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Connecting Disciplinary Literacy and Digital Storytelling in K–12 Education

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Chapter 9

Children's Cultural Backpack and Preschool Education: A Design-Based Study in a Swedish Preschool

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ABSTRACT

This chapter centres on how children's informal acquisition of textual knowledge is used or not used when children and teachers interact in formal literacy situations involving digital tools in preschool. When an interactive learning environment becomes meaningful in the eyes of children, there is potential for creativity and learning and children become competent agents in their own context and cultural environment. The empirical starting point for the chapter is qualitative observations made for a research project at a Swedish preschool. The study was organised as design-based research. The study displayed an interesting dimension of interaction in which the child had or assumed agency in dialogue with an adult. This involved occasions when the teacher was responsive to understanding the child's cultural backpack. The study is based on didactic design theories. The perspective adds to the understanding of learning in relation to human sign-creating activities.

INTRODUCTION

From the day they are born, children live in a world of shared global stories, an early interaction in constant connection with culture and history (Hvit Lindstrand, 2015). Media and popular culture that surround children are part of the informal textual experience that can lead to early written language development (Dahlberg et al., 2007; Hedge, 2011). The chapter highlights and discusses how children's informally acquired textual knowledge is used, or not used, when children and educators interact in formal digital literacy activities in preschool.

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The study that forms the basis of the chapter was conducted at a preschool in a Swedish small town. Preschool is voluntary in Sweden. Municipalities must offer preschool for children from the age of one. Today, some 80 per cent of one- to five-year-olds attend preschool in Sweden, if only for a few hours a day. This score is high by international standards. The national curriculum states that education in the preschool should lay the foundations for life-long learning and be enjoyable and rich in learning for all children (Lpfö18). Preschool should promote the development of children to become active, creative, competent and responsible people and members of society. Children's development and learning take place at all times. Hence teaching in preschool can be based on content that is planned or appears spontaneously. Preschool teachers are responsible for the educational content of teaching and for promoting development and learning in children. Preschool teachers therefore have a special responsibility in the education provided jointly by the teaching team (Lpfö18).

Four educators and four children aged 2 to 3 participated in the study presented in this chapter. The study was designed as a Design-Based Research (DBR) project, where the staff at the preschool together with the researcher explored, reflected on, and developed literacy activities with digital tools. The data material revealed an interesting dimension in which children were given, or took, agency in interaction with adults. These occasions were partly about activities when the educator was not fully aware of the situation, and partly about the moments when the educator abandoned preconceived traditional power relations in a learning situation, and focused, together with the child, on the child's own cultural experiences. This is the focus of the chapter - the juncture of the children's perspectives and the teachers' understanding of knowledge.

The study is based on a multimodal literacy perspective, where children's past experience, skills, and agency are highlighted (Selander & Kress, 2017). In this chapter, the term *cultural backpack* is used to describe children's informally conquered and developed textual knowledge. In relation to such textual knowledge, the term *text* reflects a multimodal perspective and can include, for example film, song and music, image, play and advertisements. In the interaction between educators and children a kind of digital storytelling appears. The children are, in this interaction given the agency to produce and discuss their own narratives— a possible basis for early written language development.

BACKGROUND

This section gives an overview of the area dealt with in the chapter: multimodal literacy and digital competences, but also children's agency in preschool, children's cultural backpack, children's educational and technological skills, and children's interaction with educators and digital tools. The section ends with an insight of how preschool teachers can interact with children and digital tools.

Multimodal Literacy

Gjems (2018) states that early literacy is fundamental to children's learning and development, seen from a lifelong perspective. This relationship applies both to the informal text skills that the children receive at home and at leisure, and to the more formal textual practices, the children participate in at preschool. Kress (2009) describes how children, with support in the textual worlds of the family and media, communicate their experiences multimodality. This means that they come to preschool with rich literacy experiences that are based on a variety of multimodal communicative abilities and competences.

In order for teaching in preschool to become meaningful, questions about how educators design and stage literacy activities, and whether they have the skills to recognize and handle the children's cultural experiences, are central.

From a multimodal perspective, it is studied how adults and children participate in mutual interaction through different literacy practices and how this creates meaning in a text-oriented culture (Kress, 2009; Kjällander, 2011). Multimodal literacy can theoretically be understood as a competence to understand and handle many different forms of expression today in different text contexts. This focus draws attention to the fact that communication and learning take place through more forms of expression than before and that all these forms of expression can be seen as meaningful (Jewitt, 2012; Åkerfeldt, 2013). A multimodal perspective on literacy has its origins in questions about how new communicative conditions in a digitalized environment affect the conditions for knowledge and learning (Forsling, 2017, 2020). In school and preschool, these questions indicate a need for increased digital competence.

Digital Competence

In order to offer children participation and meaning-making, the role of educators and their views on children and cultural interaction must be seen as important factors, not least in contexts where digital tools are used (Kjällander, 2011, 2014). In the early 2000s, the Swedish researchers Klerfelt (2007) and Ljung-Djårf (2004) highlighted the uncertainty of Swedish preschool teachers in relation to computers as interactive learning tools and the teachers' concern about how they could balance the preschool's traditional activities with an understanding of children's media culture. Educators who were not accustomed to using or motivated to use digital tools did not encourage the children to use them. The children's opportunities for knowledge and development of digital competence in relation to digital devices as meaning-making tools were thus limited (Elm Fristorp, 2012; Forsling, 2020; Letnes, 2017). When an interactive learning environment becomes meaningful in children's eyes, opportunities for creativity and learning are opened and the children become competent agents in the context and in their own social and cultural environment (Kjällander, 2011). To be able to offer such a learning environment, the educator must have adequate digital skills. According to the European Parliament (2005), digital competence is based on basic ICT¹ skills, that is, the ability to retrieve, assess, and store information, and to produce and communicate with and through digital media. Digital competence is about creativity and innovation, but also about ethics and law, as well as an ability to think critically about the texts that create our identity and culture (Thomas, 2011). The term *adequate digital competence* makes it clear that such competence changes over time as both the tools themselves and the use of them develop. The term is also used to indicate that it is not possible to specify an absolute level for digital competence as it needs to be gradually developed based on the demands of society and the conditions of children and pupils (SOU 2015:28). In order to develop an adequate digital competence, space for agency is required.

Children's Agency in Preschool

Agency can be seen as both a goal and a mediating resource, and it is about the scope for action and participation and the ability to act independently based on one's own choices (Sarinen & Kumpulainen, 2014). Agency is, according to Mäkitalo (2016), the very essence of a socio-cultural perspective on learning. This agency encompasses the opportunity to intervene in and change the content of ongoing activity, whether the pupil or the teacher designs the activity (Forsling, 2017, 2020).

When it comes to children's agency, the adult is often given an important role as facilitator, whether analogue or digital tools are used. The educator focuses both on the activity itself and on the chosen technology through design and engineering (Jewitt, 2012). Even in the case of child-initiated use of digital tools, the surrounding context and the educator's supportive interaction and didactic flexibility become important for the enabling of children's agency.

Lagerlöf, Wallerstedt and Kultti (2019) as well as Mäkitalo (2016) believe that agency is not something that can be taken for granted. Agency is dependent on context and medium, and therefore the educator has an important role in children's development of agency. The educators invite the children to participate as co-creators in the activity. The educator thus responds to and legitimizes the child's contributions, coordinates content and direction and helps to challenge the child's understanding. In her dissertation, Nilsen (2018) describes how educators' control of activities has decisive consequences for children's agency and what kind of interaction develops between the participants. Nilsen further shows how children's experiences, interests, and intentions, together with the support of the educators, shaped the activities where digital tools were used. Likewise, Rönnerberg (2008) highlights how children are competent actors in their own contexts and their own social and cultural environment. They are creators committed to their own interests and enabled by the available resources that the context provides. These circumstances open up for a possible interaction between the children's informal literacy experience and the formal education in preschool.

Children's Cultural Backpack, Informal Literacy Practices

Nowadays, digital media is integrated into family life and daily routines. Statistics show that even very young children have access to their own computers, tablets, mobiles and game consoles. It has been found that children aged 0-8 use the Internet early in life, and this is also a fact in Sweden (Statens medieråd, 2019). According to Marsh (2016), the young children's favorite place on the internet is YouTube, and their activity there is dominated by the viewing of short clips related to the children's favorite areas, that is, by the consumption of multimodal text. Digital tools and social media can have a positive impact on children's agency and meaning-making (Carlsson, 2010; Kjällander & Riddersporre, 2019). With agency, children have increased opportunity to be producers in the new text landscapes, rather than just consumers of culture (Carrington, 2005). This change is about shaping identity and enabling democratic approaches as well as creativity and cultural production.

Children Interacting With Educators and Digital Tools

In preschool there are many types of relationships between children and adults where power is not equally distributed. The adults have preferential powers based on governance documents, operational orientations, finances and other context-bound issues. This means that, in some contexts, children may be more or less forced to participate in various activities. In these situations, the children can act in different ways. For example, Corsaro (2012) describes how children, by creating their own peer cultures, violate or change rules that are set by educators. Skånfors (2013) shows how children exercise agency in the form of resistance, how they challenge the educator's intentions and thereby opt out of community and participation. At the same time, some children strive for adaptation *and* resistance, a desire both to be a part of the collective and to have the agency to renegotiate arrangements in the activities (Eriksson

Bergström, 2013). This may illustrate that children are not passive recipients but instead that they have the skills to handle and understand the norms, rules and social structures of their environment.

Despite the asymmetrical power relationship between adults and children, children can still have the agency to be social designers. Karlsson Häikiö (2018) demonstrates how children's rights can be manifested through cultural participation. The children in his study used cameras to photograph the world outside preschool from their own perspective. Since the educators did not consider the children as merely recipients or performers of the instructions provided by the adults, the children were offered agency on their own terms. By being active participants, the children positioned themselves as active explorers and creators of meaning.

Educators Interacting With Children and Digital Tools

Digital technology is constantly evolving and changing and it is necessary that the educator is constantly updated (Forsling, 2020; Letnes, 2017; Nilsen, 2018). The preschool teacher's digital competence is closely related to the preschool's concrete work with the children's digital activities. Letnes (2017) states that working with digital technology in preschool can be complicated, but also that it can be done easily. Letnes highlights the importance of having a basic technical competence and of relating to technology in constant interaction with practice. Furthermore, the teacher must have a broad and deep understanding of communicative processes. There are also additional issues involved such as how to create a framework for security, experiences, play and learning; in other words, a framework for education. The relationship between theory and practice in pedagogy means that the theoretical work should contribute to a reflective and improved practice (Letnes, 2017). It is furthermore important that the teacher can argue why the technology should have a place in the preschool pedagogical practice. The integration of digital technology must be rooted in concrete and situated forms of practice in close interaction with reflection of the other educational work that takes place at preschool. It is through this type of in-depth, flexible, pragmatic, and nuanced use of technology in preschool practice that a foundation can be established for the effective application and development of the educator's professional digital skills (Forsling, 2020, Letnes, 2017, Nilsen, 2018).

Nilsen (2018) examines in her doctoral dissertation how teachers and children in preschool interact with digital tools. The teachers in the study take on important roles as supporters by guiding the interaction in the studied situations. The results show that tablets and apps are used for different purposes, depending on the children's opportunities for agency. Children and educators have different motives for using the digital tools and this can lead to difficulties in establishing intersubjectivity. Intersubjectivity means that an individual can take the other person's perspective in, for example, a conversation. Intersubjectivity can arise when the adult listens to, interprets, and confirms what the child is trying to communicate, and creates a relationship between those who participate in the conversation (Öhman, 2016).

Jernes (2013) has studied interaction processes in Norwegian preschool contexts. The results show the preschool teachers' dilemma of operating between the assignment of goal-related learning and children's free exploration, where there can be a tension between inclusion and exclusion. In the light of this dilemma, questions can arise about how the educators handle and use the children's informally acquired textual skills in their formal teaching in preschool. In an inclusive environment, children will be allowed to tell their own stories, listen to each other and to support each other. This could be a possibility for the preschool teacher to design for learning, using the children's cultural backpack for interaction (Forsling, 2020).

DESIGN-ORIENTED THEORY

The study is based on didactic design theories with a focus on the learning processes of children and adults (Selander & Kress, 2017). Designs for learning is an expansive research area, developed on sociosemiotic and multimodal theories. Design theory is rooted in issues surrounding how communicative affordances in an increasingly digital environment influence the conditions for knowledge and learning. The New London Group (1997), Jewitt (2009) and Åkerfeldt (2014), all discuss the fact that communication and learning are expressed in more forms today than before and that all these expressions may be regarded as meaningful. Design theories are also based on a broader understanding of text, according to which not only graphic text or verbal language are the primary expressions for learning and meaning-making. Kress (2009) points out that these theoretical premises put the spotlight on the ways in which different resources are used (or not used) in social practices, in informal settings where learning takes place, and in formal learning environments, such as schools and preschools. In this chapter, the notion of design is used in interpreting teachers' design and orchestration of learning environments and learning situations. Designs for learning helps to understand learning in relation to a context and in relation to the conditions created for learning in different environments and situations (Leijon & Lindstrand, 2012). Didactic design involves several agents with different roles, and in preschool, for example, both teachers and children can be designers. The teachers have the agency to choose actively what sign system to use in order to design for teaching and learning. The choice of design is important for the activity to be considered meaningful or not (Selander & Kress, 2017). This ability to make choices is linked to the teacher's ability for didactic flexibility, that is, a deep understanding of the resources that can be used in different situations to create the most beneficial conditions for learning and meaning-making (Forsling, 2017; Elm Fristorp, 2012). Didactic design can also be described as a social practice that prioritizes agency, dynamics, and objects before content and method. In these practices, there should be continuous opportunities for the participants' reflections, and for design, staging, and evaluation (Lund & Hauge, 2011). The core analytical concepts used in the study and presented in this chapter *agency* and *flexibility* have been derived from design-oriented theories.

METHOD

Design-Based Research (DBR) was used because the purpose of the study was for the method to lead to opportunities for deep reflection for the educators. DBR is increasingly used in learning research. DBR is based on collaboration between teachers and researchers. The researcher and the participating teachers carry out teaching according to the joint agreement and the researcher studies and analyzes the results. Brown (1992) as well as Letnes (2017) and Åkerlund (2014) argues that DBR is about both the intention to study how different educational methods have different consequences on learning, and a desire to change. The method enables studies of complex systems involving the predicted as well as the unforeseen by interacting with more variables than originally known to the researchers, including variables derived from the researchers themselves (Brown, 1992; Collins, 1992). One of the advantages of the method is that different competences are combined. One disadvantage may be that the researcher, after initiating the project, may find it difficult to relate critically to the result (Andersson & Shattuck, 2012).

According to DBR the design always goes through changes and modifications during the ongoing study. Adjustments of the staging can change the way for the purpose of the study to be achieved, or

generate data that were impossible in the original design (Bannan-Ritland, Gorard, Middleton, & Taylor, 2008). In the present study, the method specifically meant that the staff groups at the preschool together with the researcher designed literacy activities where digital tools were used. The design and the staging were changed and reconfigured over time as the study progressed. The changes were mostly related to how the reflection sessions turned out or the daily status of staff and children and could be about different types of organizational, educational, and/or personal causal relationships.

Selection

Four preschool teachers participated in the study. Three of them, Mia, Kate and Lisa, had participated in a previous study in the fall of 2017 (Forsling, 2020). The fourth teacher, Git, was recently employed at the preschool. She had not been included in the previous research study. The names of teachers, children and preschools have been de-identified by fictitious names. During spring 2018, the researcher made seven visits at the preschool Lille Skutt. The parents of four children between the ages of two and three had received written information and signed consent forms. The choice of preschool was made on the basis that the staff participated in a previous study with a digital theme. The choice can be seen as a convenience sample as the study was limited due to time and finances. The consequences of such a selection can be both positive and negative. One advantage of conducting the study in a known place is that you do not have to spend time getting past the gatekeepers of the research environment to gain access. One disadvantage may be that the informants may be resistant participants after a long period of research in the workplace.

Information and Consent

Contact was made with the preschool head, the preschool staff and later with the legal guardians of the children. All invited participants were informed about the purpose and structure of the study. They were provided consent forms and were informed that they could withdraw their participation at any time in the research process without giving any reason. After receiving oral and written information about the study and its purpose, the legal guardians approved in writing that the children were allowed to participate.

Ethical Reflections

The study was conducted in accordance with the Swedish Research Council's ethical guidelines (Vetenskapsrådet, 2017) and the General Data Protection Regulation (GDPR). The municipality, the preschool, all informants and all participating children have been pseudonymized, according to Article 89 of the GDPR, that is, personal data is processed in such a way that it cannot be attributed to a specific person without the use of supplementary information. The personal data has been stored separately from any supplementary information. No sensitive personal data has been collected. General personal data collected will not be used for any purpose other than as stated in the consent information.

During the compilation of the data material, the children were interested in being filmed. It is important to consider the ethical aspects of children's participation in the study. Although legal guardians gave permission for participating children, one is always responsive and attentive to the children's possible signals of discomfort. A researcher can never relinquish the responsibility to respect the integrity of

children. Every time there is an interaction with a child, the researcher has to repeat the question about integrity. At the start of each recording session, the children were asked if they wanted to participate.

Data Collection

Data collection took place through observations, interviews and reflective conversations. A mobile phone without internet connection was used for recording films and calls. This methodological choice offered a way not to allow the technology to be intrusive in the limited space where the study was conducted. The data was saved to an external hard drive.

Analysis

The analysis of the data material was done through qualitative thematic content analysis, a meaning categorization (Ryan & Bernhard, 2003). Based on an inductive approach, non-predetermined categories and subcategories were thematized based on observations and statements (Denscombe, 2009). The transcripts were read through to get a general grasp of the content and then recurring themes were sought. Data were coded and grouped in themes, such as; collegial interaction, educational challenges, technological challenges, children's culture, and the power of reflection. In a deductive part of the analysis, predetermined themes and theoretical concepts was used to which the data material was linked (cf. Loseke, 2013). The central analytical concepts, agency and flexibility, were derived from design theories. Agency appeared in the material when the actors in social interaction chose characters and sign systems, such as different materials, tools and working methods. Flexibility was made visible in how the actors used different resources in different situations, how they shaped social processes, and how they created the conditions for learning. Flexibility was also evident in the meaning-making processes, when the actors designed and re-designed the learning situations. Both parts of the analysis were concluded by linking the central themes of the data in a descriptive statement (cf. Denscombe, 2009), which is presented below.

The Design of the Study

In collaboration with the participating preschool teachers, a special design was prepared for the study. At one or two week intervals, the researcher visited the preschool Lille Skutt. Before each occasion, one of the four preschool teachers, together with her colleagues, planned a camera session where the children would be given the opportunity to learn how to use the tablet as a camera. The goal was for the children to develop multimodal literacy - to photograph, document, converse and reflect on their everyday lives and on their own and the other children's image production. The design and the staging were changed and reconfigured over time as the study progressed. The changes were related to organizational, educational and/or personal causal relationships. One teacher at a time carried out the camera session with the tablets and the children. The researcher filmed the camera session which lasted between 20 and 30 minutes.

Figure 1. The task is to photograph something red

In direct connection to each camera session, the researcher met the teacher who had performed the session and a colleague teacher in a reflection session. Film sequences were shown and the two preschool teachers discussed the sequences based on signs of multimodal literacy, applicable to both children and teachers. One of the teachers recorded the conversation. At the next stage, the four participating teachers met for a joint reflection/discussion and continued planning for the next teacher, who would carry out upcoming sessions. In this way, the work and reflections continued in a spiral of consciousness, exploration, implementation, and development. At the end of the semester, the researcher met all four participating teachers at the preschool for final feedback through interview. At the beginning of the interview session, the teachers were asked to make a mind map on the theme “Learning”. They could use whatever material they wanted to represent this, and they were supposed to do it together. A big colored cardboard became the base for the presentation and the teachers wrote words and concepts related to learning, such as; *interaction, joy, participation, respect* and *meaningfulness*, on smaller pieces of colored paper. The presentation was then placed on the floor as an exhibition for discussion and reflection. The researcher finally connected the total study with the final reflections in the interview session.

Figure 2. The teachers compile their experiences at the final reflection session

RESULTS

The presentation of the results is based on transcriptions of video recordings, audio recordings and field notes. The results are presented narratively with support from quotations. The reported sections have been selected on the basis of their relevance for the concepts of agency and flexibility. Agency becomes visible in the interaction of actors when choosing different sign systems and materials. The concept flexibility becomes apparent in the context of the teachers' design of social processes for learning. It also appears in the situations where the children re-design the teachers' design, in their own meaning-making processes.

In the results section, two children, Vidar, three years, and Molli, two and a half years, will be the focus. Vidar and Molli are chosen for two reasons. Firstly, they attended most of the planned sessions, compared with the rest of the children. Their participation yields a prominent part of the data. Secondly, the design-oriented concepts – agency and flexibility, appeared particularly distinctly in the analysis of Vidar and Molli. On the first occasion, the teachers have decided to “test” the children's competence to use a tablet. At this session, the teachers chose to work with one child at a time, but in the following up to four children joined the camera session. The researcher did not attend at the initial sessions. The goal for the following sessions was to teach the child how to use the tablet's camera to take a photo. After each subsequent camera session, a reflection session was conducted with the teachers. In the results description, the first two reflection sessions (one after Molli's second session, one after Vidar's second session) are included to create an understanding of how the teachers developed the digital learning activities through collegiate learning processes. The description of Molli's second camera session illustrates the start of the teacher's work and the children's digital skills.

Description of the Camera Sessions With Molli

Molli's Second Camera Session (March 23)

Kate is sitting with the children Molli, Ella, and Loui around the table. Loui is three years old and he participates occasionally in the group. The goal is for the children to find the camera icon. During the first seven minutes of the session, Kate tries to get the children to find the camera on their tablets. Molli exclaims: "I found a lion's roar!" Molli finds the camera. She leaves the tablet lying on the table and she presses the shutter button many times. It clicks. She repeats: "I took a photo! I took a photo!" She cannot see any pictures on the screen because the camera had been photographing the table. Loui is photographing. Molli looks at him. Kate: "Let's see if Molli has a button there so you can change the view?" "Do you see it down there?" Molli touches the camera icon. Kate lifts Molli's tablet but Molli puts it down on the table again. When Kate turns to Loui, Molli lifts the tablet, turns to me and says, "Look at me". Then she puts the tablet down again and starts pressing the shutter button. The camera is now facing the ceiling. Ella is photographing Kate. Loui discovers that he has been taking photos of the researcher. Molli is trying to get the tablet to stand. When Kate notes that all the children have found the camera, the children could look for a game or something else.

In the camera session, Kate's ability for didactic flexibility is tested. She has designed an activity that is new both for the children and for herself. Her permissive prestigious approach allows children to experiment with the tablet. Kate achieves her goal - all children find the camera icon - and the children have been given the opportunity to develop their multimodal literacy, through a free trial of different expressions of meaning-making

Reflection Session – Joy for Learning

Kate who performed the camera session remains in the room and Git who has been outdoors with the rest of the group comes in. The researcher asks the teachers to tell what they think of children and learning. Kate says that she thinks immediately about the way the youngest children react. "They: ohh - how could I ...? It is about joy and they are a bit surprised. They could do something they couldn't before." The researcher shows the film sequences. Git notes that the children during the camera session at first did not want to "play games that they do at home, or watch movies." Kate refers to the film sequences as the children look at each other's actions and try to do the same, find the same icons, and show each other. In preparation for the planning of the next camera session, the teachers believe that it is important to build on the joy of the activity. They discuss that the kids found the camera icon and that they took photos, but how do they know they took photos? No photos have yet been shown.

Molli's Fourth Camera Session

Git rounds off the session with Molli, Vidar, Loui and Ella. Ella is two and a half years old, and she participates in the group from time to time. Git asks: "Do you want to take photos of something else now?" Molli, who seemed uninterested during the first part of the session, is already on her way from the table saying: "I know what we can do." She picks up a Babblare² that she places on the table. Babblarna is a Swedish preschool-oriented concept consisting of five colorful characters, with the aim to develop children's language competences. She starts playing with the Babblare and some other toys that

Figure 3. Molli takes the red ring that the other children wanted to photograph

When Ella and Loui want to photograph a red plastic ring hanging on a cabinet door, Molli steps forward and takes it down. “Look, I took this one off!” She puts the ring on the table with the Babblare and some other red objects. The kids look surprised and Git says, “But Molli, they are taking photos of that one!” Molli holds up the ring in the air so Ella and Loui can photograph it.

Description of the Camera Sessions With Vidar

Vidar's Second Camera Session (April 6)

At this camera session, Vidar is alone with Git. The intention is for Vidar to learn how the camera on the tablet works and to take a photo of a toy animal. He is concentrated. He knows how an “ajped”, which is what he calls the tablet, works. Vidar tries an app, but Git suggests that he should look for the “camera”. Vidar says “no” with emphasis and a smile. He finds what he is looking for and very quickly, the YouTube channel is running with movie clips showing rumbling tractors and rattling vehicle monsters. “I’ve looked at gramps,” Vidar says. Git is starting to get a bit frustrated. She tries to catch Vidar’s attention by repeating, “Do you find the camera, Vidar?” The exhilarated and focused boy says loudly that he has been attending a real tractor pulling, a difficult word he repeats several times to get Git to understand: “Yes, have been on tractor pulling, yes!” “Have you been on tractor pulling,” Git repeats, and there is an engaged dialogue going on while tractors are rumbling on YouTube clips. When the session is almost over, Git tries to get Vidar to use the camera again, but Vidar says firmly: “No!” Git then wants Vidar to turn off the tablet but he turns it back on. Finally, he agrees to finish the session.

The design of the activity is extensive. This is Vidar’s second camera session and Git has planned that Vidar will find the camera on the tablet, learn how to use it, *and* take photos of a toy animal. Vidar’s handling of the tablet shows that he is familiar with digital tools. He also tells Git that this is the case. During the session he demonstrates a multimodal literacy, he uses various apps, sites and functions on the tablet and he talks with Git about what he does, what he sees, and his past experience and knowledge of different things. Git tries for a long time to implement her design and is very close to giving up, but a turn occurs when she listens to the child’s voice and his experiences. You could say that Git also listens to her didactic flexibility when she gives Vidar agency to tell her about his informal textual experience.

Reflection Session – Interaction for Learning

Git who performed the camera session stays for reflection and Lisa who has been outdoors with the other children comes in. The researcher shows video sequences from the camera session on the big screen. The researcher pays attention to how Git initiates the mission and what happens when Vidar stubbornly says “no!” Lisa wonders how one could have done differently: “How do we get him to do the assignment? Would it have been better with more children? Can you remove YouTube?” The teachers note that Vidar easily found and can handle the YouTube clips and they assume he watches such clips at home. They notice that he refuses to listen to Git, though with a smile. At the sequence with the tractor pull the teachers talk about the positive knowledge-based dialogue that arises between children and the teacher. The teachers discuss how Git tries one last time to get Vidar to complete the assignment and find the camera but gives up when Vidar says no, and Vidar ends, still happy, despite his eagerness to continue. They reflect on learning based on joy and motivation but also about socialization, identification, confirmation, and digital competence. Lisa says that it is important to let the children try themselves, and Git believes that it is important to dare to be persistent even though you think nothing happens the way you had planned it. Lisa highlights the concepts of dialogue and communication. Git and Lisa take their notes from the reflection session to the next staff meeting when Lisa will plan the upcoming camera session. The teachers have decided that all irrelevant apps and icons should be removed on the tablets. They are also stressing the importance of connecting to the children’s motivation and joy.

Figure 4. Lisa helps Vidar to get the camera in the right position

Figure 5. Vidar finds the right position

Vidar's Third Camera Session (April 20)

Vidar, Ella, and Loui are sitting with Lisa at the table where the tablets are lying. Lisa brings out a bag: "What do you think I have in the bag today?" Vidar looks happily at the tablets and says, "And you have ajpeds!" Lisa hands the bag to Vidar: "Let's see what you find". Vidar brings out a Babblare. Ella and Loui also bring a Babblare each from the bag. Loui puts his Babblare on the table and says, "I have one at home". Lisa reflects: "Do you have one at home?"

Figure 6. Kate is helping Loui to get his arrangement as he wants it.

Lisa takes the pile of tablets and continues: “And you knew what this is? Today we will use them to take photos. Using the camera. Not games and not YouTube, but photos.” Vidar gladly answers Lisa: “I’ll do it!” Lisa hands out the tablets. Lisa puts two Babblare in front of each child. When the tablets are turned on, Lisa says: “Now you can try to take photos”. Vidar turns the tablet backwards and forwards over the subject. Lisa helps him and after a few attempts Vidar has taken photos of his Babblare. He looks content and happy.

Loui discovers that he can photograph Lisa. Vidar positions the tablet horizontally and takes a quick shot at Ella’s Babblare. They are talking to each other.

On his own initiative, Vidar puts down the tablet and starts swiping pictures. Lisa interacts by leaning forward, saying, “Look at all the pictures” and Vidar adds: “That I have taken”. Lisa ends the session by asking the children to turn off the tablets. The Babblare are put back in the bag. Vidar hugs his “ajped”. Lisa says: “Thanks for today”.

Lisa assumes clear agency throughout the session, but she constantly interacts with the children and draws attention to their experiences. From the latest reflection session, Lisa has brought the idea of using something from the children’s cultural backpack to inspire photography. Lisa is one of the teachers who stated that he was uninterested in digital technology at the beginning of the study. However, she has worked for many years in preschool and she is a calm and methodical person. Her design for the camera session is based on educational experience rather than technological knowledge. In the session, it seems as though Vidar accepts the design on a completely different way than in the previous session with Git.

Figure 7. Loui is looking at his pictures from the shooting session. Molli is playing with the hats using the screen of the turned-off tablet as a stage. Vidar proceeds the arrangements in the photographer's studio.

Molli's and Vidar's Fifth Camera Session (May18)

At the last camera session of the study, Kate is the designer of the learning situation. Molli, Vidar and Loui participate. Kate has designed the session based on the colleagues' previous reflections. Kate has built a small photography studio on a stool. On the floor below, there are various toy animals and in the "studio", there are a number of colorful hats. The tablets are lying on the table. When the children enter the room, they walk around and look at Kate's staging. They are small talking. Kate asks them to sit down at the table and she says: "Vidar is a photographer, Molli is a photographer, Loui is a photographer". Kate to Molli: "Can you find the camera now?" Molli, without trying: "I can't find a camera". She repeats it several times. Vidar immediately turns the camera on the lined up toys on the floor and begins to shoot. The boys photograph different motifs. They are small talking. Kate leaves the table and asks Vidar if he wants to start shooting in the studio. Kate instructs and tells him to choose one of the animals to "sit with the photographer". He chooses a rabbit and puts it on the chair in the studio. Meanwhile, Molli turns her screen to the researcher, and says: "Look – a watch!"

Kate shows Vidar that he can sit on a chair in front of the studio, but Vidar says: "I don't want to" and goes and sits at the table. Kate brings up Loui instead who is ready to participate. Loui chooses a monkey and a hat, which the monkey should wear at the photo shoot. Vidar and Molli get up and want to participate too, but Kate asks them to wait for their turn. Loui picks up his tablet, stands in front of the studio and begins to shoot. Kate stands behind him to help him point the camera. When they are ready, Loui claps his hands.

Vidar eagerly advances, arranges his rabbit and begins to take photos. He does it the same way Loui did and everything goes fast and smoothly. Then he sits down at the table and looks at the screen of the tablet. Meanwhile, Molli has been playing with a Babblare. Kate says: "Molli, now it's your turn and Bobbo's turn to come to the photographer". Molli answers "Okay", and goes ahead and puts the red Babblare on the studio chair. Kate asks her to go and get the camera. On her way with the camera, she briefly photographs Vidar: "I can actually see you" and then she takes photos of everyone. When she

comes to Kate, she poses as the boys have done and with the help of Kate: "Do you remember how to do it?" she photographs her Babblare with a hat. When she is done, Kate asks the children to take a photo each on whatever they want, and then put the tablets on the table so that everyone can see: "Now I want you to show your photos. We're doing an exhibition!" Molli picks up two Babblare and puts them on top of her tablet.

After the exhibition, the children walk around, and arrange and photograph freely. Molli has collected a great many toys and then she looks for the tablet: "Where's my camera now?" She finds it, and takes some photos and then uses it as a stage for the toys. Loui looks at the pictures from the studio photography, and Vidar continues to arrange and photograph for a while before the session is ended.

In the final camera session of the study, Vidar and Molli's fifth, Kate has designed something that goes beyond the layout of previous sessions. The children see the photographic studio and the toys, but at first, they find it difficult to understand how to use the arrangement. Vidar shows a similar reaction to his first-described camera session, with an "I don't want to". Molli keeps on playing with artifacts rather than taking photos of them. The content of the session seems challenging to the children and it is only when Loui arranges and takes photos of his toy in the studio that Vidar wants to do the same. Kate shows her didactic flexibility by using the various parts of the design, both the material but also the cultural aspects, to offer learning and meaningfulness to the children.

DISCUSSION

During the first described camera session, Molli responded seemingly uninterested to the teachers' attempts to get her to use the camera function of the tablet. She accepted but used her body language (trying to leave the table, doing other things than the teacher asked for, making mischief) and verbal language (joking, talking about other issues, etc.) to show that the tablet and the teacher's intentions are not appealing to her. She is active based on her own intentions and seeks out objects that appeal to her (red things, Babblare, other toys). She makes her own choices while at the same time she obeys the demands of the teacher in a smooth way. Molli is invited by the teachers to participate in joint activities, but she uses her agency to reshape the design to suit her own intentions. The educator tries to focus on both the technology, the tablet, and the activity, to photograph, but Molli moves past the teacher's design. She acts independently on the basis of her own choices (cf. Lagerlöf, Wallerstedt & Kultti, 2019 and Mäkitalo, 2016). One can say that Molli exercises agency in the form of *resistance*, since she challenges the teacher's intentions and thereby opts out of fellowship and participation (cf. Corsaro, 2012, 2015; Skånfors, 2013). At the same time, it is noticed that she has a desire for adaptation and wants to be part of the collective - she makes up for her mistake with the red ring and arranges another opportunity for her friends to photograph it. This simultaneous pursuit of adaptation and resistance can illustrate that Molli has the competence to deal with and understand the norms, rules, and social structures of the environment (cf. Eriksson Bergström, 2013).

Vidar shows a development regarding digital and multimodal competence. He has learned from the second camera session to handle the camera function so that he can independently photograph what he wants in the way he wants. He knows the basic functions of the tablet and he varies between interacting with the other children and working independently. Vidar has also conceived one of the ethical rules of digital photography - to ask for permission. To begin with, Vidar, like Molli, also shows some resistance to the educator's design of the activity. He firmly refuses, albeit with a smile, to do what Git asks him

to do. However, when he finds the YouTube clips with the noisy tractors, he seems to be all set. Git lets him watch for a long time and they talk about what is happening on screen. When Lisa says at the next session that the children are not going to watch movies, but use the camera to take photographs, Vidar says happily: "I'll do it!" In the following camera session, Vidar is hardly noticeable because he works relatively independently in taking photos on his own initiative. He uses his agency to create his own room for action within, but still separate from, the community (cf. Corsaro, 2012 and Mäkitalo, 2016). It is also interesting to note that Vidar during the study goes from being a digital consumer, looking at YouTube clips, to being a digital producer, arranging and taking photos, and talking about them in the exhibition.

In the final camera session, we see Molli and Vidar and their continued digital development. We can note that Molli seems to follow her first somewhat cool interest in the tablets and the teachers' intentions, design and staging. Vidar, from showing quite a definite distance, has become an engaged photographer who does not always follow the teacher's instructions and wishes, but who is interested enough to re-design and experiment with the given tasks.

Which opportunities to use their cultural backpack did Molli and Vidar have in the formal camera sessions? Was their experiences used in the interaction between them, the teachers and the digital tools? Did the children's expression turn into a focus? Git's legitimation of Vidar's tractor-pulling clips was probably important to Vidar's continued interest in using the tablet as a camera, but nothing can be proved. Perhaps Babblarna, known from the internet, television and commercial media, played a certain role in keeping Molli engaged in an activity that was not really interesting to her, but this is also not something that can be confirmed based on the analysis. On the other hand, it is clarified how the offer of agency and the didactic flexibility affected the outcome of the study. From the didactic design perspective, the institutional setting becomes important. The framing means that someone has designed a text, but the reader then designs his or her own reading, interpretation, and understanding of it. Related to the world of preschool this is exactly what happens when children and adults gather around or collaborate with the digital tools. The teachers in the study designed and staged activities where digital tools were used, and the children re-designed those activities based on the possible agency they were offered and took. After the reflection sessions, the teachers developed new ways of thinking about learning – that is, they used their transformational skills - and this continued in an investigative spiral in what Thestrup (2011) calls an experimental community:

Both media technologies and media narratives can be activated in the experimenting community and they can be brought close together and transformed. Both these phenomena can be used as a foundation for material for constructing new communication possibilities, playing and narratives. It is an offensive strategy, which makes use of the potential present in digital media, for children and teachers to become co-producers and communicators of digital media (p.389).

By using a design-based method, the teachers in the study were agents in a complex system that involved the expected and the unexpected through interaction (cf. Brown, 1992; Collins, 1992). Important factors for offering children participation and meaningfulness were the role of the educators and their views on children and cultural interaction (cf. Kjällander, 2011, 2014). This is a matter of didactic flexibility. The design underwent changes and modifications during the ongoing study (cf. Bannan-Ritland, Gorard, Middleton, & Taylor, 2008). The question of meaning-making is linked to the teacher's ability for didactic flexibility, as well as what resources the agents use in different situations, how they create social processes and conditions for learning, how they design and re-design information in their own

meaning-making processes (Forsling, 2017; Elm Fristorp, 2012). This didactic flexibility can be referred to as *transformational competence* - in the sense of an ability to use different learning tools at different learning occasions and stages (Forsling, 2017, 2020). Transformational competence encompasses the didactic flexibility that deals with both individual differences and differences between different teaching tools (cf. Forsling, 2017; Rose & Meyer, 2002).

CONCLUSION

The results show how teachers in a Swedish preschool discover the children's world, the children's views and the context of the work with the camera. The digital sessions gave the children agency - a voice, a story that the teachers might not have discovered otherwise. The intersection between the child's perspective and the teachers' understanding of knowledge gave new knowledge and in this context, the teachers' view of children and cultural interaction became important, which was made visible in the subsequent reflection sessions. The meeting was both cohesive and meaningful. The concepts of agency and flexibility were made visible in the analysis, but it was also obvious that the children's cultural backpack was not used to the extent possible in the context. At the camera session, the teachers were very busy working with a group of two-three year olds, including digital beginners, which in itself can suffice in a teaching situation. With a continuation, an extension of the study, the interaction between the children's cultural backpack, the transformational skills of the teachers and the multimodality of the digital tools, would have been fully possible to develop. It would also have been possible to study whether it was the multimodal tools or the reflective approach that gave the teachers the feeling that the attentive children's voices were more obvious.

The results of the study are not generalizable but well transferable. Corresponding arrangements are possible to implement at other preschools. The area is not thoroughly researched and there is great potential in, for example, further exploring how agency can be linked to transformational competence. Such a study can be important, not only to legitimize children's informally conquered and developed digital backpacks in formal teaching contexts but also, to legitimize the educators' agency, in relation to their work with digital tools in preschool.

REFERENCES

- Åkerfeldt, A. (2014). *Didaktisk design med digitala resurser: En studie av kunskapsrepresentationer i en digitaliserad skola* [Didactic design with digital resources: A study of knowledge representations in a digitalized school] (Dissertation). Stockholms universitet.
- Åkerlund, D. (2014). *Elever syns på nätet: Multimodala texter och autentiska mottagare* [Students seeing each other online. Multimodal texts and authentic audiences] (Dissertation). Åbo Akademi.
- Anderson, T., & Shattuck, J. (2012). Designbaserad forskning: Ett decennium av framsteg inom utbildningsforskning? [Design-based research. A decade of progress in educational research]. *Pedagogisk forskning*, 41(1), 16-25.

Bannan-Ritland, B., Gorard, S., Middleton, J., & Taylor, C. M. (2008). The “compleat” design experiment: from soup to nuts. In A. E. Kelly, R. A. Lesh, & J. Y. Baek (Eds.), *Handbook of design research methods in education: innovations in science, technology, engineering, and mathematics learning and teaching* (pp. 21–46). Routledge.

Brown, A. L. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *Journal of the Learning Sciences*, 2(2), 141–178. doi:10.1207/15327809jls0202_2

Carlsson, U. (2010) Introduktion. Barn och unga i den digitala mediekulturen [Introduction. Children and youth in the digital media culture]. In U. Carlsson (Ed.), *Barn och unga i den digitala mediekulturen*. Nordicom, Göteborgs universitet.

Carrington, V. (2005). New textual landscapes, information and early literacy. In J. Marsh (Ed.), *Popular culture, new media and digital literacy in early childhood*. Routledge Falmer. doi:10.4324/9780203420324_chapter_2

Collins, A. (1992). Toward a design science of education. *New Directions in Educational Technology*, 96, 15-22. doi:10.1007/978-3-642-77750-9_2

Corsaro, W. A. (2012). Interpretive reproduction in children's play. *American Journal of Play*, 4(4), 488–504.

Corsaro, W. A. (2015). *The sociology of childhood* (4th ed.). SAGE. doi:10.4135/9781483399027

Dahlberg, G., Moss, P., & Pence, A. (2007). *Beyond quality in early childhood education and care: Languages of evaluation* (2nd ed.). Falmer Press.

Denscombe, M. (2009). *Forskningshandboken: För småskaliga forskningsprojekt inom samhällsvetenskaperna* [Research handbook: For small scale research projects in social sciences]. Studentlitteratur.

Elm Fristorp, A. (2012). *Design för lärande: barns meningsskapande i naturvetenskap* [Design for Learning: Children's Meaning-making in Science] (Dissertation). Stockholms universitet.

Eriksson Bergström, S. (2013). *Rum, barn och pedagoger: Om möjligheter och begränsningar i förskolans fysiska miljö* [Rooms, children and educators: About opportunities and limitations in the preschool physical environment] (Dissertation). Umeå universitet.

European Parliament. (2005). *Europaparlamentets lagstiftningsresolution om förslaget till Europaparlamentets och rådets rekommendation om nyckelkompetenser för livslångt lärande* [European Parliament legislative resolution on the proposal for a European Parliament and Council recommendation on key competences for lifelong learning]. Academic Press.

Forsling, K. (2017). *Att överbrygga klyftor i ett digitalt lärandelandskap. Design och iscensättning för skriv- och läslärande i förskoleklass och lågstadium* [Bridging gaps in a digital learning landscape. Design and setting for writing and reading education in preschool class and primary school] (Dissertation). Åbo Akademi.

Forsling, K. (2020). Hur tänkte du nu? Digitala verktyg och kollegiala lärprocesser i förskolan [What do you mean? Digital tools and collegial learning processes in preschool]. *BARN-Forskning om barn og barndom i Norden*, 38(2), 57-73.

General Data Protection Regulation. Regulation (eu) 2016/679 of the European Parliament and of the council of 27 april 2016.

Gjems, L. (2018). *Förskolans arbete med tidig litteracitet - på barns villkor* [Literacy in preschool – on the children's terms]. Studentlitteratur.

Hedge, H. (2011). Rethinking Sponge Bob and Ninja Turtles: Popular culture as funds of knowledge for curriculum co-construction. *Australasian Journal of Early Childhood*, 36(1), 25–29. doi:10.1177/183693911103600105

Hvit Lindstrand, S. (2015). *Små barns tecken- och meningsskapande i förskolan. Multimodalt görande och teknologi* [Young children's sign- and meaning making processes in preschool: Exploring multimodal language and interactions with technology] (Dissertation). Jönköping University.

Jernes, M. (2013). *Interaksjoner i digitale kontekster i barnehagen* [Interactions in digital contexts in preschool] (Dissertation). Universitetet i Stavanger.

Jewitt, C. (2012). *Technology, literacy and learning: A multimodal approach*. Routledge. doi:10.4324/9780203964101

Karlsson Häikiö, T. (2018). Cultural participation for, with and by children – enhancing children's agency through art pedagogy, visual knowledge-building and learning. In *Information - Nordic Journal of Art and Research*, 7(1), 1893-2479.

Kjällander, S. (2011). *Designs for learning in an extended digital environment: Case studies of social interaction in the social science classroom* (Dissertation). Stockholms universitet.

Kjällander, S. (2014). Förskolebarn och digital literacy [Preschool children and digital literacy]. In U-K. Lundgren Öhman, (Ed.), *Mediepedagogik på barnens villkor*. Lärarförlaget.

Kjällander, S., & Riddersporre, B. (2019). *Digitalisering i förskolan: på vetenskaplig grund* [Digitalization in preschool: on a scientific basis]. Natur & Kultur.

Klerfelt, A. (2007). *Barns multimediala berättande. En länk mellan mediekultur och pedagogisk praktik* [Childrens multimodal story telling. A link between media culture and pedagogical practice] (Dissertation). Göteborgs universitet.

Kress, G. (2009). What is mode? In C. Jewitt (Ed.), *The Routledge handbook of multimodal analysis*. Routledge.

Lagerlöf, P., Wallerstedt, C. & Kultti, A. (2019). Barns 'agency' i lekresponsiv undervisning [Children's agency in play-responsive teaching]. *Forskning om undervisning och lärande*, 7(1), 44-63.

- Leijon, M., & Lindstrand, F. (2012). Socialsemiotik och design för lärande: Två multimodala teorier om lärande, representation och teckenskapande [Sociosemiotics and design for learning: Two multimodal theories about learning, representation and sign production]. *Pedagogisk Forskning i Sverige*, 17(3–4), 171–192.
- Letnes, M. A. (2017). *Legende Læring med Digitale Medier*. Akademisk Forlag.
- Ljung-Djärf, A. (2004). *Spelet runt datorn – datoranvändande som meningsskapande praktik i förskolan* [The game around the computer – computer use as a meaningful practise in preschool] (Dissertation). Malmö högskola.
- Loseke, D. R. (2013). *Methodological thinking: Basic principles of social research design*. Sage Publications, Inc.
- Lpfö 98, rev 2016. Läroplan för förskolan [Curriculum for the preschool]. Skolverket.
- Lund, A., & Hauge, T. E. (2011). Designs for teaching and learning in technology-rich learning environments. *Nordic Journal of Digital Literacy*, 6(4), 258–271.
- Mäkitalo, Å. (2016). On the Notion of Agency in Studies of Interaction and Learning. *Learning, Culture and Social Interaction*, 10, 64–67. doi:10.1016/j.lcsi.2016.07.003
- Marsh, J. (2016). The digital literacy skills and competences of children of pre-school age. *Media Education: Studi, Ricerche. Buone Practice*, 7(2), 197–214.
- New London Group. (1997). A pedagogy of multiliteracies. *Harvard Educational Review*, 66(1), 60–93.
- Nilsen, M. (2018). *Barns och lärares aktiviteter med datorplattor och appar i förskolan* [Children's and teachers' activities with tablets and apps in preschool] (Dissertation). Göteborgs universitet.
- Öhman, M. (2016). *Samspelsbar och samtalsklar: om samtal i förskolan och skolan*. Liber.
- Rönnerberg, M. (Ed.). (2008). *Blöjbarnstv. Om hur barn under 3 år upplever tv och leker med fjärrkontroll* [Toddlers TV. How children under 3 years' experience TV and play with remote controls]. Filmförlaget.
- Rose, D. H., & Meyer, A. (2002). *Teaching every student in the digital age: Universal design for learning*. Association for Supervision and Curriculum Development.
- Ryan, G. W., & Bernard, H. R. (2003). Techniques to Identify Themes. *Field Methods*, 15(1), 85–109. doi:10.1177/1525822X02239569
- Sarainen, H., & Kumpulainen, K. (2014). A Visual Narrative Inquiry into Children's Agency in Preschool and First Grade. *International Journal of Educational Psychology*, 3(2), 141–174.
- Selander, S., & Kress, G. (2017). *Design för lärande: Ett multimodalt perspektiv* [Designs for learning: a multimodal perspective]. Norstedts Akademiska Förlag.
- Skånfors, L. (2013). *Barns sociala vardagsliv i förskolan* [Children's everyday social life in preschool] (Dissertation). Karlstads universitet.
- SOU 2015:28. Gör Sverige i framtiden – digital kompetens [Make Sweden for future – digital competence]. Stockholm 2015.

Statens Medieråd. (2019). *Småungar och medier, 2019* [Kids & Media]. <https://statensmedierad.se/publikationer/ungarochmedier/smaungarochmedier2019.3348.html>

Thestrup, K. (2011). *Det eksperimenterende fællesskab - Medieleg i en pædagogisk kontekst* [The experimental community – Media play in an educational context] (Dissertation). Aarhus Universitet.

Thomas, A. (2011). Towards a transformative digital literacies pedagogy. *Nordic Journal of Digital Literacy*, 6(1–2), 89–102.

Vetenskapsrådet. (2017). *God forskningssed* [Good research practice]. Academic Press.

KEY TERMS AND DEFINITIONS

Adequate Digital Competence: Competences that changes over time as both the tools themselves and the use of them develop. The term is also used to indicate that it is not possible to specify an absolute level for digital competence as it needs to be gradually developed based on the demands of society and the conditions of children and pupils.

Agency: Can be seen as both a goal and a mediating resource, and it is about the scope for action and participation and the ability to act independently based on one's own choices.

Children's Cultural Backpack: Children's informally conquered and developed textual knowledge.

Text: Reflects multimodal perspective and can include film, song and music, image, play, advertises, and more.

Transformation Competence: An ability to use different learning tools at different learning occasions and stages.

ENDNOTES

¹ <https://babblarna.se/en/about-babblarna/>

² ICT: Information and Communicative Technology.