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PEER REVIEWED ARTICLE

# Children's digital storymaking

*The negotiated nature of instructional literacy events*

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## ABSTRACT

Narrative is used in early childhood education to engage children in reading and writing. With the advent of digital technologies, new contexts are created for multimodal ways of narrating. The purpose of this study is to illuminate the relationship between a digital storymaking activity and the stories made in an early years practice. The results show that the children's texts to varying degrees approximate a narrative genre and illustrate how these variations can be understood in terms of how the participants negotiate the task.

## Keywords

storymaking, tool-mediated activity, early childhood education, literacy event

## INTRODUCTION

Narrative is often used in Swedish early childhood education as a means of engaging children in reading and writing (Klerfelt, 2007; Taube, 2011). Drawing on Bruner's theorizing of narrative as a cultural tool constituting 'the earliest way in which we organize our experience and our knowledge' (Bruner, 1996, p. 121), it is an important aspect of education. The ability to tell stories is not innate but something we learn and develop as participants in social interaction (Brice Heath, 1996; Bruner, 1996). Therefore, by arranging instruction in relation to narratives in preschool, children become familiar with this cultural tool for thinking and sense-making. A question of significance is then how narrative instruction can be performed in classrooms. This paper will examine instructional activities in a Swedish context, which are seen as situated literacy events where the narrating is part of the child's learning to read and write (cf. van Oers, 2007; Wells, 2009). Based on a sociocultural perspective, the concept of literacy event is here defined as everyday writing activities embedded in

  
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social and cultural contexts functioning as ways for communication and negotiation (Barton, 2007; Razfar & Gutiérrez, 2013).

In relation to young children, there is a growing body of research suggesting that they are engaged in a wide range of digitalized literacy practices already from an early age (Marsh, 2010; Marsh et al., 2005; Plowman, Stephen, & McPake, 2010). Recent statistics from Sweden report that the regular use of the Internet among five- to six-year-olds has trebled since 2010 and that access to computer tablets has increased significantly compared to 2012/13 (Swedish Media Council's Annual Report, 2015). Current development implies evolving contexts for making digital stories, since contemporary technologies provide new opportunities for combining different sign systems such as words, images, sounds and colours on the screen. For this reason, our interest moves from traditional narration to a digital context, guided by an interest in how digital technologies mediate storymaking. Based on the premise that a storymaking activity is of negotiated nature, the present study will contribute to this research field by investigating preschool class<sup>1</sup> children's narration with digital technologies. This includes not only their narrative products, but foremost their interactions are of significance to investigate for understanding how they engage in the classroom practice of narrating.

### Storymaking with digital tools

What is often referred to as digital storytelling is not a new phenomenon, but the rapid increase of tools such as digital cameras and accessible software programs has made it easier for novices to produce narratives digitally (Robin, 2008). Although many scholars use the term 'storytelling' (e.g. Bayon et al., 2003; Gelmini-Hornsby et al., 2011; Nicolopoulou, 2008; Robin, 2008), we find the term in relation to digital technology somewhat problematic, since telling primarily refers to speech. In this study, the term 'storymaking' (Bruner, 2002) will be used instead, since what the children do encompasses speech and writing as well as other modes, such as visual, audio and gestural modes. For defining how children employ these modes and bring them together with the aim of composing something new, storymaking is, arguably, a more functional term. For us, storymaking also implies interaction and 'the social aspect of the literacy event in which meaning-making occurs' (Gattenhof & Dezuanni, 2015, p. 92).

With digital emergence, early literacy research has moved towards different theoretical paths in studying children's writing activities, from an individual psychological to a sociocultural and social-semiotic perspective. Semiotic research explores the interweaving of linguistic and other sign systems to understand the multimodal nature of children's digital composing (Wells Rowe, 2013). Sociocultural studies focus on interactional and negotiable

1. The preschool class is an optional one-year form of schooling located within the Swedish school system, and with the aim of forming an educational bridge between preschool and primary school.

aspects of composing with various semiotic resources. One line of research has engaged children and teachers as co- designers to develop digital tools for enriching narrating in preschool and primary school. One example is the storytelling project, Kidstory, including young children and teachers as design partners (Bayon et al., 2003). From a computer-drawing application, KidPad, the project developed devices allowing the creation of narratives in virtual environments. Findings from this study show that the children learn to produce more complex stories and develop peer collaboration. However, a supporting teacher in structuring the activities and stories was found to be necessary.

Using the same application as the previously described project, Gelmini-Hornsby et al. (2011) conducted a study on a group of six- to seven-year olds telling stories collaboratively, using a reciprocal questioning script. The research interest was on how, and to what extent, the children's storymaking discussions could be influenced by the intervention. In analysing both the stories made and the production, the result shows that the script supported and enhanced the ability of the children to engage in elaborative discussions, benefiting the quality of their stories. This study does not, however, explore the relation between the product and storymaking resulting in specific genre characteristics.

One study that has investigated this relationship shows that preschool children select materials for their digital stories from media culture, classic story traditions and everyday life, resulting in different genres (Klerfelt, 2004). In the storymaking activities the children and the teacher use different strategies and cultural resources to constitute practices that include the children's experiences and the preschool tradition. Thus, such an explorative approach enables spaces for participation and learning.

A recent study from a Finnish context confirms the picture of preschool children's active participation in media production with both print-based and digital devices (Leinonen & Sintonen, 2014). The result reveals how the young children created meaning of their media characters and the invented plots, and displayed their growth of participation and ownership in the process as it unfolded. However, Leinonen and Sintonen (2014) do not highlight the teacher's role or account for the final digital stories in relation to the activities, even if they discuss the importance of teacher support in providing opportunities for children to act independently.

An Australian project investigated the use of computer tablets and accounted for applications to assist preschool children in storymaking. The apps required varying degrees of adult support in terms of handling the devices (Gattenhof & Dezuanni, 2015). Children's engagement with apps such as *Draw and Tell* and *Puppet Pals* are shown to support storymaking and, thus, literacy learning. However, the researchers suggest that educational practice enhance such learning through posing open-ended questions, making time for reflection, and maintaining a dialogue.

What could be concluded from these studies is that regardless of the resources embedded in the technologies, teachers play a pivotal role in what possibilities or constraints are made for learning.

### Text and images on the screen

The immersion of digital technologies in our daily life is sometimes debated in terms of whether this challenges the privilege of the written word over images as communicative media, especially in educational practices. Scholars debate whether or not visual modes of communication in general are becoming predominant through the screen (see, Kress, 2003; Merchant, 2007). However, this is an unfruitful discussion, since images and written text exist side by side, even if in multimodal contexts such as the screen, they interact differently and in more complex ways than in some other contexts (Säljö, 2010). Defining 'text' as including both written words and still and moving images (in a broader definition, even gestures and sounds) permits a wider analysis of the sense-making processes learners engage in. However, since in this paper the analysis includes the relationship between words and images in the narratives made, the word 'text' is here delimited to *the written*, in order to be transparent.

Informed by a sociocultural perspective, the image is here considered representing something that is socially, historically and culturally linked. As asserted by Kress and van Leeuwen (1996), 'visual language is not transparent and universally understood, but culturally specific' (p. 3), that is, it is something we learn to make use and sense of in cultural practices. However, the unit of analysis of this study does not particularly focus children's visual language. Rather, the images provided by the software are seen as one of the multimodal resources embedded in the tool, which becomes part of the situated storymaking activity.

### Research aim

This study focuses on literacy events *in situ* where children create digital narratives with images as a starting point. The study is guided by the questions of how the technology, the teacher's scaffolding and other contextual resources mediate the storymaking activity, and what constitutes the different approximations of a narrative genre the children's stories exemplify. Phrased differently, we aim to empirically clarify the relation between the unfolding activities and the final digital products.

### THEORY

Distinctive of a sociocultural perspective is the inclusion of tools in the unit of analysis. The key concept of mediation is based on the premise that our actions are part of the social and physical world through cultural tools (Wertsch, 2007), which also implies that the nature of these tools informs our actions. When ana-

lysing the empirical material of the present study, the unit of analysis is formulated as a tool-mediated activity, allowing us to conceptualize learning in terms of the appropriation of cultural tools (verbal distinctions as well as physical artefacts) (Vygotsky, 1987; Wertsch, 2003, 2007). From this perspective, the introduction of a new artefact or an intellectual tool does not simply facilitate or improve the effectiveness of an activity. Rather, new tools qualitatively transform an activity and how participants engage in it (Wertsch, 2003). As a mediating semiotic artefact, digital technology functions as a tool to make sense and think with. The learning practice is therefore regarded as mediated through the use of cultural tools such as writing, speech and various physical tools, in relation to how people participate in routine activities in, for example, classrooms.

From this theoretical position, it is important to investigate what cultural tools children encounter in educational practices, and how the teacher scaffolds them to appropriate these tools. The term 'scaffolding', introduced by Wood, Bruner and Ross (1976), is used in the present study to conceptualize the evolving interaction between children and teacher in the storymaking activity. The concept highlights the participation of the teacher in children's problem-solving by supporting them to gradually more independently complete a task.

From a sociocultural perspective, narratives are seen as shaped in interaction with others and used as cultural tools for communicating, structuring knowledge, remembering, shaping identities and creating meaning (Bruner, 1996; Erstad & Wertsch, 2008; Vygotsky, 1987). Cultural tools are transformative in nature, especially narratives, since they 'are not a product of independent invention' (Erstad & Wertsch, 2008, p. 29). Rather, narratives are dependent on the cultural and social settings in which, through use, they develop and change over time. Genre, as an analytical concept, refers to a particular kind of text, representing the world in a distinct way (Bakhtin, 1981; Bruner, 1996). In line with the elaboration above, the analytical agenda of this study entails studying the children's in-situ storymaking with a focus on the relation between the product and the activity (cf. Arnseth & Ludvigsen, 2006; Säljö, 2009).

## METHOD

In the present study, eight six-year-old preschool class children participated (four girls and four boys). This preschool class is part of a primary school, situated in a small Swedish town. The school is located near the countryside in a middle-class area and was selected due to its participation in a larger municipal project on writing with digital technology – *learning to read through writing*. Thus, this group of children had previous experience of digital technology in school prior to this study. Additionally, the teacher informed us that the children had previously been introduced to the activity of how to compose a narrative, for instance by talking about how to begin and end a story. The teacher paired the children for the storymaking activity according to her perception of their ability to collaborate.

The study was conducted in a separate classroom, often used by the children during school hours and as an after-school centre. Laptops were prepared by the teacher and connected to the Internet and the storymaking software *Storybird*, a tool chosen by the teacher. On the first occasion for observation, the teacher introduced the software to four of the children, whereupon they were instructed to create a digital story in pairs. During the second visit, this procedure was repeated with the other four children. On the third occasion, all four child dyads created their second story. Thus, in total, eight digital stories were made and collected. The average storymaking activity lasted approximately thirty minutes.

Video observation was used to generate empirical data for the study, allowing a detailed analysis of how the participants engage in the activities with digital technologies and other semiotic resources. The recordings include the teacher's introductions and the participants' engagement in the storymaking throughout the activity. The produced video material amounts to approximately four and a half hours of film.

### The storymaking tool

Previously, *Storybird* has not, to our knowledge, been extensively researched. One study investigates the possibilities of this tool for writing and narrative skill enhancement (Herrera Ramírez, 2013), while another study employs *Storybird* as a means for looking at peer feedback on written compositions in English language (Shu Mei Chwo, 2015). These studies were conducted on university students, and not preschool children as the current study. *Storybird* offers a large variety of images to select from, illustrated by artists worldwide. The images are organized by theme, such as 'dog' or 'happiness'. The amount of story pages is optional, and each page provides spaces for writing and an image, allowing the user to arrange it in various ways. Important features provided by *Storybird* are the professional layout of the final product and opportunities for digital publishing. The participating children refer to the stories as books. We will also use this term henceforth when referring to the stories they make.

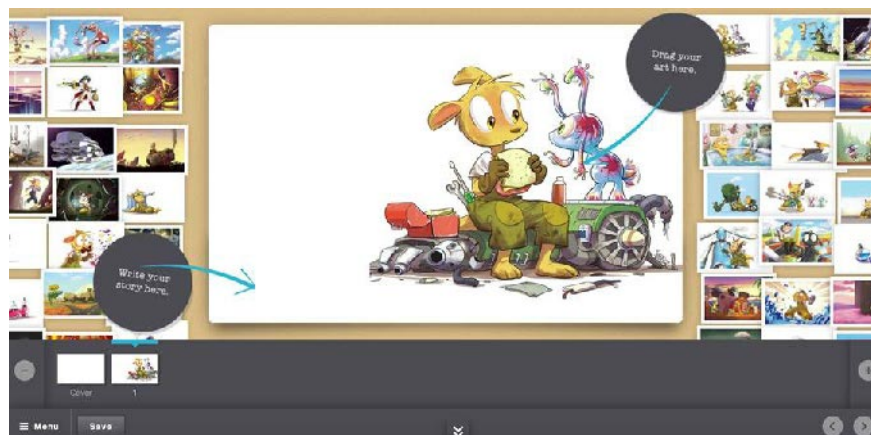


Figure 1. A still image from Storybird interface.

### Ethical aspects

This research follows the ethical guidelines of the Swedish Research Council for asserting the rights of all participants. Children's participation in research requires paying special attention to ethical aspects. Coady (2010) points out the importance of how a 'concern for ethics both in the planning and the execution stage of research can add to the quality of the research' (p. 82). To adhere to these concerns, the researcher met the children before the study took place, and they were informed about the aim of the study, and that video cameras were to be used. To acknowledge the children's voluntary participation, they were informed about their right to abort participation at any time during the recorded activities. However, the teacher, all the children, and their parents chose to participate. When reporting the study, the participants' names used are fictional.

### Analytical work

The narratives were analysed partly in terms of the terminology of Nikolajeva and Scott's (2001) work on children's picture books, focusing on the complex relationship between the written text and images. We examined the interaction between words and images, for instance, whether they had a complementary, enhancing, or, to the analysts, indistinct relationship (cf. Nikolajeva & Scott, 2001). Furthermore, in terms of narrative theory (Bruner, 1996), narrative structure, temporality and character were analysed. A close reading of the stories in our empirical data revealed that the children created books within a fictional genre. However, they differed in terms of, for example, their degree of narrative structure. The analysis of the narratives led to grouping the eight collected stories into three different approximations of a narrative genre. These are referred to as *coherent narrative*, *disconnected narrative* and *fragmented narrative*. In this paper, we consider a coherent story to involve an agent in a recognisable setting, acting towards a goal, and encountering a problem (a breach) that must be solved (overcome). Additionally, we regard a story as coherent when involving a chain of events, indicating a temporality with a beginning, middle and an end that builds up the narrative structure (cf. Bruner, 1996). Coherence, as one of the important components of a developed narrative, also requires the plot to be embedded in a meaningful context for a child (Nicolopoulou, 2008). In contrast, a disconnected narrative lacks such components that link images together. It is characterized by a number of elements, including images and written captions, which do not relate to each other. We define a fragmented narrative as having but a few narrative elements, where each image and caption appears to the analysts to be unconnected.

The video recordings were transcribed verbatim according to the principles of Interaction Analysis. In line with a sociocultural perspective, Interaction Analysis is used to study learning as distributed in situated social and material contexts (Jordan & Henderson, 1995; Lantz-Andersson, 2009). This allows us to bring together the theoretical and empirical approaches, to illuminate social interactions in the observed activities, including the mediational tools (cf.

Plowman & Stephen, 2008). After reviewing the entire data set several times, selected parts were transcribed in more detail. At the core of the analysis were those sequences when the children elaborated on the plot with each chosen image. Since the storymaking activity is multimodal in character, that is, carried out with several semiotic means such as speech, body movement, images, and written text, these features were attended to in the analysis for understanding the participant's sense-making. Studying these different means and responses to them made it possible to identify the complexity of the unfolding interactions.

In the excerpts below, actions appearing on the screen will be marked within square brackets, while our comments will be indicated within double brackets. When translating the stories, we have been careful to emulate the characteristics of the children's occasional misspelling and how they shift between lowercase and uppercase letters.

## FINDINGS

In this section the findings will be presented by outlining two strands from the empirical material. First, we will illustrate and analyse the different characteristics of each approximation of the narrative genre the children created in terms of the criteria referred to above. Second, for understanding how the narratives come to vary, an analysis of the storymaking activities resulting in the produced stories will follow. To frame the activity, we first account for the findings from the introductions made by the teacher.

### Introduction of the storymaking software

Initially, the teacher introduced the activity on two occasions (with four children at a time) by explaining the software *Storybird* and by creating a story together. She informed the children how to select an image, whereupon they were instructed to select one each. Thereafter the teacher urged the children to tell a story with their specific image. She then wrote down the children's suggestions, focusing on one image at a time. In this way, the teacher established a working frame; with the images as a starting point, a narrative was to be told and written down.

In a general sense, all stories in the material are seen analytically as examples of picture books, since they build on both image and text. However, the relation between text and image differs among the stories as well as the narrative structure, which we account for in the following. In elucidating traces of the negotiations visible in the final texts, we have boldfaced those phrases the children utter that are subsequently transformed into written words.

### The Coherent Narrative

An example of a story that coherently relates the different episodes by an evolving plot is *The Book of Friends* made by two boys, Simon and William.

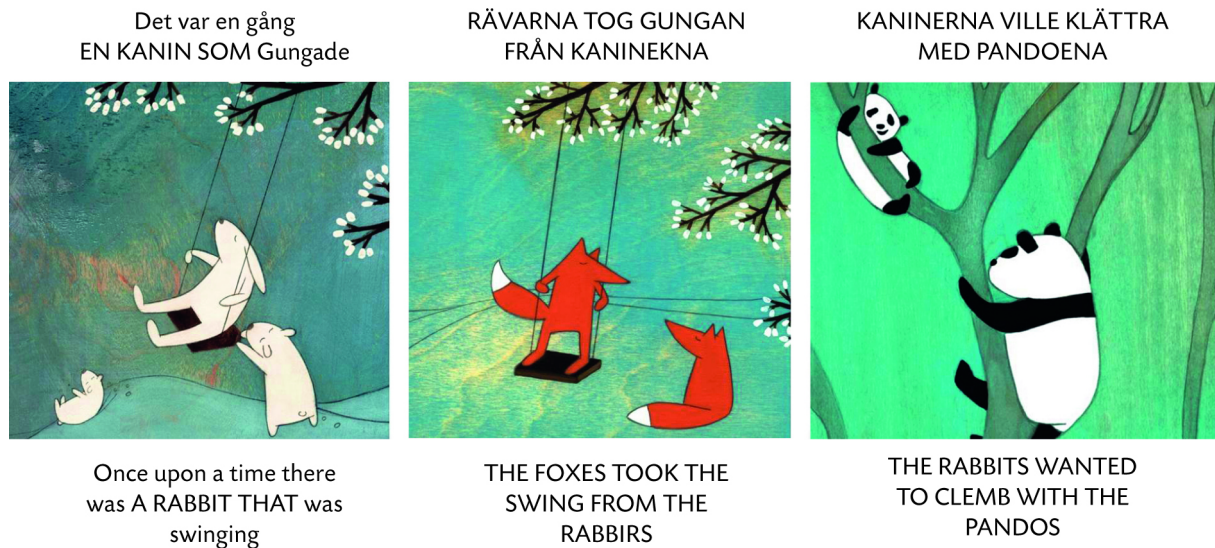


Figure 2. Screenshots of the story *The Book of Friends*.

The three images long narrative begins with a traditional fairy tale marker: 'Once upon a time'. The story has main characters, rabbits (referred to by the children as bunnies), which figure throughout the entire story. Note that the rabbits are only visible in the first image but remain figures in the continuing text. Thus, these actors intertwine the events of the evolving story. Some foxes represent the unexpected turning point by their taking over the swing (an encountered problem as typical for stories: see Bruner, 1996). The rabbits then choose to climb with pandas, which could also be seen as unexpected, but functions as a solution to the problem encountered and constitutes the ending of the story. The written text carries the narrative, in terms of being intelligible without the images. Thus, the function of the images, in a way, is illustrative. However, each image portraying animals performing an activity points towards what is referred to in the written text. This implies that the text can be seen as expanding the visual since the image is the starting point (cf. Nikolaeva & Scott, 2001). Even if it appears to be gaps in the plot, for example, from the rabbits swinging to the foxes taking over the swing, the first and second image interconnect, as they provide coherence through the depicted environment (the background milieu), and together with the written words they are complementary. Even if the third image differs from the other two, both in terms of the environment and the actors' activity, the background colour and the resemblance in imagery to the previous images bridge the gap in the text and give coherence to the story.

### The storymaking activity

As illustrated, the choice of images may be supportive in linking the events together. Visual representations are culturally specific (Kress & van Leeuwen, 1996), and in *The Book of Friends* the motives of humanized animals performing typical everyday activities are recognisable for the children. Thus, similarities in the milieu (see Fig. 2) might have contributed to mediate the coherence of the plot. Another reason for the book to be considered a coherent narrative, from the analysts' point of view, is that Simon displays his appropriation of general characteristics of traditional stories and deliberately uses these experiences in the storymaking activity (cf. Klerfelt, 2004).

The teacher emphasizes the storymaking activity to be completed on schedule and with the intention of letting the children succeed. This entail that instead of supporting narrative content and structure, the teacher focuses on scaffolding the children to formulate an appropriate length of text to each image by summarizing and reducing their telling.

The excerpts below display examples of the findings of the unfolding negotiation during the work with the second and third image preceding the written text.

#### EXCERPT 1

46. Simon:	once upon a time there were two bunnies no, once there was a bunny on a swing we wrote that (.) once, we said that first, so we should write like this
47. William:	once upon a time there was a wolf on a swing [an image depicting foxes on the screen]
48. Simon:	no
49. Teacher:	((approaches)) have you written the entire first now
50. Simon:	I know how we wrote on the other
51. Teacher:	yes
52. Simon:	that the foxes took the swing from the bunnies, and the bunny became ((Swedish: 'blidde' which is a grammatically incorrect form of blev, became)) sad
53. Teacher:	what a good story you have come up with ((Simon nods smiling towards William))
54. Simon:	that'll be nice
55. William:	hm
56. Teacher:	((writes and reads)) the foxes took the swing from the bunnies (.) okay was it like that

In the first utterance (turn 46), Simon says, 'Once upon a time,' but corrects himself, 'we said that first' (see Fig 2). This utterance indicates that he has knowledge of a narrative structure in terms of how to introduce a fairy tale, and

that a similar phrase as the initial one should not be reused in the same story. In the next turn (47), William suggests something new, which Simon rejects (turn 48). Simon's reaction could be a response to the choice of wolf instead of fox, but arguably, he responds to William's construction of the sentence, which is formulated as an introductory text. This interpretation made by the analysts is supported by Simon's reasoning in turn 46 and his way of rephrasing William's suggestion in turn 52. Simon here includes the bunnies as the main characters although they are not present in the image, but prompted by the same environment evident in the two images. Thus, in turn 52, the bolded phrase constitutes the text for the second image, although when writing down Simon's words, the teacher reduces his telling by excluding the last phrase, 'the bunny becomed (became) sad' (turn 56). Turn 49 presents an example of how the teacher's utterance mediates the activity by foregrounding the children's writing to be completed to one picture at the time, rather than scaffolding them in making a unified story.

#### EXCERPT 2

63. William:	once there were <b>the bunnies wanted</b> to play with the pandas and the pandas wanted <b>to climb</b> and so wanted, and so did the bunnies ((animated voice))
64. Teacher:	((writes and reads)) the bunnies wanted to climb
65. William:	<b>with the pandas</b>
66. Teacher:	climb with the pandas shall we begin with that part first

This excerpt illustrates the negotiation for the third image between William and the teacher. In turn 63, William again repeats the introductory phrase (see turn 47), indicating his emergent knowledge of narrative structure. Another interpretation might be that this is contingent on the previous teacher-led instruction in creating a text with each image. Implicitly though, the teacher scaffolds William in rephrasing the sentence more appropriately for the last image in the book (turn 64). William's rich narrative including an essential feature is not attended to as the teacher reduces (turn 64) his suggestions. However, William continues by wanting to include the characters appearing in the image (turn 65), which the teacher notes (turn 66). Hereby the caption is formulated and linked to the previous events.

#### The Disconnected Narrative

An example of what we analytically categorize as a disconnected narrative is made by Katie and Lauren, which they titled *The Story of Cats*.



Figure 3. Screenshots of The Story of Cats.

In this story, three of the four written texts are partly descriptions of images with a narrative element, for example, ‘Once upon a time’. The text to the third image differs in that it changes the grammar to the definite form ‘the gray cat’, and to the future tense, ‘was to have a party’. It also expresses more fictional content, in the sense of describing a non-realistic event, if still based on a child’s experience (cf. Klerfelt, 2004). The written texts each carry narrative elements, with the images functioning as illustrations (or since the images are primarily the medium, the text expands the meaning on the images). However, to be comprehensible, the third text requires the image to enhance its meaning.

The disconnected narrative represents separate parts and does not, from an analytical perspective, interrelate the parts into an intelligible coherent narrative with a discernible plot, and a structure with a beginning, middle and end. In contrast to the story *The Book of Friends*, this story does not have a problem-solving issue or an explicit protagonist (cf. Bruner, 1996).

### The storymaking activity

Below, two excerpts will exemplify how the activity resulted in a disconnected narrative. Our analysis of the activity reveals that the descriptive text partly depends on the teacher’s reduction of the girls’ telling and illustrates her focusing on one image at a time rather than on an overarching narrative, uniting all the images. However, the girls do attempt to create a coherent plot with an active character encountering a problem, displaying their narrative competence (cf. Wells Rowe, 2013).

The following excerpts display how the participants negotiate in relation to the first and second selected image.

## EXCERPT 3

38. <i>Katie:</i>	maybe a cat playing with yarn
39. <i>Teacher:</i>	do you want me to write for you and you copy it or do you want
40. <i>Lauren:</i>	((interrupts)) the <b>cat had very sharp claws</b>
41. <i>Teacher:</i>	do you want me to write for you and you may copy it
42. <i>Girls:</i>	((nods))
43. <i>Teacher:</i>	((writes and reads)) once upon a time there was a cat that had very sharp claws
44. <i>Katie:</i>	and played with yarn
45. <i>Teacher:</i>	should you start with this, once upon a time there was a cat that had very sharp claws

Katie initiates the negotiation by suggesting the cat being the actor, performing a well-known activity: playing with yarn (turn 38). The teacher does not respond to the suggestion but instead scaffolds the transformation to the written text (turn 39). The image depicts a cat with oversized claws that had caught the girls' attention already in the selecting phase. Thus, Lauren interrupts by formulating a sentence (turn 40) including the claws, which the teacher captures, although she rephrases it by adding a fairy tale marker (turn 43). This implies support in narrative structure although the teacher does not explicitly comment on her remark. However, Lauren's utterance (turn 40) forms this caption since Katie's suggestion of an event that could have built an initial plot is overlooked.

## EXCERPT 4

58. <i>Teacher:</i>	what will you write here then
59. <i>Lauren:</i>	<b>a black cat</b> that growled at the other cat
60. <i>Katie:</i>	black cat with yellow eyes
61. <i>Lauren:</i>	with yellow eyes
62. <i>Katie:</i>	that sees well in the dark
63. <i>Lauren:</i>	that sees well in the dark (.) that is <b>good at catching mice</b> in the dark
64. <i>Teacher:</i>	((writes and reads)) it was a black cat that was good at catching mice
65. <i>Lauren:</i>	it was only because he was black and it was during the night
66. <i>Teacher:</i>	yes, do you know what Lauren, should we write everything, it will be very much and you're gladly allowed to write much, that's not what I mean, but you have two more images (.) it was a black cat that was good at catching mice (.) should we write like that

Initially, the teacher directs the attention towards image number two (turn 58), displaying her focus on the children writing text for the image. This question redirects focus from the overarching narrative to completing text to one spe-

cific image at a time, which is arguably one reason why the written text develops into a disconnected story. However, Lauren tries to initiate an unexpected event and thereby creating a tension by proposing the depicted black cat being unfriendly: he ‘growled at the other cat’ (turn 59). According to Bruner (1996), a breach in the plot is what makes a story worth listening to. The other cat, arguably, refers to the one in the previous image: clearly Lauren tries to interconnect the events, showing that she has appropriated skills to construct an exciting plot. Katie picks up Lauren’s utterance and transforms it by using the subject (the cat) and adding an attribute that develops the character (turn 60). Through the girls verbally filling in each other’s phrases, the plot develops. In turn 64, the teacher finally summarizes, but evidently the text becomes reduced from what the girls have narrated. As a result, Lauren attempts to clarify their negotiated story (turn 65). However, the teacher explains that their extensive telling is too much to write down (turn 66), and by that scaffolds the children to manage to complete their book.

### The Fragmented Narrative

The third approximation of a narrative, as discerned by the analysts, is what we refer to as a fragmented narrative, which is exemplified by *The Lonely Dog* by Lucy and Sarah.



Figure 4. Screenshots of *The Lonely Dog*.

This book is characterized by simpler images in terms of no background milieu (in contrast to the other stories, for example in the first case the rabbits with the swing in the forest). This way of illustrating, leaving an empty space around the object to enhance the essential details, is common in picture books addressing young readers with limited experience (Nikolajeva & Scott, 2001). In contrast to the other stories, the relation between images and words is interdependent in the first two parts, only being apparently related by describing dogs (with opposite qualities). Furthermore, the texts have a demonstrative function ‘This dog...’ (Fig. 4). There is no evident plot, to the analysts’ understanding, as no change is taking place over the parts. However, the sentence with the third picture has a narrative element, presumably referring back to the agent on the previous page, *He* (*H*, misspelling of Swedish *Han*), that is, the mean dog in picture two.

### The storymaking activity

The following two excerpts illustrate how the approximation we refer to as a fragmented narrative is shaped during the storymaking. The unfolding activity differs from the two others analysed above in that a story develops already during the selection of the images. The children orient towards the screen, scrolling up and down, simultaneously negotiating quite intensively in shaping the plot.

#### EXCERPT 5

20. Lucy:	... once there was <b>a dog</b> sort of and so and so had she a lot of friends, or
21. Sarah:	hmm ... it was a dog that had a lot of friends anyway, and he found someone and that would be ((looking at the screen))
22. Lucy:	no he (.) once there was a person so he found, take the road ((points at an image depicting a road))
23. Sarah:	no
24. Lucy:	and so did the guy find him then ((points at an image depicting a young man))
25. Sarah:	wait, it was <b>a dog that was mean to this dog</b> ((points at the screen but moves the finger from left to right rapidly. We assume she points at two images depicting different dogs, which are the two appearing in the story))

From these few turns a protagonist is invented, a dog, and a setting in terms of a road. This story does not contain a problem. Rather, the climax is a meeting between the dog and a man, which they pick up later in the discussion, even if Sarah also suggests another character that potentially can result in difficulties, namely a mean dog (turn 25). In short, this represents what Nicolopoulou (2008) describes as an elementary form of a young child's coherent narrative, but the teacher does not recite the extended telling that is mediated by the large amount of images.

#### EXCERPT 6

59. Teacher:	what is this about
60. Sarah:	a dog that was, <b>this dog was nice to others</b>
61. Teacher	((writes and reads)) This dog was nice to others
62. Sarah:	and
63. Teacher:	we use this for this image and then we will take a new sentence to the next image, so it doesn't get too much for you to write

The teacher approaches and asks, 'What is this about' (turn 59), which entails an awareness of the negotiated nature of the activity. Sarah starts retelling the story (turn 60) and the teacher responds by writing down her words and reading them (turn 61). Sarah, however, is not quite finished and utters, 'and' (turn 62) as she probably wants to continue their negotiated plot. The teacher inter-

rupts her (turn 63), and by delimiting the scope of telling, the teacher scaffolds the girls in accomplishing the task but also constrains the continuing narrative. What actually remains of the negotiation in the final text are the two dogs (see Fig. 4).

To summarize the findings, eight children were assigned the task of writing a digital story in pairs with *Storybird*. As a result, the books produced by the children for the analysts exemplify three different approximations of a narrative genre, categorized as *coherent narrative*, *disconnected narrative* and *fragmented narrative*. By displaying excerpts from the in-situ activity, we have shown how the technology, the teacher's scaffolding, and other contextual resources mediate the storymaking activity, and what this implies for the books produced in terms of narrative structure, degree of discernible coherence in the plot, the role of characters and images, and in the nature of the relation between images and written texts. In the next section, we will discuss these findings concerning the process of negotiation and the teacher's scaffolding, resulting in the formation of the stories.

## DISCUSSION

The analytical interest of this study focuses on literacy events (Barton, 2007) in the form of children creating narratives with the storymaking software *Storybird*. Our findings display that what the children orally tell is not completely mirrored in the final products, resulting in what are analytically seen as different approximations of a narrative genre (see Fig. 2–4). The reason for the variation is understood as the teacher's mediation of the activity, including her asking the children to focus on completing text for one image at a time, and by this limiting the children's narrative suggestions. The overall context of schooling, implying writing and fulfilling the task, thus prevails over scaffolding the appropriation of narrative knowing, that is, how to interrelate events into a sequence making up a story, with character development, the unexpected turning point and its solution (Bruner, 1996). This entails that the teacher does not direct the children's attention to the relation between text and image. Additionally, very little re-reading of the stories during these activities is performed, that could have contributed to make the events in the stories more coherent. Thus, the teacher's scaffolding is not focused on narrating, but rather on writing, as she anticipates the difficulties of managing the technology of writing, knowing that the children do not yet extensively master the conventions of this cultural tool (Vygotsky, 2004). Therefore, by eliminating elements beyond the children's capacity and by summarizing and reducing the children's telling when transforming it into writing, she arguably scaffolds them in simplifying the task of transforming between the two modes of communication. Tensions emerge in the negotiations through this reduction (see Excerpts 2–4 and 6), even if the participants establish temporal intersubjectivity of significance for the aim of completing a book.

As seen in the empirical material, the children use a variety of resources available to narrate, such as speech, text, images, and gestures, with the two former being at the forefront for the teacher in her scaffolding. These semiotic resources come into play in the literacy-related activities mediated by the digital technology. Children's early composing has always been multimodal in nature, which for example has been reported through the extensive work of scholars such as Dyson (2001, 2003). This view is also supported by Wells Rowe (2013), who argues that focusing merely on the oral and written is to ignore a large part of children's sense-making. Implementing digital technologies, such as tablet computers or cameras, in early childhood education practices may provide greater opportunities for expressing stories in multimodal ways. However, Kress (2003) argues that the materiality of the resources used in a practice can only be understood by the potentials and limitations they offer. In this study, the software supports a coherent storymaking through the thematic and sequential organization of the images and the imagery with a consistent background milieu (e.g. the forest in story one). At the same time, the fact that the themes are built on coherence rather than potential conflict or discrepancy, for example not allowing a cat theme to also contain dogs, delimits the resources for making interesting and engaging stories where problems are encountered and overcome. Nevertheless, the images are compelling, and come to mediate storymaking beyond what is depicted in the images, for instance when the rabbits became sad (Excerpt 1). The children interpret the imagery and build on the knowledge and cultural experiences they have (Kress & van Leeuwen, 1996; Klerfelt, 2004), and the images trigger the narrative as displayed in our analysis. Thus, the opportunities offered by this kind of software applications become motivating for meaning-making and composing stories (Leinonen & Sintonen, 2014). However, for enhancing literacy learning the teacher may have to pose questions to the children to encourage reflection on their work (Gattenhof & Dezuanni, 2015). In line with earlier research (e.g. Wells Rowe, 2013), the findings of the present study illustrate that already some six- to seven-year olds have narrative skills. In all three storymaking activities, the children demonstrated an ability to structure a coherent narrative with an intelligible content, although this was only visible in one of the final stories, *The Book of Friends*. As we have already hinted, it is important not to see the teacher's reduction of the richer stories told by the children as erroneous. As we could see in the results, within the negotiable space of the verbal interaction there are possibilities for developing the plot. Given this, the teacher orchestrates the complex activity in terms of institutional conditions such as the time aspect, as well as technical issues and writing.

## CONCLUSIONS

The teacher's role arguably becomes crucial for the final result, regardless of the resources inherent in the software, which is in line with earlier studies on technology-mediated activities (e.g. Bayon et al., 2003; Gelmini-Hornsby et al., 2011). Thus, software applications like *Storybird* might offer various pos-

sibilities, such as the different organizations of images, but it is the teacher's scaffolding that enables the fulfilling of the educational task. In the studied literacy events, the teacher – as seen in terms of spatial metaphors – primarily mediates the children's attention to the 'vertical' relationship between an image and its text (caption – even if each text graphically comes to stand beside its respective image) while the 'horizontal' relationship, that is, weaving a succession of events as pivotal to the development of a story, is less focused. The narrative knowing the children display is not entered into by the teacher in a way that further develops this fundamental form of communication and sense-making. Rather, it forms the background when she scaffold the children in practising writing.

From our study we conclude that it is problematic to assess young children's literacy skills from a final product, a completed text, since what is displayed in the written text does not reflect the collaborative storymaking process. For the early childhood education curriculum, this implies a need to stress literacy activities as such, in order to enhance children's multimodal narrative learning.

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