to the object of inclusive education?

METHOD

This study was conducted in a mid-sized municipality in Sweden, described as a context of structured implementation of digital tools in education. It combines data from interviews and surveys collected in 2021/2022. The motive for the mixed-methods data collection was the desire to gain both deep and contextual knowledge (Harrison et al., 2020) about the case, which was defined as a digitalised special education practice (Stake, 1995). The guidelines of the University Ethical Review Board were consulted ahead of data collection and, given the scope of the study, it was decided that no ethical approval was needed. Before data collection, informed consent was obtained from all participants.

Data sources

The digital survey was constructed and distributed by the author using Limesurvey Project Team and Schmitz (2022). Ahead of distribution, the survey was piloted by four experienced special educators, who gave constructive feedback about the Q&A constructions, after which the survey was revised to include some minor clarifications. The 15 multiple-choice questions (see Data S1), some also offering the possibility of text comments, mainly focused on (1) special education work assignments with potentially digital features, and (2) the 22 digital tools for which the municipality had purchased user licences and was thus able to provide to all employees and students. For each tool, two questions were asked: one on frequency of use and one on self-assessed knowledge of the tool (Table 1).

The semi-structured interviews were guided by 17 prepared questions, focusing on the interviewee's background, inclusive education, and digitalisation (see Data S2). Due to COVID-19 recommendations, the interviews were conducted via video conferencing software. They lasted 53:18 min on average, and with permission from the participants they were recorded and stored on Umeå University's digital platform for safe file storage.

Participants

At the time of the survey's distribution, the municipality's total population of special educators was 55. Out of those 55 potential participants, 31 answered the survey (56.4%), of which four were partially answered. Because the responses were anonymous, the author had no opportunity to contact the four recipients who did not respond to all the questions to ask for their reasons. No incentives were offered for participation. The survey participants were distributed as shown in Table 2.

The seven interviewees, all women, were recruited from among the survey participants and consisted of four SETs and three SENCOs. Their average length of special education practice experience was 8.1 years, ranging from 2 to 16 years. All the interviewees had prior experience of working within school and general education, with an average length of service of 18.3 years. To

TABLE 1 Examples of survey questions about digital tools in special education practice.

13. On average, how often do you use the following digital tools in your special education practice?	**Never**	**Once a semester**	**Once a month**	**Once a week**	**Almost daily**
(Digital Tools 1–22)					
14. How would you rate your knowledge of the following digital tools?	**Very weak**	**Weak**	**Sufficient**	**Strong**	**Very strong**
(Digital Tools 1–22)					

TABLE 2 Distribution of survey participants.

Organisation	**SENCOs**	**SETs**	**Total**
Elementary school, years 0–9	12	9	21 (66%)
Upper-secondary school, years 10–12	5	–	5 (16%)
School for students with intellectual disabilities	3	–	3 (9%)
Municipality student health care	1	1	3 (9%)
	$n=21$	$n=10$	$n=31$ (100%)

maintain both internal and external anonymity, information revealing location is excluded and each informant is referred to with a number.

Data analysis

The survey data was analysed descriptively to provide a context to the digitalised special education practice (the case) from which the interviews derive, and also to strengthen or question the results drawn from the interviews. The digital tools included in the survey were categorised according to the Categories of Digital Tools in Special Education Activities (Holmgren, 2023, pp. 491–492).

The interviews were analysed using reflexive thematic analysis (RTA). Within this school of thematic analysis, the research questions, the participants' expressions, the theory, and the researcher's preunderstandings all guide the reflexive and iterative process of providing a coherent and well-grounded interpretation of the data (Braun et al., 2019). RTA is described as an analytical method that acknowledges the researcher's involvement in generating themes and sub-themes. Coding quality in RTA does not stem from coder consensus but from deep engagement with the data and situated, reflexive interpretation (Braun & Clarke, 2021). The coding process is described as 'unstructured and organic' rather than linear (Braun & Clarke, 2020), due to the reflexive dimension, by means of which the researcher's theoretical assumptions and the progressively deepened understanding of the data continuously reconstructs the themes. The interviews, transcribed by the author and analysed using Nvivo 12 (Lumivero, 2017), were repeatedly listened to and closely read by the author with the purpose of coding (and re-coding) the data to construct sub-themes and themes related to the research questions and to the theoretical framing of CHAT (see example in Table 3; for full coding disclosure see Data S3). Quotes included in the text were translated from Swedish into English by the author.

RESULTS

This section begins with a statistical description focusing on digital features in this case of special education practice. Then, the results are structured to emphasise the relations within the activity system that were identified in the dataset, based on the survey results and the final themes from the interviews: 'A paradigm shift', 'Digital features in practice', 'Inclusion as practice', and 'Experienced changes'.

The case: A digitalised special education practice

The survey data provides a general contextual understanding of the special education practice in question. In the context of this study, the special educators use digital tools extensively in their everyday practice (see Table 4). Work assignments connected to working with students at the individual or group level, as in teaching and supporting, regularly involve digital technologies. In addition, 26 out of 31 respondents reported tutoring and supervising teachers about how and when to use digital tools as a work assignment occurring at least once a semester, but often more frequently. More than two thirds (21) of the respondents use digital screening materials for assessing and identifying students at risk of needing special support. Comments in relation to this question stated that several of the informants did not do screenings at all, either physical or digital.

TABLE 3 Example of the qualitative analysis process.

Quote	Codes	Subthemes	Theme
Interviewer: What is your understanding of inclusive? *Informant*: That's an interesting question, I think, because there's been a shift. I think we've had a… This shift from including all students in a classroom and that we're supposed to work there, I think the pendulum has now swung towards the idea that it's completely okay to have special teaching groups. We talk about flexible group solutions; we talk about special support groups. That's where I think we're going now.	From class to group A shift 'We'—the community	Ideas of Inclusive Education Changeability/Flux	A Paradigm Shift

TABLE 4 Presence of digital features in the special education practice ($n = 31$).

			If yes, how often on average?				
In your special education practice, do you…	**Yes**	**No**	**Daily**	**Once a week**	**Once a month**	**Once a semester**	**No answer**
…use digital tools when teaching/working with students in need of special support?	29	2	12	10	4	0	3
…use digital screening materials when assessing and identifying students at risk of needing special support?	21	10	2	2	7	9	1
…supervise teachers about how and when to use digital tools in their teaching?	26	5	0	4	12	10	0
…function as support when students and/or teachers need technical assistance?	19	12	0	5	9	5	0

			If yes, to what extent?			
	Yes	**No**	**Very large extent**	**Large extent**	**Small extent**	**Very small extent**
…have an influence and impact on your school's organisational strategies for the use, purchase, and distribution of digital technology?	28	3	1	8	10	9

Almost as many (19) reported that providing technical support for students and teachers was a work assignment occurring somewhere between once a week and once a semester. All but three participants reported having an influence on their school's organisational strategies regarding digital technologies. Overall, the survey results show that the investigated special education practice is strongly influenced by the digitalisation of education in terms of the presence of work activities with digital features.

A shift in the interpretation of inclusive education

In this study, the participants described the goal, or the object, of their work efforts as creating and supporting inclusive school practices. These were represented as school practices in which the academic and social needs of all students, including students in need of special support, are met by the school organisation as a whole. There was strong agreement that the definition of inclusive education had changed over time. Historically, this term referred to the placement of students in need of support in general classrooms, but now it meant something else. Several statements emphasised that inclusion as a practice mainly focusing on placing students in need of support in general classrooms was an outdated view of inclusion. For example:

> I believe that, back then, it meant that all students should be integrated. At any cost. It's fluctuated a bit, and I think that's good. It's not about excluding, but that you need to see each individual. How they can feel good and develop based on their personal circumstances. I find that exciting. And it's a good thing and a bad thing at once, because I experience, this is just what I feel, that now it's starting to become more apparent that it's OK to exclude.
>
> (Informant 7)

The intense focus on emphasising what inclusive education used to be reveals a cultural shift and shows that the concept of IE is fluent and transforms over time and in line with societal movements. It also shows that the informants considered it important to explain this shift as a basis for their present understandings:

> Interviewer: What is your understanding of inclusive education?
>
> Informant: That's an interesting question, I think, because there's been a shift. I think we've had a… This shift from including all students in a classroom and that we're supposed to work there, I think the pendulum has now swung towards the idea that it's completely okay to have special teaching groups. We talk about flexible group solutions; we talk about special support groups. That's where I think we're going now. (Informant 1)

Thus, the basis for an inclusive school practice was described as meeting the students' needs in ways that provide academic and social success for everyone, and the physical placement of this practice was subordinate to that goal. Nevertheless, several informants accentuated that the long-term goal, and the outcome of truly inclusive education, is that the needs of all students are met within the general classroom and that supporting and improving general teaching practice was central to achieving this goal:

> I think that, as representatives of the student health team, we have quite a big responsibility to, kind of, push back against the idea of lifting students in need of support out of classrooms, and instead [we need to] change the ways teachers work. And that's what my most common feedback is about. In all the cases I work with, I always get to play that ball. The ambition is that students should be able to participate in the classroom.
>
> (Informant 1)

This quote highlights a contradiction within the object, a primary contradiction (Engeström, 2015), where the goal of placing all students in general classrooms seems to be in conflict with the goal of meeting every student's individual needs. Alongside this, IE was described as creating learning environments that can accommodate all students and it was argued that, for this to occur, the general teachers' teaching must be designed in relation to differences within classes. One informant said that an inclusive school practice means that schools should be able to create learning environments in which all students can be accepted, and another framed it as a practice of creating different environments within the school that utilise a variety of teaching methods, to suit everyone. The importance of strengthening school as a social community was emphasised, making all students feel safe and comfortable within groups, experiencing a sense of belonging, and being seen and respected as group members:

> It's like this: inclusion is about a student feeling that they're part of 'the gang' and that they're allowed to join in. It's about the classes making suitable adjustments such that the students feel they're participating. So it's about being seen and being included.
>
> (Informant 3)

The students' well-being and membership within groups were highlighted as indicators of an inclusive practice, whereas the physical organisation for this ideal was of less importance:

> I would describe it as when you're included in a group, you should be able to feel safe in that context and that you're an equal member. So, to me, inclusion is creating activities where students feel included, whether it's in a classroom or a small group, or wherever.
>
> (Informant 4)

Although there was agreement among the informants that there has been a shift in how inclusive education is interpreted and enacted in practice, a contradiction was identified in relation to whether they believed that the teachers within the community shared their thoughts on IE:

> Interviewer: Is everyone within the organisation in agreement about what inclusive education is, do you think?
> Informant: No, I can't say that we agree. No, I don't think so. But there is potential here to develop this. And we, I and the teachers, have certainly started to get closer, but this is something you need to work with for a longer period of time. So I think this is perishable if you know what I mean? Even if we were to work on this for two years, I think we would need to repeat it continuously. I need it too, so it's not like I'm good and they're bad, that's not what I mean. But this is something that should always be on the agenda, because things change. (Informant 7)

Additionally, in cases where the school management had decided to initiate organisational initiatives to meet the students' needs better, such as flexible teaching groups in which students leave the general classroom for periods of time, there were disagreements within the community about whether these kinds of solutions were good or not:

> No, we don't always agree. Not everyone agrees. No, we have different views on what inclusion is about, so there are those… Like, this new flexible group we're starting up, there are teachers who think it's crap because it's segregated from the general teaching.
>
> (Informant 5)

To summarise, in the context of this study, the meaning of inclusive education seems to have changed due to societal and cultural influences. However, this shift also describes a contradiction between the aim of meeting students' needs and that of including all students in general classrooms. Another identified contradiction was the disparity between how different actors within the community defined inclusive education, which was experienced as a hindrance.

Expanding the professional toolbox and expectations exceeding competencies

The means for achieving the object of inclusive education were described in the interviews as improved teaching methods and materials, in which digital technologies were considered to be an expansion of the existing professional toolbox for teachers and special educators. Comments about digital tools as a complement to the previously available, more traditional, tools and materials, in combination with statements about the importance of having the knowledge to decide when to use them and when not, emphasised that digital tools were considered to add alternatives to their work practice, and not as substitutes to replace traditional tools. In this sense, a congruent relationship between digital technologies and the object of inclusion was expressed, in which new tools had brought new ways of working towards the object. Since all the informants had a long history of working in education, many of them described experiences of increased access to digital technologies. One informant said:

> Let me put it like this, I've worked at this school for 14 years. Back then, we had a small room with seven desktop computers that the teachers and students had to book to practise using a computer. It's a bit different today. Today, everyone from school year 2 has their own Chromebook that they can access. And among the youngest, we have one [computer] per two [students]. So there's been incredible progress in digital development. Also, if you look at the access to digital learning materials. Before, there were only books and paper.
>
> (Informant 2)

This historical development was described as changing the conditions for the object of IE. Differentiated teaching, where the teaching offers a variety of methods and materials for instructing, processing, and assessing curricula content (see Tomlinson, 2014), was described as a crucial aspect of inclusive school practice, and several informants stated their belief that digital tools make differentiated teaching easier. For example:

> It's the teacher who decides what teaching is appropriate for each student. That way of working was obviously more difficult with only books. So it's easier to customise when you have… well, the more choices you have. Because they [students] are different. That's how it is. So the digitalisation has made it much, much easier to differentiate and motivate students.
>
> (Informant 2)

> You have the opportunity to individualise your teaching based on the differences within a class. If you look into a classroom here, some are working in books, and some are sitting at the computer. They're learning the same things, but in the way that's best for each of them. And some also have the opportunity to challenge themselves a bit more. That way of teaching is more available.
>
> (Informant 6)

The ability to produce texts and presentations using digital technology, and digital tools as compensators for students' lack of certain skills, were accentuated as especially beneficial for students in need of special support. Several informants mentioned students with developmental language disorder (DLD) as specifically benefitting from using digital technologies; for example, by using compensatory tools like text-to-speech software, grammar and spelling checkers, softwares for sign language, and reading skills training applications:

> Now you have digital teaching materials, which I see as incredibly helpful for those who have quite serious reading difficulties. It makes the subject content much more accessible when they have access to it digitally, so they can listen to the texts. I also have some students who train in different skills digitally, for example, reading.
>
> (Informant 3)

Learning how to use digital tools was also described as a way of enhancing the sense of autonomy in everyday life for students with speech impairments; for example, by using symbol support software to communicate during everyday activities like buying groceries at the store or taking the bus, where symbols and images can support oral communication.

When informants were asked about their competence regarding using, instructing, and making pedagogical decisions about digital tools, a contradiction was identified. Feelings of being overwhelmed by the number of digital tools available, and lack of time for learning them, were described as a problem causing stress and frustration. Several informants said that the number of digital tools made it difficult to gain an overview and choose the right tool at the right time:

> And this is too…there are hundreds [of digital tools]…it's too much. There are too many pieces to the puzzle. I don't really understand. What should I use this for? And when? I don't have the time to look into every tool. (Informant 1)

The informants said that having an overview of the digital tools provided by the municipality was an expectation that the teachers had of special educators, so they could guide them through 'this jungle of digital tools' (Informant 7). But, because this expectation sometimes exceeded their competencies, a problematic situation was described in which teachers asked the informants questions about whether there was some digital tool that could improve their teaching in some specific area, and the special educator used resources such as Google or YouTube to try to answer their requests as best they could. To address this issue, several informants requested more knowledge:

> I need to learn…I need to gain more knowledge about different tools and what's happening in the market. Because it's changing so incredibly fast, and it's important to try to keep up so that you can use the right things with the students. They're not served by me knowing about a tool that worked five years ago. They're not served by that tool today. (Informant 2)

A lack of thorough knowledge about all the digital tools provided by the municipality was also identified in the survey results. An uneven level of self-assessed knowledge among the subjects appeared, as visualised in Figure 2, in which equal numbers of respondents described their knowledge as weak/very weak and strong/very strong.

In order to help the teachers and students to find and use adequate digital tools, informants described having more and deeper knowledge as 'a mission' (Informant 6) that required time for testing ('learning-by-doing') and initiatives for in-service training.

To summarise, in this study, digital technologies were described as tools that can contribute to more inclusive teaching practices in terms of differentiation, adaptation, compensation, and motivation. In this sense, there was a congruence between digital tools and the object of inclusive education. However, digital tools were not described as stand-alone solutions, but as tools which, through organisational changes and shared objects, could expand the professional toolbox for creating inclusive learning environments. A contradiction between the digital tools and the division of labour was also identified, where the expectations placed on the special educators sometimes exceeded their competencies.

'Students are changing'

According to CHAT theory, a community is represented by a group of individuals who share the same object. Since most informants were working alone as special educators at their school, without close

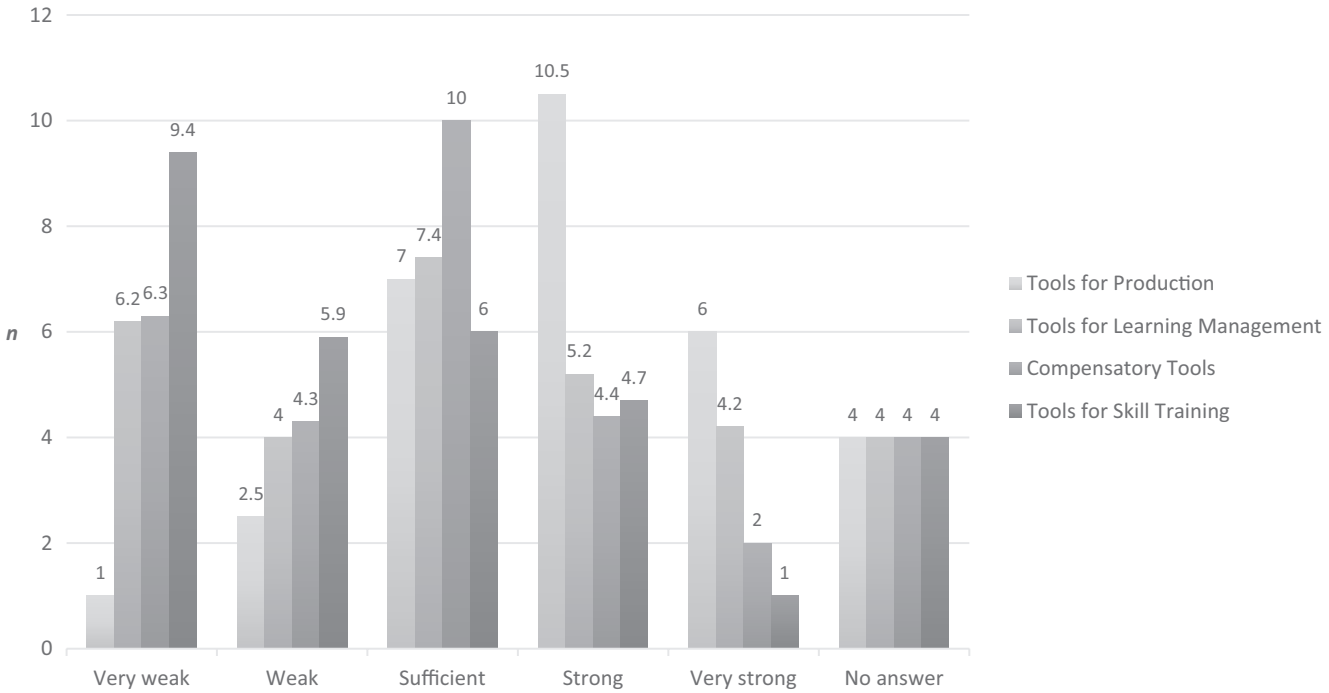

FIGURE 2 Self-assessed knowledge of digital tools (n=31). Mean n per category.

colleagues with special education expertise, the community in this study is framed not only in relation to other teachers as has been described in earlier sections, but also in relation to the students whose learning is the motive for the activities of special educators and teachers. The contradiction between teachers' and special educators' ideas about the object of inclusive education has already been described in previous sections; hence, this section describes the informants' statements about the students.

An experience of change within the community that informants described was the belief that students are in some ways different today, and thus require different methods of teaching and learning than previously. Statements about students spending more of their (spare) time with friends online than offline, and socialising via mobile technology, were argued to have an impact on how school practice has transformed during recent years. For example:

Informant: Then there's probably also a difference in the children today. They have…they have a hard time playing. They find it difficult to be physically present with a friend and play.
Interviewer: Mm. Why is that, do you think?
Informant: Because they don't do it in their spare time. They're either sitting at their computers or doing different types of, like, structured sports activities and things like that. But they don't play. Because sports practice isn't playing, free playing, using your imagination and creativity. It's very difficult for them today. So they have to practise playing in preschool and during early school years instead. (Informant 5)

Statements in alignment with the above indicate a change in how socialisation is enacted in a digitalised society, and show that this change has had an impact on school practice. The online culture and social media were also described as affecting, in a positive way, the students' linguistic development regarding English as a second language:

> They [the students] are absolutely incredible in English today. You see, most of the students know English. And I think that's thanks to digitalisation. Above all, they have much better listening- and reading comprehension than before. Much, much better. They can also speak much, much more English. A completely different level.
>
> (Informant 2)

More holistic ideas about students being different today describe a change in how to motivate students to learn school subjects. The digital world, which provides constant stimulus in terms of points, levelling up, quick responses to their actions, and appealing digital environments, was argued to have affected students' preferences for how to be taught. The digital transformation of education was described as making it easier to 'meet the students where they are' (Informant 4) and thus to motivate them. To summarise this section in CHAT terms, the study identified a congruent relationship between digital tools and the allegedly changed students.

DISCUSSION

The aim of this study was to examine how inclusive education and the digitalisation of education are understood and experienced in one Swedish case of special education practice. Sweden has one of the most technology-dense school systems in the world (IMD, 2021; Mori et al., 2019; Wastiau et al., 2013), and the study adds empirical knowledge to how the concept of inclusive education is understood and organised within a digitalised practice. By using CHAT as an analytical framework, both contradictions and congruencies were identified in relation to how to organise, develop, and facilitate inclusive school practices through the use of digital tools. These findings contribute with knowledge that will also be valuable in other contexts in the process of implementing digital technologies for (inclusive) educational purposes.

First, the results indicate that special educators in this municipality are experiencing a shift in the interpretation of what inclusive education means. The idea of IE as a practice in which all students must be placed in general classrooms, which they described as a previously accepted definition, seems to have changed. The shift towards a more person-centred perspective, which positions the individual's rights and needs for self-realisation at the forefront of the group-centred perspective, accentuating community and diversity as educational ideals, can be described as a cultural-historically driven development influenced by societal discourses. In the context of this study, meeting students' needs is positioned as the basis for an inclusive practice, whereas the physical location of this practice is subordinate. Although placement in general classrooms is highlighted as the 'long-term goal' of inclusion, this goal should not take precedence over students' rights to have their needs met. In this sense, the results restructure the categories of IE identified by Göransson and Nilholm (2014) and challenge the placement category (A) as a basic requirement for inclusive education. This also reflects what Lindner and Schwab (2020) refer to as a well-known discussion in the field of inclusive education about when inclusion turn into integration, and when we should rather call it exclusion. In the absence of sufficient support in the general classroom, a contradiction emerges between the ideals of 'all students in the same classroom' and 'meeting the needs of all students', with the latter being prioritised according to this study. This can be seen

in light of discussions about the how the processes of transforming inclusive education theory into practice are being affected by issues of local conditions, resources, and financing mechanisms (Magnússon et al., 2019; Meijer & Watkins, 2019).

Second, the importance of having a common understanding of what IE means within the organisation was stressed as an important prerequisite by the participants (c.f. Finkelstein et al., 2021). If the object of an activity is unclear, the activity risks not making sense (Kaptelinin, 2005), and if the object is perceived differently by various actors within the system, there is a risk of ending up with several parallel activities driven by different motives and represented through different actions (Engeström, 2015). In this study, the latter seems to be the case since the special educators had experiences of some of the taken actions towards their idea of inclusion being questioned by others with a different understanding of the object. From a developmental perspective, it would be important to highlight and discuss this primary contradiction (a contradiction within one of the activity system's components) within the organisations in order to define a shared object, a process which in turn could push for changes in the activity.

Another outcome of this study adds contextual knowledge about the digital features of special education professions, and how the digitalisation of education is represented in object-oriented special education practices, which at present are described as a sparsely researched area (Anderson & Putman, 2019; Holmgren, 2023; Istenic Starcic & Bagon, 2014). In this case, the object was identified as inclusive education with the outcome of academic and social success for all students, and digital tools were described as tools that expand the inclusive toolbox. Digital technologies were argued to add options and variation, and to enable differentiation (Tomlinson, 2014) which were described as important aspects of inclusion as defined in this study.

Linked to this, the general teachers' teaching was described as the foundation for inclusive education. Supervising teachers in ways that make their teaching more inclusive in general, and specifically with the help of digital tools, was discussed as an important and commonly occurring activity. This supervising and guiding role corresponds well with the recommendations made by NASNES (2020) in which educating teachers and students in the use of softwares and methods was proposed as an assignment for special educators. Given that interprofessional cooperation and consultation can benefit the process of achieving inclusion (Paulsrud & Nilholm, 2023), this task could be related to the object of inclusion as meeting the needs of all students. Digital tools were used to assist students in need of special support, and digital screening materials were commonly used to identify students at risk of needing support.

These results strengthen the argument about the professional toolboxes being expanded by digitalisation, and thus able to offer more options. A contradiction regarding the use of digital tools, and thus an identified source of potential change in the activity (Sannino & Engeström, 2018), was the informants' lack of broad knowledge about the available tools. This knowledge was explained as having a structured overview, or a map, of 'the jungle of digital tools' in which some informants had experienced becoming lost. The large number of digital tools available, in combination with the rapid development of the market, lack of time, and lack of pre-service and in-service training within this area, caused feelings of resignation and despair among the informants. This seems to have led to a practice whereby the special educators in this municipality used a limited selection of digital tools which they knew served their purposes, and about which they had deeper knowledge. However, this led to limitations regarding the options, variations, and differentiations that were highlighted as benefits.

In addition, when faced with a situation in which they were expected to give answers to questions outside of their digital comfort zone, for example when teachers requested guidance about digital teaching, informants had experienced that these expectations exceeded their knowledge. Lack of knowledge is also potentially problematic in relation to the result showing that the majority of the special educators participating in this study were expected to have an influence and impact on the organisational decisions regarding strategies, purchases, and the distribution of digital technologies. Overall, the results reveal a need to understand what kind of professional competencies are expected and necessary in digitalised special education practices, and the importance of supporting special educators with in-service and pre-service training (c.f. Donath et al., 2023).

Finally, a congruence between the students and digital teaching and learning was described in the case of this study. Experiences of students socialising and learning informally in different (digital) ways nowadays were understood as a cultural change, for which using digital tools in education was not only seen as expanding the professionals' repertoire of tools, but also as a way of motivating students to learn; the expanded professional toolbox that digitalisation enables was described as bringing new efficient ways of working with students towards the object. Digital features in teaching were described as meeting the students where they are, implying that, in this context, students are living in a digitalised world which arguably influences their motivations and preferences for how to be taught and how to learn. This assumption must be critically balanced and problematised, however, because research has shown that not all students have the same prior experiences or preferences (Eynon, 2020). In addition, in relation to the object of inclusion as meeting all

students' needs, pedagogical decisions in schools must be based on the students' *needs*, and not primarily on what they *want*.

LIMITATIONS AND FUTURE RESEARCH

Because this study draws on data from one case of a special education practice, the results should not be considered generalisable. In addition, the data consists of the participants' responses and verbal descriptions of their practice which might differ from their actual practice. The fact that the interviews were carried out in Swedish but published in English should also be viewed critically, given the potential for flaws in translation. Also, the choice to include all the participants in one activity system delimits the opportunities to identify variations within and between the municipality's school units. Future studies are encouraged to add perspectives from other actors (e.g. teachers, students, school leaders) within the activity system, which could shed further light on the identified community-object contradiction.

CONCLUSIONS

This study has examined experiences of inclusive education and digitalisation in one Swedish case of a special education practice. A perceptible shift in the interpretation of inclusive education was highlighted, moving from a group-centred perspective to a more person-centred one, which emphasises individual rights and needs. This evolution challenges previously accepted notions, such as the centrality of placing students in general classrooms as a basic requirement for inclusion. In addition, organisational clarity about the meaning of inclusive education emerged as crucial, with a lack of a shared understanding leading to conflicting actions and motives within the system. Furthermore, the study illuminates digital features of special education practices, describing digital technology as an expansion of the professional toolbox for creating inclusive learning environments. However, a challenge was identified in the shape of informants' experienced lack of knowledge in this area, revealing an expansion of the requirements for professional competencies within digitalised special education practices. Lastly, a congruence between students and digital teaching was acknowledged, which emphasises a cultural shift in informal learning. While digital tools were seen as motivational and meeting students 'where they are', caution is urged to balance this assumption with recognising diverse student experiences.

ACKNOWLEDGEMENTS

This work was supported by the School of Education at Umeå University, and by the Swedish Research Council [No. 2019-03607].

FUNDING INFORMATION

This work was supported by the School of Education at Umeå University, and by the Swedish Research Council [No. 2019–03607].

CONFLICT OF INTEREST STATEMENT

The author(s) declared no conflicting interests.

DATA AVAILABILITY STATEMENT

Research data are not shared.

ETHICS STATEMENT

Given the scope of the study, the guidelines of the University Ethical Review Board were consulted and ahead of the data collection it was decided that no ethical approval was needed. Before data collection, informed consent was obtained from all participants. No incentives were offered for participation.

ORCID

Martin Holmgren https://orcid.org/0000-0002-7583-0557

REFERENCES

Ainscow, M., Booth, T. & Dyson, A. (2006) *Improving schools, developing inclusion*. London: Routledge. Available from: https://doi.org/10.4324/9780203967157

Allen, D.K., Brown, A., Karanasios, S. & Norman, A. (2013) How should technology-mediated organizational change be explained? A comparison of the contributions of critical realism and activity theory. *MIS Quarterly*, 37(3), 835–854.

Alquraini, T. & Gut, D. (2012) Critical components of successful inclusion of students with severe disabilities: litterature review. *International Journal of Special Education*, 27(1), 42–59.

Anderson, S.E. & Putman, R.S. (2019) Special education Teachers' experience, confidence, beliefs, and knowledge about integrating technology. *Journal of Special Education Technology*, 35(1), 37–50. Available from: https://doi.org/10.1177/0162643419836409

Börnert-Ringleb, M., Casale, G. & Hillenbrand, C. (2021) What predicts Teachers' use of digital learning in Germany? Examining the obstacles and conditions of digital learning in special education. *European Journal of Special Needs Education*, 36(1), 80–97. Available from: https://doi.org/10.1080/08856257.2021.1872847

Braun, V. & Clarke, V. (2020) Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and Psychotherapy Research*, 21(1), 37–47. Available from: https://doi.org/10.1002/capr.12360

Braun, V. & Clarke, V. (2021) To saturate or not to saturate? Questioning data saturation as a useful concept for thematic analysis and sample-size rationales. *Qualitative Research in Sport, Exercise and Health*, 13(2), 201–216. Available from: https://doi.org/10.1080/2159676x.2019.1704846

Braun, V., Clarke, V., Hayfield, N. & Terry, G. (2019) Thematic analysis. In: Liamputtong, P. (Ed.) *Handbook of research methods in health social sciences*. Singapore: Springer, pp. 843–860. Available from: https://doi.org/10.1007/978-981-10-5251-4_103

Chen, X., Zou, D. & Xie, H. (2020) Fifty years of British Journal of educational technology: a topic modeling based bibliometric perspective. *British Journal of Educational Technology*, 51(3), 692–708. Available from: https://doi.org/10.1111/bjet.12907

Donath, J.L., Lüke, T., Graf, E., Tran, U.S. & Götz, T. (2023) Does professional development effectively support the implementation of inclusive education? A meta-analysis. *Educational Psychology Review*, 35(1), 30. Available from: https://doi.org/10.1007/s10648-023-09752-2

Engeström, Y. (1987) *Learning by expanding: an activity-theoretical approach to developmental research*. Helsinki: Orienta-konsultit.

Engeström, Y. (2001) Expansive learning at work: toward an activity theoretical reconceptualization. *Journal of Education and Work*, 14(1), 133–156. Available from: https://doi.org/10.1080/13639080020028747

Engeström, Y. (2015) *Learning by expanding: an activity-theoretical approach to developmental research*, 2nd edition. Cambridge: Cambridge University Press.

European Parliament. (2006) *Recommendation of the European Parliament and of the ouncil of 18 December 2006 on Key Competences for Lifelong Learning*. Available from: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:394:0010:0018:en:PDF [Accessed 11th December 2022].

Eynon, R. (2020) *The myth of the digital native: Why it persists and the harm it inflicts*. Paris: OECD. Available from: https://doi.org/10.1787/2dac420b-en

Finkelstein, S., Sharma, U. & Furlonger, B. (2021) The inclusive practices of classroom teachers: a scoping review and thematic analysis. *International Journal of Inclusive Education*, 25(6), 735–762. Available from: https://doi.org/10.1080/13603116.2019.1572232

Forlin, C., Chambers, D., Loreman, T., Deppler, J. & Sharma, U. (2013) *Inclusive education for students with disability: a review of the best evidence in relation to theory and practice*. Available from: https://researchonline.nd.edu.au/edu_article/141/ [Accessed 14th December 2023].

Göransson, K., Lindqvist, G., Möllås, G., Almqvist, L. & Nilholm, C. (2016) Ideas about occupational roles and inclusive practices among special needs educators and support teachers in Sweden. *Educational Review*, 69(4), 490–505. Available from: https://doi.org/10.1080/00131911.2016.1237477

Göransson, K. & Nilholm, C. (2014) Conceptual diversities and empirical shortcomings—A critical analysis of research on inclusive education. *European Journal of Special Needs Education*, 29(3), 265–280. Available from: https://doi.org/10.1080/08856257.2014.933545

Gu, L. & Lindberg, O. (2021) Understanding Swedish educational policy developments in the field of digital education. In: Krejsler, J.B. & Moos, L. (Eds.) *What works in nordic school policies? mapping approaches to evidence, social technologies and transnational influences*. Switzerland: Springer, pp. 213–233. Available from: https://doi.org/10.1007/978-3-030-66629-3_11

Harrison, R.L., Reilly, T.M. & Creswell, J.W. (2020) Methodological rigor in mixed methods: an application in management studies. *Journal of Mixed Methods Research*, 14(4), 473–495. Available from: https://doi.org/10.1177/1558689819900585

Haug, P. (2017) Understanding inclusive education: ideals and reality. *Scandinavian Journal of Disability Research*, 19(3), 206–217. Available from: https://doi.org/10.1080/15017419.2016.1224778

Hernández-Torrano, D., Somerton, M. & Helmer, J. (2022) Mapping research on inclusive education since Salamanca Statement: a bibliometric review of the literature over 25 years. *International Journal of Inclusive Education*, 26(9), 893–912. Available from: https://doi.org/10.1080/13603116.2020.1747555

Holmgren, M. (2023) Enacting special education in a digitalized school: opening for new understandings of a digitalized special educational practice. *Journal of Special Education Technology*, 38(4), 488–500. Available from: https://doi.org/10.1177/01626434221131776

IMD. (2021) *IMD world digital competitiveness ranking 2021*. Switzerland. Available from: https://www.imd.org/link/5963ef400b8d4cfe8d8f79c1f4f72bf4.aspx [Accessed 30th January 2023].

Inci, G. & Köse, H. (2023) The landscape of technology research in special education: A bibliometric analysis. *Journal of Special Education Technology*, 14, 94–107. Available from: https://doi.org/10.1177/01626434231180582

Istenic Starcic, A. & Bagon, S. (2014) ICT-supported learning for inclusion of people with special needs: review of seven educational technology journals, 1970-2011. *British Journal of Educational Technology*, 45(2), 202–230. Available from: https://doi.org/10.1111/bjet.12086

Kaptelinin, V. (2005) The object of activity: making sense of the sense-maker. *Mind, Culture, and Activity*, 12(1), 4–18. Available from: https://doi.org/10.1207/s15327884mca1201_2

Karanasios, S. & Allen, D. (2014) Mobile technology in mobile work: Contradictions and congruencies in activity systems. *European Journal of Information Systems*, 23(5), 529–542. Available from: https://doi.org/10.1057/ejis.2014.20

Karlsohn, T. (2009) *Teknik—Retorik—Kritik: om IT-bubblan och datoriseringen av den svenska skolan* [*Technology—rhetoric—criticism: About the IT-bubble and computerization of the Swedish school*]. Stockholm: Carlsson Publishing.

Klang, N., Möllås, G., Gustafson, K. & Göransson, K. (2017) *Specialpedagogers/Speciallärares arbete i den dagliga skolpraktiken*.

Leontev, A. (1981) The problem of activity in psychology. In: Wertsch, J. (Ed.) *The concept of activity in soviet psychology*. Armonk: M.E. Sharpe, pp. 37–71.

Limesurvey Project Team & Schmitz, C. (2022) limesurvey: an open source survey tool. Available from: http://www.limesurvey.org [Accessed 12th April 2022].

Lindner, K.-T. & Schwab, S. (2020) Differentiation and individualisation in inclusive education: a systematic review and narrative synthesis. *International Journal of Inclusive Education*, 1-21, 1–21. Available from: https://doi.org/10.1080/13603116.2020.1813450

Lindqvist, G. (2013) SENCOs: vanguards or in vain? *Journal of Research in Special Educational Needs*, 13(3), 198–207. Available from: https://doi.org/10.1111/j.1471-3802.2012.01249.x

Lumivero. (2017) *NVivo 12*. (Version 12, 1.7.1). Lumivero. Available from: https://lumivero.com/products/nvivo/ [Accessed 20th November 2022].

Magnússon, G., Göransson, K. & Lindqvist, G. (2019) Contextualizing inclusive education in educational policy: The case of Sweden. *Nordic Journal of Studies in Educational Policy*, 5(2), 67–77. Available from: https://doi.org/10.1080/20020317.2019.1586512

Meijer, C.J.W. & Watkins, A. (2019) Financing special needs and inclusive education—from Salamanca to the present. *International Journal of Inclusive Education*, 23(7–8), 705–721. Available from: https://doi.org/10.1080/13603116.2019.1623330

Mihajlovic, C. (2020) Special educators perceptions of their role in inclusive education: a case study in Finland. *Journal of Pedagogical Research*, 4(2), 83–97. Available from: https://doi.org/10.33902/jpr.2020060179

Mori, I. & European Commission. (2019) *2nd survey of schools. ICT in Education, Technical Report. P. O. o. t. E. U. Belgium*. Available from: https://policycommons.net/artifacts/279330/2nd-survey-of-schools/1122674/ [Accessed 19th October 2022].

NASNES. (2020) *Digitalt lärande—för att nå målen* [*Digital learning—to Reach the Goals*]. Available from: https://webbutiken.spsm.se/digitalt-larande-for-att-na-malen/ [Accessed 14th February 2021].

OECD. (2011) *Social justice in the oecd: how do the member states compare? sustainable governance indicators 2011*.

Olakanmi, O.A., Akcayir, G., Ishola, O.M. & Demmans Epp, C. (2020) Using technology in special education: current practices and trends. *Educational Technology Research and Development*, 68(4), 1711–1738. Available from: https://doi.org/10.1007/s11423-020-09795-0

Paulsrud, D. & Nilholm, C. (2023) Teaching for inclusion—A review of research on the cooperation between regular teachers and special educators in the work with students in need of special support. *International Journal of Inclusive Education*, 27(4), 541–555. Available from: https://doi.org/10.1080/13603116.2020.1846799

Pettersson, F. (2018) On the issues of digital competence in educational contexts—A review of literature. *Education and Information Technologies*, 23(3), 1005–1021. Available from: https://doi.org/10.1007/s10639-017-9649-3

Richardson, J. & Powell, J. (2011) *Comparing special education: origins to contemporary paradoxes*. Stanford: Stanford University Press.

Sannino, A. & Engeström, Y. (2018) Cultural-historical activity theory: founding insights and new challenges. *Cultural-Historical Psychology*, 14(3), 43–56.

Schwab, S. (2020) Inclusive and special education in Europe. In: Sharma, U. & Salend, S. (Eds.) *Oxford research encyclopedia of education*. New York: Oxford University Press. Available from: https://doi.org/10.1093/acrefore/9780190264093.013.1230

Siyam, N. (2019) Factors impacting special education Teachers' acceptance and actual use of technology. *Education and Information Technologies*, 24(3), 2035–2057. Available from: https://doi.org/10.1007/s10639-018-09859-y

Stake, R.E. (1995) *The art of case study research*. Thousand Oaks: Sage.

Starks, A.C. & Reich, S.M. (2023) "What about special ed?" Barriers and enablers for teaching with technology in special education. *Computers & Education*, 193, 104665. Available from: https://doi.org/10.1016/j.compedu.2022.104665

Tomlinson, C.A. (2014) *The differentiated classroom: responding to the needs of all learners*, 2nd edition. edition. Alexandria, VA: ASCD.

UNESCO. (2020) Global Education Monitoring Report 2020: inclusion and education: all means all. Available from: https://unesdoc.unesco.org/ark:/48223/pf0000373718 [Accessed 3rd September 2021].

Van Mieghem, A., Verschueren, K., Petry, K. & Struyf, E. (2020) An analysis of research on inclusive education: a systematic search and meta review. *International Journal of Inclusive Education*, 24(6), 675–689. Available from: https://doi.org/10.1080/13603116.2018.1482012

Vislie, L. (2003) From integration to inclusion: focusing global trends and changes in the Western European societies. *European Journal of Special Needs Education*, 18(1), 17–35. Available from: https://doi.org/10.1080/0885625082000042294

Vygotsky, L.S. (1978) *Mind in society: development of higher psychological processes*. Cambridge, Mass: Harvard University Press. Available from: https://doi.org/10.2307/j.ctvjf9vz4

Wastiau, P., Blamire, R., Kearney, C., Quittre, V., Gaer, E. & Monseur, C. (2013) The use of ICT in education: a survey of schools in Europe. *European Journal of Education*, 48, 11–27. Available from: https://doi.org/10.2307/23357043

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Holmgren, M. (2024) Expanding the special education professional toolbox: A case study of a digitalised special education practice in Sweden. *Journal of Research in Special Educational Needs*, 00, 1–14. Available from: https://doi.org/10.1111/1471-3802.12662