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Teachers' pedagogical strategies when creating digital stories with young children

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ABSTRACT

Digital technology is a central part of young children's everyday lives in most societies today. This paper contributes to current research by exploring two teachers' pedagogical strategies when creating digital stories together with groups of six kindergarten children (age 4–5). The study has a qualitative, multiple-case study design. The analysis was performed inductively across the two cases. The findings show that when creating digital stories with young children, teachers' various pedagogical strategies are equally important for the process and product: *Inviting to dialogue, Explaining the practical*, and *Instructing for results*. An encouraging tone characterises the teachers' communication. The research findings contribute to knowledge of how teachers involve groups of children in technology-mediated story creation processes by highlighting the pedagogical perspectives when using digital technology.

KEYWORDS

Collaborative creation process; digital stories; kindergarten children; teachers' pedagogical strategies; digital technology

Introduction

This paper reports findings from a study exploring children's and teachers' collaborative use of digital technology in two Norwegian kindergartens, and contributes to contemporary research on the use of digital technology with children in early childhood education and care (ECEC). The purpose is to explore and describe the pedagogical strategies used by two teachers when they involve groups of six children (age 4–5) in collaborative, technology-mediated, story creation processes. The term digital story is used in this paper to refer to technology-mediated stories that are expressed and presented digitally through several modalities, for example, pictures, words, sounds (e.g. Kucirkova 2018). The digital stories that the participants created in this study were an e-book and an animated movie. In response to a call for more research regarding the youngest children's creation with digital technology (e.g. Burnett and Daniels 2016; Hsin, Li, and Tsai 2014; Marsh 2010), this study complements other studies in the field by emphasising the teachers' pedagogical strategies.

Digital technology is a central part of young children's everyday lives in most societies today (Chaudron, Di Gioia, and Gemo 2018; Medietilsynet 2018), yet 'only

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recently emerging in ECEC' (OECD 2017, 168). OECD describes digital technology as 'a learning tool to improve learning processes' (OECD 2017, 283), while UNESCO highlights creativity, curiosity, exploration, sharing, and problem solving in relation to digital technology (Kalas 2010; OECD 2017, 87). In Norway, teachers' pedagogical use of digital technology with the children is emphasised in the *Framework Plan for Kindergartens*, focusing on digital practices to 'encourage the children to play, be creative and learn' (Udir 2017, 44), in line with OECD (2017) and UNESCO (Kalas 2010). Further, the plan emphasises how staff can support and promote children's development and learning through child-centred play-based pedagogy by drawing on children's interests and experiences; group activities and children's active participation in society are highly valued (Udir 2017). We consider the process of creating digital stories a good opportunity for children to experience using digital technology in a collaborative process in which they can express their own meanings and ideas. However, research shows a lack of digital competence among Norwegian kindergarten staff, especially regarding pedagogical use of digital technology (Fagerholt et al. 2019; Fjørtoft, Thun, and Buvik 2019).

Previous research

The need for teachers to understand and have knowledge of digital stories to be able to support and help children in their creation of the stories is highlighted by several researchers (e.g. Fleer 2018; Klerfelt 2007; Leinonen and Sintonen 2014; Letnes 2014; Marsh 2006; Palaiologou and Tsampra 2018; Rowsell 2013; Undheim and Vangsnes 2017). Letnes (2014) emphasises the proximal teacher who interacts, supports, and communicates with the children during the process. There seems to be a need for the supporting teacher during the process to achieve the goal of creating a digital story, for example, to facilitate turn taking and coordinate activities (Fleer 2018, 955). According to Klerfelt (2007), it may sometimes be useful to give short instructions, for example, those related to technical aspects; thus, when creating the narrative, a complex and rich dialogue with children is important.

Several researchers have explored young children creating digital stories individually or in pairs, focusing mainly on digital activities (e.g. Klerfelt 2007; Marsh 2006; Petersen 2015; Skantz Åberg 2017; Skantz Åberg, Lantz-Andersson, and Pramling 2015). Other studies have explored the entire process of creating digital stories, including activities with and without digital technology (e.g. Fleer 2018; Leinonen and Sintonen 2014; Letnes 2014, 2019; Undheim Forthcoming). The technology itself does not improve the pedagogical situation; thus, it provides new opportunities in the context of digital stories, for example, for meaning-making, creation, collaboration, and sharing (Fleer 2018; Letnes 2014). To capture 'the special characteristics of how teachers use digital technologies for play, learning and development', Fleer (2017, 123) introduces digital pedagogy; to emphasise the importance of connecting and embedding the technology appropriately to the pedagogical practice.

However, most of these previous studies emphasise only the children or the activity, to a lesser extent the teachers. Hence, in our study, the knowledge of teachers' pedagogical strategies is highlighted. The research question driving this paper is as follows: *What pedagogical strategies are in use by two kindergarten teachers when they create technology-mediated stories with groups of children?*

Theoretical framework

Interactions between the participants and their collaborative contribution to activities are seen as important for quality learning and development in ECEC, according to sustained shared thinking (SST) (Siraj-Blatchford and Sylva 2004; Sylva et al. 2004). SST is explained as 'an episode in which, two or more individuals "work together" in an intellectual way to solve a problem […]. Both parties must contribute to the thinking and it must develop and extend thinking' (Sylva et al. 2004, 36). To listen to the children, respect their decisions and choices, observe body-language, show genuine interest, invite the children to elaborate, clarify ideas, suggest, remind, encourage, and ask open questions are central aspects within SST (Brodie 2014, 65), which can be interpreted as teachers' pedagogical strategies. SST is closely connected to the more competent other (Vygotsky 1986) and scaffolding (Wood, Bruner, and Ross 1976), which in play and everyday activities requires interpretation and guidance by the teacher in situ (Dewey 1902, 13).

Teachers' interactions with children can be seen as a combination of spacious and narrow interactional patterns, according to Bae (2012). A spacious interactional pattern is characterised by teachers who are attentively present in the interaction, focused on the children's attention, and open to meta-communicative signals; in contrast to a narrow pattern where the teachers are more in control of the situation. Children's experiences, participation, and opportunities to express thoughts and feelings are best supported by a spacious pattern (Bae 2012). To describe how teachers can actively support children when using digital technology, Plowman and Stephen (2007) introduce distal and proximal guided interaction. Distal refers to teachers' pedagogical framing and facilitating of activities, for example, planning and providing resources, while proximal refers to how teachers can directly support and help children, the direct face-to-face interaction, such as, explaining, instructing, prompting, supporting and providing feedback (Plowman and Stephen 2007, 18–19).

In this paper, we explore the pedagogical strategies used by two teachers during the creation process with groups of children by embedding SST, spacious and narrow interactional patterns, and guided interaction in the analysis.

Methodology

Research design

This study takes a qualitative multiple-case study approach, focusing on observable contemporary events in two collaborative processes (Yin 2014). Two cases are included, each consisting of one kindergarten teacher and six children (aged 4–5) who have created a technology-mediated story together. The collaboration between the participants and researchers is seen as important for the development and construction of empirical knowledge (Alvesson and Sköldberg 2018).

Participants

The participating teachers and children were recruited from a Norwegian research project; the teachers were invited by the authors, and the children were invited by the teachers (Mangen et al. 2019). Both teachers were female, age 44 and 47, with 15–20 years of

experience as kindergarten teachers. One of them had made a few digital stories earlier, but the other did it for the first time. The teachers were technically supported of how to make a digital story in a workshop held by the first author, prior to the research period.

Data collection

In both cases, the technology-mediated story creation started with a shared reading activity to inspire the children to create their own story and finished with a display of the completed product. Other activities during the creation process were, for example, creating narrative, drawing and creating props, photographing, animating, recording sound, editing, and watching the products (Undheim Forthcoming).

Based on experiences from a pilot study, we saw video-observation as a valuable method for capturing the multimodal complexity in the interactions between the children and teachers in situ. Video-observation is considered a valuable method for capturing layers of information that occur simultaneously by providing a rich source of information with temporal and sequential records of verbal and non-verbal interactions (see Cowan 2014; Flewitt 2006; Heikkilä and Sahlström 2003; Luff and Heath 2012). The kindergarten teachers were responsible for the activities during the process, while the first author participated as an observer, took notes, and video-recorded these activities. The researcher sat close enough to capture the verbal and non-verbal interactions and communication among the participants and artefacts without interrupting them physically; we are interested in the interactions among the participants.

This paper draws on video-observations of the activities (14 h of video from 18 days). Some utterances from the pre- and post-interviews and daily reflections with the teachers are also included, to offer insights into their reflections and explanations of the process.

Data analysis

The research question indicates an open approach to the empirical material, with a focus on the teachers' pedagogical strategies of how to involve the children in the creation process. The video-observations and interviews were transcribed by the first author (in Hyper Transcribe) (Researchware 2013), focusing on the content within the conversation and the verbal and non-verbal communication about and related to the activities. However, as with all transcriptions, these are re-presentations of the situations (Cowan 2014). To provide a rich description of the two cases and strengthen the construct validity, the empirical material was analysed at different levels and combined in several ways (Yin 2014, 121). The analysis was performed inductively, through a constant comparison analysis (Leech and Onwuegbuzie 2008), based on written transcriptions in NVivo (QSR International Pty Ltd. 2018) and by watching the videos. We started with a within-case analysis in each case separately, followed by a cross-case analysis (Creswell 2013). Some of the first codes of how the teachers involved the children in the process were to ask, confirm, describe, engage, explain, extend, fantasise, inspire, instruct, invite, motivate, organise, re-narrate, repeat, provide feedback, summarise, and wonder. These codes have been refined and adjusted several times, and grouped into broader categories. To ensure consistent coding, descriptions of the codes were included in a codebook; the pedagogical strategies presented in Table 1 is the final codebook, which is the result of a back-and-

Table 1. Codebook – teachers' pedagogical strategies.

Categories	Codes	Description of the code
Describing	Describe	The teacher describes how something looks, what happens (in the e-book and the animation movie), what the children are doing, etc.
Explaining	Explain	The teacher explains what they are going to do and why, answers questions and explains what something means
Instructing	Instruct	The teacher instructs the children by telling them what to do (without any explanation, short messages)
Inviting	Ask about facts	The teacher asks questions about facts related to the process and product
	Ask about opinion	The teacher asks questions about opinions, e.g. about who would like to do what
	Clarify ideas	The teacher clarifies ideas and gives the children a chance to confirm and explain more thoroughly
	Give choices	The teacher gives the children choices among different alternatives
	Inspire	The teacher inspires the children by presenting alternative viewpoints, new ideas, or suggestions
	Invite	The teacher invites the children to dialogue about the e-book, the drawings, or the narrative, and encourages the children to elaborate their thoughts and say more
	Repeat	The teacher repeats what the children have said, often in an asking tone, to encourage them to say more
	Wonder	The teacher encourages the children to wonder about things happening to the product or during the process, e.g. by asking open questions
Motivating	Motivate	The teacher motivates the children to start or continue, e.g. the conversation or an activity, verbally or non-verbally
	Encourage	The teacher encourages the children to look at something special, indirectly and directly
Organising	Organise	The teacher organises the activities and the children by telling them who is doing what and where
Providing feedback	Provide feedback	The teacher gives the children encouragements for efforts, verbally or non-verbally
Supporting	Support	The teacher supports the children's utterances and/or confirms that something is «correct»

forth process between the empirical material and theory. Several of the incidents were coded with two or more codes, indicating interconnections (Ritchie, Spencer, and O'Connor 2003) (Figure 1). As a way of looking for patterns and interesting aspects and develop a further understanding of the teachers' pedagogical strategies, a classical content analysis was also carried out (in NVivo) (Leech and Onwuegbuzie 2008).

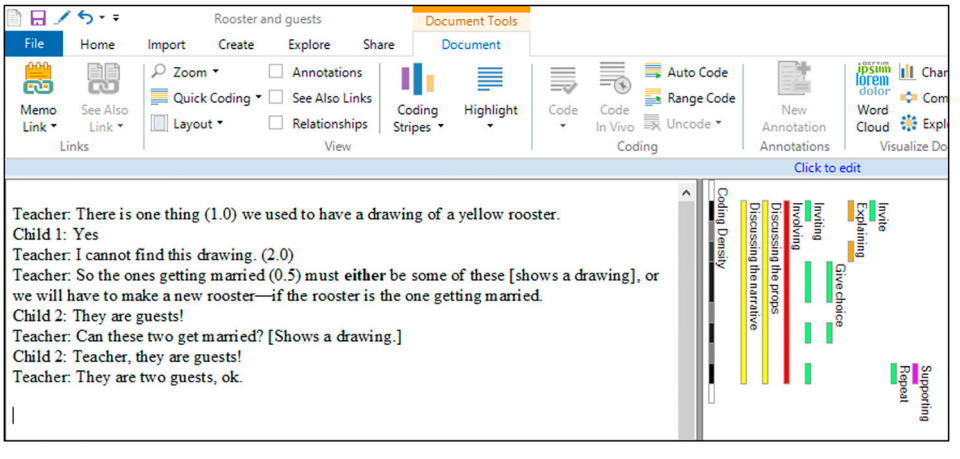

Figure 1. A screenshot from NVivo that shows the inductive coding of an excerpt from one of the cases.

Our interpretations are based on our pre-understanding and subjective experiences of past events which, in connection with theories, construct our horizon, as learned from the hermeneutical circle (Alvesson and Sköldberg 2018; Gadamer 2013). Transparent research requires reflexivity that includes a clarification of values and attitudes (Alvesson and Sköldberg 2018; Guillemin and Gillam 2004; NESH 2016). We are aware of our own pre-understanding, which has been reflected upon and taken into account through an iterative process in dialogue with the teachers (see Gadamer 2013; Jernes and Alvestad 2017).

Ethics

The Norwegian Centre for Research Data (NSD) has approved the study and all participants gave their informed consent. In line with other researchers in the field, we acknowledge the children as competent and knowledgeable participants (e.g. Danby 2017; Kjørholt 2005; Lunn Brownlee et al. 2017). To make sure the children understood the purpose of the study and their role, the first author visited both groups and spoke with the children prior to the data collection; why we wanted them to participate, what we wanted them to do, and their right to say *no* at any time (Danby and Farrell 2005). The children's consents were re-affirmed during data collection, which proved to be a good way to ensure the children's protection and active participation, in line with Danby and Farrell (2005).

Trust, loyalty and confidentiality are important for us; to ensure the participants' confidentiality, the names and other identifiers are anonymised. This is closely connected to being a reflexive researcher, in line with *EECERA's Ethical Code* (Bertram et al. 2015) and *NESH's Research Ethics* (2016). To validate the preliminary findings, the participating teachers were invited to a dialogue meeting in which preliminary reflections regarding the analysis were discussed. This meeting confirmed the analysis of the teachers' verbal and non-verbal communication and their different ways of involving the children during the process.

Results and discussion

In this paper, we focus on the pedagogical strategies used by two teachers when they involved children in technology-mediated story creation processes. First, we will present the process and the context, and we will then describe and discuss the teachers' pedagogical strategies.

The creation process

In case 1, one teacher and six children made an e-book called *The Wedding*; in case 2, another teacher together with six other children made a stop-motion animation movie called *Rapunzel* (Table 2).

During the creation process, the teachers prepared for various activities, for example, Props (e.g. drawing, painting, and creating clay figures), Narrative (e.g. composing and discussing the narrative), Animation (animating the scenes), Sound (e.g. recording narrator voice and discussing the recordings), and Product (e.g. watching the products and discussing them). These were the activities that they spent the most time on. Props and

Table 2. Presentation of the two digital stories.

Digital story	The story is about	Made of	Technology used
An e-book called *The Wedding*	A rooster who marries his dream princess and their large wedding	Drawings, paintings, photos, written text, music, songs, and narrator voice	iPad and Book Creator (Red Jumper Limited 2018)
A stop-motion animation movie called *Rapunzel*	Rapunzel who is trapped in a castle by her stepmother and rescued by a prince A troll, a monster, a lion and a leopard are also included	Duplo- and clay figures, written text, narrator voice, and music	iPad and Stop Motion Studio (Cateater LLC 2017) and iMovie (Apple 2018)

Narrative are examples of non-digital activities, without any use of digital technology, while Animation, Sound and Product are examples of activities in which digital technology was central (Undheim Forthcoming). A child-centred pedagogy was essential in all activities, which we will describe next to provide insight of the context.

Context: child-centred pedagogy

Both teachers mentioned children's participation several times during the pre-interviews, with references to the Framework Plan (Udir 2017). They clearly expressed that they wanted to involve the children as much as possible in the process. Both teachers had made a brief plan for the process; thus, they said that they were prepared to change their plan: 'I have **kind of** made a plan, but then I need to listen to the children and include their ideas'. Both teachers emphasised *the process* and *children's participation* as the two most important factors; they wanted the process to be enjoyable for the children. However, one of the teachers expressed that the completed product did matter for the children; creating a product that the children could enjoy and were happy to share with others was important for her. The children's interests are central in Nordic pedagogy (Udir 2017). Thus, the teachers' overall knowledge of the situation is equally important (Dewey 1902, 1963; Letnes 2014; Plowman and Stephen 2007); 'The planning must be flexible enough to permit free play for individuality of experience and yet firm enough to give directions towards continuous development of power' (Dewey 1963, 58). There was a clear link between the beginning and the end of both creation processes. The process took nine days in both cases, which gave the participants enough time to dwell on the process. The children were mostly eager to participate, but some of the children chose not to participate on some of the days; they would rather play or do other activities and used their right to say *no* (Danby and Farrell 2005).

Through an inductive analysis of how the teachers' involved the children, several pedagogical strategies were identified (Table 1). An encouraging tone characterised the interactions in both cases. In the following sections, we will describe and discuss the three most frequently used pedagogical strategies during the five activities that they spent the most time on: *Inviting to dialogue*, *Explaining the practical*, and *Instructing for results*.

Inviting to dialogue

During the process, we experienced both teachers as open-minded and child-centred, encouraging the children to participate actively and giving them time and space to contribute verbally and non-verbally; interpreted as inviting. The analysis of the videos shows that

inviting to dialogue was used as a pedagogical strategy by both teachers in all the various activities during the process; in eight different ways (Table 1). The words used by the teachers, their non-verbal communication, and their tone of voice all played a part in the analysis. The following examples from the empirical material illustrate the teachers' ways of inviting.

In *The Wedding,* one of the main characters was a rooster, drawn by one of the children early in the process. Some days later, the teacher could not find this drawing. She explained the situation to the children and invited them to a dialogue about what to do by providing them with several solutions: to make a new rooster or change the main character. The teacher found a drawing of two people and asked the children if one of them could be the main character. 'They are guests!' one of the children said. The teacher repeated the question: 'Can these two get married?' The child did not like the idea of changing a drawing of guests to the main character and clearly expressed this: 'They are guests!' The teacher repeated the child's answer and confirmed by saying 'ok'. The teacher then placed the drawing of the guests together with the other guests and re-focused the attention towards some other pictures.

In the *Rapunzel* case, the children created the narrative before they started to animate, but there were still many choices to make during the process. Sometimes the teacher invited the children to dialogue when they were animating by encouraging them to make a choice about where to move the characters: 'Where are they going now?' the teacher asked. 'I'm going in that direction', the child replied and moved the lion a step towards himself. Very often when animating, the children responded verbally and non-verbally to the teacher's questions, as shown in the example from *Rapunzel*.

During the process, unexpected things sometimes happened, for example, when one of the children clicked on the tablet and started the movie when they were animating. Both the children and the teacher started laughing, and the teacher asked in a wondering tone, 'What have you clicked on now?' Other times during animation, the teacher invited the children to dialogue by making a wondering comment, 'I wonder what happens now'. In this example, the child responded non-verbally to the teacher's comment by moving the character one step further.

Both teachers encouraged the children to participate during the process, verbally and non-verbally, by tuning into the children, listening carefully, observing the children's body language, asking open-ended, wondering questions, and asking questions to clarify ideas and understand. These ways of inviting the children to dialogue can be understood in terms of SST (Sylva et al. 2004). Both teachers expressed that they were interested in and respected the children's ideas and opinions, as shown by the example with the rooster and guests, which can be seen as an example of spacious interactional pattern (Bae 2012). The creation process developed during interactions among the children, teachers, materials, activities, and a clearly defined goal – to create a technology-mediated story together. The teachers expressed that they did not have the answers but needed help from the children; meaning was created during the interactions and discussions among the participants, as highlighted by Letnes (2014). Both teachers managed to establish joint attention with the children during the activities, which is a prerequisite for proximal guided interaction (Plowman and Stephen 2007). It seemed that each child felt respected and appreciated, in line with SST (Sylva et al. 2004) and spacious interactional pattern (Bae 2012).

Klerfelt (2007) and Plowman and Stephen (2007) describe digital activities as less dialogue-rich activities, with an absence of talk between teachers and children when children use computers. The analysis in this study, however, shows that the teachers deliberately invited the children to a rich dialogue in all the activities. These findings, in contrast to the other studies, might have been identified because the digital activities in our study were part of a collaborative creation process.

Explaining the practical

During the process, both teachers explained to the children what they were going to do and why, what something meant, and answered questions. The analysis of the videos shows that explaining the practical was used as a pedagogical strategy by both teachers in all activities during the process, with and without digital technology. Some of the children thought it was strange that they could create the story themselves, and the teacher had to explain, clarify and confirm this several times (Excerpt 1).

Excerpt 1, from *Rapunzel*:

Child 1: Can we decide?
Teacher: Yes, that's what I have told you, you are making this, I'm just helping you.
Child 2: Me too?
Teacher: You too! I am not making this. […] All I do is write down what you are saying.

When they were animating, the teacher often invited the children to dialogue about the activity by explaining what was happening, asking questions about what they were doing, or highlighting specific things as an invitation for the children to find a solution themselves. Other times the children needed help with seeing whether the characters were actually showing in the picture or not or needed a reminder that one of the children was still visible in the picture; a similar finding as in Fleer's (2018) study. The teacher sat next to the child taking the photos, looking at the tablet during the process (Figure 2). The children moving the characters were not able to see what was visible in the picture unless they moved towards the tablet. Sometimes the teacher helped the children by explaining how far they could move the characters (Excerpt 2).

Excerpt 2, from *Rapunzel*:

Child 1 is lying on the floor and Child 2 is standing by the chair (see Figure 2).

Child 1: [Moves the monster].
Teacher: There! Now the monster is in the movie! Then … you can take a picture [to the other child].
Child 2: [Takes a picture].
Teacher: Then you can move the monster a little, not much, just a little.
Child 1: [Moves the monster a little].
Teacher: Like that, not further, it is important not to take too … big steps.
Child 1: [Moves towards the tablet to see how it looks].
Child 2: [Takes a picture].
Teacher: Great!

The teacher explained several times where it would be best to sit and stand when they were animating, trying to avoid too many pictures with children in them. However, she also

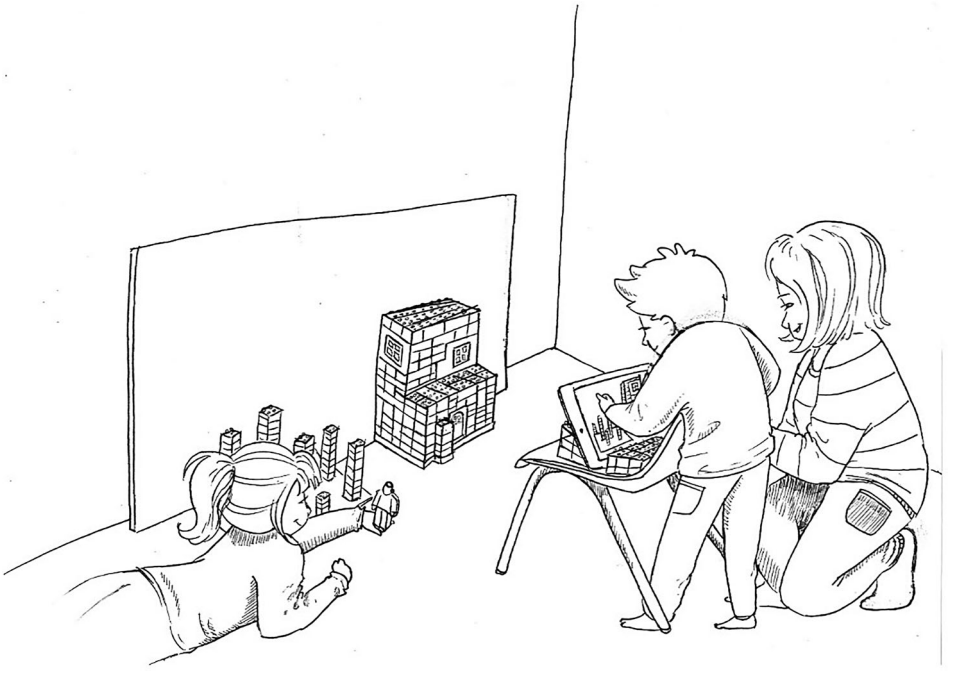

Figure 2. Animating one scene. Illustrated by Tilde Hoel Torkildsen.

explained that it did not truly matter because they could delete those afterwards when editing.

In both cases, when recording sound, the teachers explained what to do and why verbally as well as non-verbally by pointing. 'We can click there', the teacher said, 'It says *add sound*'. 'What does that mean?' one of the children asked. The text in the app was in English, which the Norwegian children did not understand. The teacher saw this as a valuable opportunity to highlight differences between the languages and explained what it meant. Sometimes the teachers showed the children where to click while explaining, as in this example, especially during the first times, but very often the teacher just pointed where to click.

As shown in the included excerpts, the teachers used explaining as a strategy to support and scaffold the children in the activities (Wood, Bruner, and Ross 1976); to support the children in experiencing and understanding the different steps in the process beyond what they could initially manage. There seems to be a larger focus on learning when the teachers used explaining as a strategy to involve the children, as opposed to when they used inviting.

Explaining the practical can be understood as a narrow interactional pattern, however, our analysis shows that very often the teachers used explaining in combination with inviting as in spacious interactional pattern (Bae 2012). The teachers involved the children in the process by first explaining and showing and then letting them do it by themselves, as in proximal guided interaction; other times the teachers supported the children by just being there, as in distal guided interaction (Plowman and Stephen 2007). The teachers were able to interpret their observations of the situation and the children and act in response to this, in line with Bae (2012) and Plowman and Stephen (2007); they were able to regulate when explanation was needed.

Instructing for results

When the teachers explained something to the children, they told them what to do and why. Sometimes they instructed the children by telling them what to do without any explanation. This was mostly done after the teachers had already explained to the children what to do and why. Typical ways of giving instructions were, 'Oh, there! Oh wait … we have to wait', 'Say *out of the picture*', 'Then you stop', 'New picture', and 'No, you must move out from the picture'.

Animation was the activity with the most instructing; there was hardly any instructing in the other activities. This was the first time that the children animated, and the activity took place on the floor, which made it easy for the children to bump into the props. The teacher explained where to sit and stand and why, but the children still needed some reminders during the activity to be able to finalise the product.

Excerpt 3, from *Rapunzel*:

Teacher:	… then Child 1 must move the stepmother … again.
Child 1:	[Moves the stepmother and moves herself one step back].
Teacher:	And say 'out of the picture'.
Child 2:	Out of the picture.
Child 1:	[Moves a little further].
Child 2:	[Takes a picture].

The children did as the teacher told them and seemed to accept the instructions (Excerpt 3); they seemed to recognise the teacher's communication in situ as meaningful and relevant.

Instruction is a central part of proximal guided interaction (Plowman and Stephen 2007) and was used as a way to scaffold the children in their creation process (Wood, Bruner, and Ross 1976), for example, on where to sit and stand. Instructing can be described as a narrow interactional pattern (Bae 2012); the teachers took responsibility and control of the situation. Thus, instructing is a necessary part of the process. Several times during animation, the children started to role-play with the props, which is in itself a worthy part of childhood, but in this particular process, it was important for the teacher to maintain the direction to finalise the product. Animation is a relatively demanding activity, with several things happening at the same time, as Excerpts 2 and 3 show. According to the analysis, it is important for progress that teachers take on the role as the more competent other (Vygotsky 1986) and sometimes use a slightly more closed dialogue. Instruction is not a commonly used term in child-centred pedagogy, but the teachers' use of instruction seems to be necessary to finalise the product (Bae 2012; Jernes 2013; Klerfelt 2007). Both teachers demonstrated, instructed and organised activities; thus, they also participated in joyful interactions with the children and gave positive feedback and support.

Conclusion

We have identified several pedagogical strategies used by the teachers in this study to involve the children, presented as three categories: *Inviting to dialogue*, *Explaining the*

practical, and *Instructing for results*. Both teachers invited the children to a rich dialogue during all activities; they showed genuine interest and respected the children's ideas and opinions and encouraged the children to participate actively, in line with SST (Sylva et al. 2004) and spacious interactional pattern (Bae 2012). The teachers explained the practical by supporting and scaffolding the children during the process (Plowman and Stephen 2007; Wood, Bruner, and Ross 1976) and by observing the children and regulating when explanation was needed (Dewey 1902). Explaining was often used in combination with inviting, combining narrow and spacious interactional patterns (Bae 2012). Sometimes the teachers instructed for results by giving short instructions (Plowman and Stephen 2007; Wood, Bruner, and Ross 1976), which seems to be necessary to finalise the product (Bae 2012; Jernes 2013; Klerfelt 2007). These findings are of special interest from a pedagogical perspective, by highlighting the pedagogy in technology-mediated creation processes, in line with digital pedagogy (Fleer 2017).

In contrast to findings from other studies, we found mostly proximal guided interaction in this study (Plowman and Stephen 2007); the teachers worked mostly directly with the children, which can be seen in relation to the concept of children's right to participation (Udir 2017; UN 1989). The children's interests are central, however, the teachers' overall knowledge of the situation is equally important (Dewey 1902; Letnes 2014; Plowman and Stephen 2007); this combination was taken care of in both cases by how the teachers involved the children in the different activities during the process.

In response to a call for more research regarding young children's creation with digital technology, the study contributes to other studies in the field by emphasising how the teachers involved the children. The findings draw on observational data from two cases and are supported by interview data. It would be interesting to discuss the findings more thoroughly with teachers, perhaps in an action-based research study. Another interesting perspective would be to explore the interactions among the participants more deeply, or the digital stories that were created.

The findings show that in technology-mediated story creation processes with young children, in which digital technology is used in some activities but not in all, teachers' various pedagogical strategies are equally important for the process and product. An encouraging tone characterised both teachers' communication during the process, when they invited the children to dialogue, explained the practical, and instructed for results. Inviting and explaining were used as pedagogical strategies during all activities, while instructing was mostly used during animation. In line with other studies within ECEC (Jernes 2013; Klerfelt 2007), the teachers' use of instruction during some of the digital activities seems to be necessary to achieve the goal of creating a technology-mediated story together. The findings contribute to knowledge of teachers' pedagogical strategies in collaborative, technology-mediated, story creation processes with young children. Implications for policy and practice might be to reflect and take into account new knowledge of children's participation in technology-mediated story creation processes, in which a combination of spacious and narrow interactional patterns is essential (Bae 2012); especially in a world where digital technology is emerging within ECEC and a central part of many young children's lives.

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