Digital Technology, Young Children with Disabilities, and Preschool Inclusion: An Observation Study in the Context of the Swedish Preschool

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ABSTRACT
Currently, inclusion is embraced, and the digitalisation of society is one of the salient issues of our time. The aim here is to describe and analyse the use of digital technology and online activities in inclusive preschools in the context of the Swedish preschool. Direct semi-structured observations were conducted in seven inclusive preschools. The results show that various digital technologies and online activities have been implemented, and that these technologies and activities facilitate and enhance preschool inclusion in several ways, both directly and indirectly. The study expands our knowledge about digital technology, young children with disabilities, and preschool inclusion.

Keywords: artefact, digitalisation, disabilities, early childhood inclusion, technologies

Introduction
This study concerns digital technology, young children with disabilities, and preschool inclusion in Sweden. In the study, we investigate the use of digital technology and online activities in inclusive preschools, and discuss how such technology and activities can facilitate and enhance preschool inclusion for children with disabilities.
In our study, digital technology, such as tablets, robots, and projectors are understood as digital artefacts in accordance with sociocultural learning theory (Fleer, 2018; Säljö, 2005). This means they are considered to be important everyday tools for children and staff members at inclusive preschools. Online activities refer to different forms of communication using digital artefacts, for example sharing a digital photo. Young children with disabilities in this study refer to children aged three to five with a formal medical diagnosis, as well as special educational needs. The expression preschool inclusion has the same meaning as early childhood inclusion. It refers primarily to the sense of belonging in educational activities, daily routines and play at preschool, adaptations, and learning, rather than the placement of children with and without disabilities in the same preschool (Hebbeler & Spiker, 2016; Soukakou, 2016; Sandall et al., 2019; UNICEF, n.d.). UNICEF (n.d.) has defined inclusion as follows: “Education environments that adapt the design and physical structures, teaching methods, and curriculum as well as the culture, policy and practice of education environments so that they are accessible to all students without discrimination. Placing students with disabilities within mainstream classes without these adaptations does not constitute inclusion” (p. 3).

Currently, inclusion for children with disabilities is embraced in macro policies (Salamanca Declaration, 1994; the United Nation’s Agenda for Sustainable Development, 2015; the United Nation’s Convention on the Rights of Persons with Disabilities, 2006) at the same time as the digitalisation of society is one of our time’s most salient issues (United Nations Children’s Fund [UNICEF], 2017). This means that preschool inclusion should be put into practice, and that preschool staff members must ensure that all children, including those with disabilities, feel a sense of belonging among peers, and acquire new knowledge and skills at preschool. This also means that digital technology and online activities are a huge part of daily life, for example for preschool staff members and children in preschool (Forsling, 2011; Lundqvist et al., 2021). This major issue of our time creates opportunities, for example, to facilitate and enhance preschool inclusion by means of such technology and activities. We will come back to this in a later section on reviews and previous studies.

In Sweden, preschool is the first part of the education system. In the Swedish preschool, all children must have the same opportunity to take part in educational activities, daily routines, and play, as well as to gain new knowledge and develop to their fullest potential (Swedish Code of Statutes, 2010:800; Swedish National Agency for Education [SNAE], 2018). This includes children with disabilities. Whenever needed, each child with a disability should be provided adequate support (Swedish Code of Statutes, 2010:800; SNAE, 2018), the main purpose of which is to ensure that each child can participate actively in preschool activities, routines, and play situations, thereby acquiring new knowledge and developing to their full potential. A Swedish preschool often incorporates several units or departments, and the administrative body in charge may be the municipal council. Each preschool also has a head teacher/pedagogical leader, preschool teachers with a university degree, and other preschool staff members.
According to the Swedish National Agency for Education (SNAE, 2018), all children in Swedish preschools must be given opportunities to use digital technology and develop their digital competence. Preschool staff members must also use digital technology and online activities “in a way that stimulates [all children’s] development and learning” (SNAE, 2018, p. 16).

There are reviews (Abbot, 2007; Lyons & Tredwell, 2015; Mahoney & Hall, 2017) and previous studies (Chmiliar, 2016; Fleer, 2018; Ismailova, 2021; Laubscher et al., 2022) of digital technology, young children with disabilities, and preschool inclusion. Abbot (2007) conducted a review of e-inclusion, which he defined as “the inclusion of people with learning difficulties through the use of digital technologies” (p. 26), and concluded that digital technology facilitates and enhances inclusion. According to Abbot’s review, digital technology and online activities provide opportunities for children to train and revise. One example is that they provide stimuli to which children can respond. Abbot considers that such use of technology and activities belong in e-inclusion and relate to a behaviourist understanding of learning, but that such use should not be dominant, but should rather be used only when needed. According to Abbot’s review, digital technology and online activities also compensate for children’s difficulties. One example is that they assist children in communicating with staff members and peers. For example, they create opportunities for children with disabilities who are unable to speak to make their wishes known, to take part in discussions, and to become literate. Abbot believes that such uses of technology and activities have their place in e-inclusion, compensating for difficulties and assisting learning. He explains this as follows: “The use of technologies in this way is ... usually not related to a specific theoretical model of learning; it is an adjunct to learning rather than the key agency through which the learning takes place” (p. 13). Other researchers (Fleer, 2018; Laubscher et al., 2022) have come to similar conclusions, and emphasised the beneficial roles of digital technology and online activities in relation to assisting communication for children with disabilities in inclusive preschools. Moreover, Abbot’s review (2007) shows that digital technology and online activities provide opportunities for staff members to set up classrooms in which all children can learn in new ways. Abbot’s opinion is that such uses have a key place in e-inclusion: they promote collaboration in classrooms; transform classrooms; and relate to, for example, a sociocultural view of learning. In brief, his review showed that “e-inclusion can be seen to encompass technology to train or rehearse, technology to assist learning and technology to enable learning” (Abbot, 2007, p. 24).

Mahoney and Hall (2017) conducted a literature review on differentiated instruction, digital technology and disabilities. Differentiation refers to varying the content, process, and product so that all children can participate actively and learn. It can also be described as a means of inclusive education. According to their review, digital technology and online activities are useful for differentiating instruction and engaging children in learning. They create opportunities for children with disabilities to learn the same subjects as their peers, manage on their own, have a sense of autonomy, succeed, and receive immediate feedback. Similar to Abbot (2007) and Mahoney and Hall (2017),
Lyons and Tredwell (2015) also provided descriptions of and conclusions in these matters. They suggest a five-step process for using digital technology and online activities in early childhood inclusive programmes, and they show what preschool teachers and other preschool staff members should do. The first step is to assess the technological knowledge of children and peers using the following questions:

1. What is technology? 2. What do you call this tool ...? 3. Do you like using technology by yourself or with a friend? 4. What technology do you use at home ...? 5. When can you play with technology at home ...? 6. What is your favorite technology ...? 7. What is your favorite App ...? (p. 154)

The second step is to develop technology rules together with children and peers. Three examples of such rules are “use clean dry hands, use soft touches,” and keep the devices in a safe and dry place (p. 155). The third step is to apply professional judgment and programme policy. Some examples are to ensure equal access for all children, set limitations, exclude non-interactive technologies, and include technology supporting hands-on learning, thinking, creativity, as well as goals and values of an early childhood inclusive programme. One more example is to recognise that children may need assistive technologies (ATs). Lyons and Tredwell (2015) state:

Educators should recognize that the technology needs of children with disabilities may be different. Young children with disabilities may need assistive technologies (ATs) to actively participate in their daily routines and activities (e.g., to communicate with peers and adults [families and professionals], for vision or hearing, to play, to access materials and the physical environment). (p. 155)

The fourth step includes implementing technology and activities in educational activities, routines, and play. Step five includes evaluation and development work on matters such as learning opportunities for children when offering them a certain digital technology and online activity in an inclusive programme. Chmiliar (2016) conducted an observation study on children with disabilities, and on tablets and apps that were integrated in a learning centre of an inclusive preschool classroom. The children participating demonstrated extensive learning through online activities with tablets and apps in the leaning centre. For example, they learned the alphabet, to read, and to complete a jigsaw puzzle. Their most successful learning related to apps they liked. The children navigated through apps independently, engaged with all apps provided to them, and alternated their use of familiar and new apps. According to Chmiliar (2016), it is important to have tablets integrated in classroom learning centres, to provide apps that relate to children’s interests, to provide several apps, and to ensure that apps have a range of difficulty. Furthermore, studies on digital technology, online activities, preschool inclusion, and children with disabilities have shown that these types of technologies and activities also assist communication between the preschool and a child during long-term hospitalisation (Ismailova, 2021), and between home and
preschool, for example on matters like information from preschool to home and organising homework (Ismailova, 2021). Fleer (2018) has suggested that digital technology can be described as a bridge between home and preschool. Fleer conducted a study of one child who used digital technology (a tablet, applications, and computer), both at home and at their inclusive preschool. The child had a visual impairment and used the digital technology not only to navigate at home and in preschool, but also as a tool for social relations at home and in preschool, academic development in music and mathematical concepts at home and in preschool, and as a bridge between these two environments. At home, interactions often occurred around digital technology and a certain app, and this carried over into preschool. For example, the child learned symbols and concepts by means of the technology and an app at home, and made use of this knowledge in social relations and learning at preschool. This means the digital technology was not linked to the child’s visual difficulty. Rather it was linked to the child’s daily life and abilities, such as hearing and talking. Further, Fleer stated that “the use of a digital tablet should be viewed not as compensation but rather as a social device that supports inclusion” (2018, p. 34), and that digital tools are “part of the social relations between the child and their social and material world” (2018, p. 35).

To sum up, digital technology has been framed by both a behaviourist understanding of learning, a compensatory framework, and a more socially oriented framework, such as a sociocultural view of learning, in previous inclusion research and practice. These are conceptually disparate educational theories. This means digital technology is conceptually understood as capable of providing an important stimulus, compensating for difficulties, assisting learning, facilitating interactions and/or as an important everyday tool. In our study, digital technology is understood to be a digital artefact. We will come back to this later in the discussion.

Aim
This study aims to describe and analyse the use of digital technology and online activities in inclusive preschool attended by children with disabilities, in the context of the Swedish preschool. The questions are: What digital technologies and online activities are implemented? What are the observed benefits of using these technologies and activities in relation to inclusive education and learning?

The study provides further knowledge on digital technology, young children with disabilities, and preschool inclusion. It concentrates on digital technology as a force for inclusion. It also contributes a description and analysis in the context of the Swedish preschool.

Method
This study is part of two larger studies related to a research project called Sustainable Development of inclusive preschools: Interdisciplinary co-production research for children with disabilities and the teaching profession in the preschool of the future. It was supported by Forte [grant number 2018–01855]. The overall aim of the project
is to expand knowledge about preschool inclusion, and how it can be implemented for children with various disabilities. It has ethical approval (2019–03724), and before data collection was conducted, preschool staff members consented to taking part, and parents of the children approved the study. In the study, we involved seven inclusive preschools where digital technology and online activities were integrated into educational activities, daily routines, and play. The variations between these preschools were: geographical location, preschool size, and formal medical disabilities of the children. The range of disabilities included autism, intellectual disabilities, attention deficit hyperactivity disorder (ADHD), limited intellectual functioning, language disorder, selective mutism, visual impairment, and epilepsy. In all the preschools, at least one preschool teacher and two other preschool staff members constituted a work team.

The data was collected by one of the authors (JL) between 2019 and 2021. Direct semi-structured observations (Yin, 2014) were conducted in each preschool for approximately five to ten days. Pen and paper were used. No film or voice recordings were made. Digital technology and online activities were identified in the notes, and data on observed benefits were analysed using a thematic inductive analysis approach (Braun & Clarke, 2006), in which patterns (i.e., themes and subthemes) were identified, given names, and described. Some examples of the researchers’ actions were as follows: several readings of observation notes; using these notes to find the benefits of using the technologies and activities for inclusive education and learning, for example, a sense of belonging in educational activities, daily routines and play at preschool, adaptations, and learning concepts and skills; observing patterns in the benefits (i.e., organising them into themes and subthemes); and naming the themes. To increase trustworthiness and give life to the themes, the descriptions included examples from the observations.

In the results, children refer to the participating children with disabilities and peers by the terms, typically-developing children and children without disabilities.

**Results**

According to the observations, preschool teachers and other preschool staff members in the inclusive preschools implemented various types of digital artefacts. This included mobile phones, tablets, computers, flat-screen televisions, robots, projectors, and several educational and administrative apps. They also conducted different forms of online activities and communication using these artefacts, for example sharing digital photos with children, parents, and colleagues. Two overall themes and subthemes emerged in the inductive analysis. The themes and subthemes reflected observed benefits of using the technologies and activities in relation to inclusive education and learning in preschools.

**Benefits for children**

The first theme (theme 1) is benefits for children. The theme indicates that digital technology and online activities create a broad range of benefits for children with disabilities.
The first subtheme (1.1) is called *cosiness and recreation*. This involves opportunities for children to rest, find relief from stress, calm down, and withdraw from more lively preschool activities through digital technology and online activities. Examples are soothing music combined with colourfully patterned videos projected onto the wall, or painting on a computer. The first is described as follows: A staff member puts on soothing music and a colourfully patterned video in a calm space for a child who needs to rest. She sits next to the child and makes sure the child can hear the music and see the pattern. The other example is as follows: In the corner of a classroom, there is a computer. Every day after lunch, a child sits down at the computer to paint digitally. A staff member takes part and provides support when needed. At times, a peer also takes part.

The second subtheme (1.2) is *a combined joy of movement*. This means social interactions between children and peers, peer interactions, music, and gross motor skills activities. During the observations, children and peers dance and sing along with dancers and singers on a flat-screen television or a screen projected onto the wall. They are active and show their enjoyment. Staff members take part. They help the children and their peers to start the film clips, and they model and provide gentle prompts, such as holding hands with the children when needed. They also give positive feedback on children’s and peer’s efforts.

The third subtheme (1.3) is *cognitive and academic abilities*. According to the observations, digital technologies, such as tablets and educational apps, are implemented to promote children’s learning and the development of cognitive and academic abilities. The abilities relate to various school subjects such as mathematics, literacy, zoology, botany and chromatics. We will return to literacy in the next subtheme. One example is an observed virtual trip to the sun, conducted in a preschool, exploring the solar system: The staff members initiate a circle time with colourful pictures of the sun projected onto a whiteboard. They talk about the sun, and both the child with a disability and peers take part. Another observed example is a staff member who initiates and leads teaching about animal sounds, using a tablet and an educational app. The staff member places the tablet in front of the child with a disability, sits down next to him, starts the app, encourages the child to interact with the tablet and herself, and supports the child throughout the activity using modelling, gentle prompts (such as hand-over-hand assistance), and positive feedback. The child engages with the app, which provides a stimulus to which the child responds. The child looks at and touches the tablet and makes animal sounds.

Subtheme four (1.4) is *stories, pictures, and texts*. It is, primarily, a theme involving digital technology, which can read picture books and stories to children (and peers), in Swedish as well as in the children’s (and peers’) mother tongues. According to the observations, the staff members sometimes decide not to read a picture book or tell a story, but instead use digital technologies. One observation shows how a preschool teacher makes use of a tablet and an educational app during story time. She places the tablet in front of two children with disabilities and their peers. Thereafter, she concentrates on encouraging the children’s active participation. She sits down next to them
and puts her arms around them. She shows them where to look and describes, using easy words, what happens.

Subtheme five (1.5) is *diverting attention* and reflects ways in which a staff member helps a child to sit still using digital technology. The observed example is a staff member and parent, who encourages a child to watch film clips on a mobile phone while being fed.

Subtheme six (1.6) is *external motivation*, and it relates to outside motivation using digital technology and online activities. According to the observations, children obtain reinforcements from staff, which is called tablet time, after preschool teacher-led instructions.

The last subtheme relates to theme one (1.7) and is *communicating important messages*. It is a subtheme that reflects opportunities for children who do not speak, to use assisting digital technologies such as voice output devices. One example is a child who presses a voice output device during personal care routines when assistance is needed. Peers can also use this technology.

**Benefits for preschool staff members**

The second theme (theme 2) is benefits for preschool staff members. The theme shows how digital technology and online activities create benefits for preschool teachers and other preschool staff members. These are opportunities to feel satisfied at work, manage pedagogical documentation, and be able to handle administrative chores.

The first subtheme (2.1) is *a sustainable working environment*. It reveals how digital technology enables breaks and rest time at work. According to the observations, digital technologies, such as film clips, temporarily reduce the workload of staff, and make it possible for one or two staff members to remain in the preschool group while other staff members have a break for personal hygiene routines or the like. It also reflects the fact that digital technologies at times “do the job,” instead of a staff member. They read books and tell stories to children and their peers. They also instruct children and their peers on subjects such as mathematics, literacy, zoology, botany and chromatics.

The second subtheme (2.2) is *recording, re-experiencing, and memorable moments*, and is a theme about digital pedagogical documentation. Recording refers to taking notes, taking a photo or recording a short film clip, and re-experiencing refers to experiencing an educational activity, daily routine or play situation again through a note, photo or a film clip. Memorable moments are educational activities, daily routines, and play that are perceived as special and worth remembering. One example of digital pedagogical documentation involves children and peers playing with water. Another example includes instruction, in which both children and peers are actively involved. Staff members look at these, re-experience activities, and self-reflect. Staff members also present pedagogical documentation on the walls or on in-house preschool blogs or the like, so that children, peers, parents, and colleagues can have a look at them. During an observation, the staff at one preschool discuss the importance of showing their pedagogical documentation to colleagues. They say pedagogical documentation shows the children’s strengths, and what the children and peers can do together.
The third subtheme (2.3) illustrates opportunities to *handle administrative chores in an effective manner* by means of digital technology. This is also the name of the subtheme. According to the observations, digital technologies, such as tablets with platforms, facilitate documentation of children’s presence and absence, and mobile phones enable communication with parents and provide them with information. A staff member, for example, can send a text message to a parent and, within a short time, receive an answer. The parents can do the same.

An overview of the benefits identified is presented in Table 1.

### Table 1: The titles of themes and subthemes

<table>
<thead>
<tr>
<th>THEME</th>
<th>SUBTHEME</th>
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| Benefits for children (1) | Cosiness and recreation (1.1)  
  A combined joy of movement (1.2)  
  Cognitive and academic abilities (1.3)  
  Stories, pictures, and texts (1.4)  
  Diverting attention (1.5)  
  External motivation (1.6)  
  Communicating important messages (1.7) |
| Benefits for preschool staff members (2) | A sustainable working environment (2.1)  
  Recording, re-experiencing, and memorable moments (2.2)  
  Handle administrative chores in an effective manner (2.3). |

*Note. Themes, (N = 2). Subthemes, (N = 10; benefits for children n = 7; benefits for preschool staff members n = 3).*

### Discussion

The aim was to describe and analyse the use of digital technology and online activities in inclusive preschool units attended by children with disabilities, in the context of the Swedish preschool.

The results of this study confirm the findings of reviews (Abbot, 2007; Mahoney & Hall, 2017) and previous studies (Chmiliar, 2016; Fleer, 2018; Ismailova, 2021; Laubscher et al., 2022), which show that digital technology and online activities can facilitate and enhance preschool inclusion for children with disabilities, and thus contribute positively to their sense of belonging and learning at preschool. The similarities to the reviews (Abbot, 2007; Mahoney & Hall, 2017) and previous studies (Chmiliar, 2016; Fleer, 2018; Ismailova, 2021; Laubscher et al., 2022) are striking. Both reviews and previous studies, as well as the results of this study, show that digital technology and online activities: provide opportunities for children with disabilities to train and revise subjects, such as mathematics, zoology, botany and chromatics; assist communication and learning at preschool, such as communicating an important message; assist communication between home and preschool thereby functioning as digital bridges; and enable learning for children with disabilities, as well as their peers, in new ways. Two examples of such learning benefits highlighted in this study are: a virtual trip to the sun; and a digital reading session in Swedish, where staff members, instead of reading the book aloud themselves, encouraged the participation of children with disabilities, thus enhancing their learning. These similarities strengthen the external
validity of this study, and the extent to which results can be generalised into a broader context, with other children and staff members.

Moreover, the results of this study also reinforce these reviews (Abbot, 2007; Mahoney & Hall, 2017) and previous studies (Chmiliar, 2016; Fleer, 2018; Ismailova, 2021; Laubscher et al., 2022). The contributions are as follows: The results of this study show that digital technology and online activities assist children’s recreation, promote a sense of cosiness in preschool, are useful when a child is being fed, and offer external motivation. These benefits can be understood as indirectly related, rather than directly related, to facilitating and enhancing preschool inclusion, that is, to say the sense of belonging and learning at preschool (Hebbeler & Spiker, 2016; Soukakou, 2016; Sandall et al., 2019; UNICEF, n.d.). It is obvious that eating and resting help children to succeed in preschool, and that active and calm activities need to be balanced to ensure that children have positive experiences of daily life in preschool. Furthermore, the results of this study show that digital technology and online activities are also advantageous for preschool teachers and other preschool staff members. They create opportunities to feel good at work, to create pedagogical documentation, and to easily handle administrative chores. Like the above-mentioned benefits for children, the benefits for preschool staff members seem more indirectly related to preschool inclusion. Nonetheless, a staff member who, for example, feels good at work and conducts administrative chores in an effective way, is more likely to do a better job in achieving preschool inclusion. These contributions enhance our knowledge about digital technology, young children with disabilities and preschool inclusion. They also show that digital technology and online activities are useful and valuable tools for both children and preschool staff members, as well as parents, at an inclusive preschool.

None of the participating preschool staff members in this study were observed to assess the technological knowledge of the children, develop technology rules together with children, or systematically evaluate or assess their work with a certain digital technology and online activity. Doing so may not be a routine in these preschools. This is a somewhat worrisome result, and these issues could possibly be subjects for further development (Lyons & Tredwell, 2015). This may also be the case in other preschools that use digital technology and conduct online activities.

To summarise, when the results from reviews (Abbot, 2007; Mahoney & Hall, 2017), previous studies (Chmiliar, 2016; Fleer, 2018; Ismailova, 2021; Laubscher et al., 2022), and this study are pieced together, it can be concluded that the use of digital technology and online activities facilitate and enhance preschool inclusion (i.e., a sense of belonging in educational activities, daily routines and play at preschool, adaptations, and learning) in several direct and indirect ways, and do not lead to loneliness, segregation or exclusion at a preschool. It can also be concluded that a behaviourist model of learning (in which digital technology provides a stimulus to which children can respond), a compensation framework (in which digital technology compensates for difficulties and assists learning), and a sociocultural view of learning (in which digital technology is understood as a digital artefact and tool for learning and interaction) can co-exist at inclusive preschools, and are considered essential by preschool staff members.
Therefore, the application of conceptually disparate educational theories in inclusion research appears useful and valuable, in a study that aims to describe and analyse the use of digital technology and online activities in inclusive preschools, attended by children with disabilities. This part of the discussion indicates that, in an inclusive research study, it may be somewhat counterproductive to select and give preference to one single conceptual educational theory in advance. This was the case for us, as our understanding of digital technology was a tablet, robot, and projector (or the like) as a digital artefact in accordance with sociocultural learning theory. Together, conceptually disparate educational theories can provide (close to practice) explanations of what is observed, as well as being a useful and valuable vocabulary of concepts for the researcher(s).

This study is relevant for preschool staff members, teacher educators, and teacher students, as well as others interested in digital technology, young children with disabilities and preschool inclusion. The results can form the basis for important discussions, since preschool inclusion is currently embraced in macro policies (Salamanca Declaration, 1994; the United Nation’s Agenda for Sustainable Development, 2015; the United Nation’s Convention on the Rights of Persons with Disabilities, 2006), and the digitalisation of society is a salient issue of our time (UNICEF, 2017).

However, this is a small-scale study with limitations. One limitation relates to the instances of practical digital technology applications, which are associated with direct references, rather than a critical analysis. Further research can investigate if other uses and benefits of digital technology and online activities are present at inclusive preschools, and what the long-term effects of this technology and activities are. It can also explore uses and benefits related to peer interactions in depth, since these are important at inclusive preschools, and how children and parents experience the use and benefits of digital technology and online activities at inclusive preschools. In addition, it can investigate how working with a certain digital technology and online activity can and should be systematically evaluated and assessed by staff members at inclusive preschools. Moreover, a small-scale study of the benefits, though not the challenges, can be considered romanticising the use of digital technology and online activities at inclusive preschools. Although challenges were not considered in this study, the researcher who collected the data observed technology that did not always work, and staff members who found it difficult to use digital technology. Further research can investigate what challenges exist, and how these challenges can be dealt with.

Disclosure statement
No potential conflict of interest is reported.

Conference presentation
The preliminary results of the study were presented at the 2023 NERA [Nordic Educational Research Association] Conference, 15–17 March, in Oslo. Theme Digitalization and Technologies in Education – Opportunities and Challenges.
Author contributions
JL planned the study, collected the data, performed the analyses, and wrote the paper. PA planned the study and contributed to the analyses and revision of the paper.

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