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CHILDREN'S STORY MAKING WITH DIGITAL TECHNOLOGIES:
TOOL-MEDIATED ACTIVITIES IN A PRESCHOOL CLASS

Licentiate thesis

Ewa Skantz Åberg
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Abstract

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Author: Ewa Skantz Åberg

Opponent: Professor Karin Aronsson, Stockholm University

Examiner: Senior Lecturer Liss Kerstin Sylvén, University of Gothenburg

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Narrating has a long tradition within early childhood education and serves, among many things, as a means of engaging children in literacy activities. With the advent of digital technologies, different contexts are created that provide opportunities for multimodal ways of narrating. The overall purpose of this licentiate thesis is to investigate what kind of activities emerge when six-year olds are instructed to narrate with digital technologies, and how the teacher, the technologies and cultural tools, such as language, symbols and other physical artefacts, mediate the story-making activities. The present thesis consists of an extended summary and two empirical studies on instructional activities performed within the context of a preschool class setting. The first study explores what kind of activities emerge when the children in collaboration write stories using word processor and speech-synthesized feedback computer software applications. In the second study the software provides illustrating images designed especially for story making. A particular interest in this study is to analyse how the in situ activities evolve, and to clarify how the children's final products come to vary. The empirical material was generated with the use of video observations and the analysis was informed by sociocultural theory. The mutual findings in the two studies show that the art of narrating forms the background of the teacher's introduction and her scaffolding, and as a consequence, two agendas can be discerned in terms of the children orienting themselves foremost to making a story and handling the technologies, whilst the teacher foregrounds writing. The inherent possibilities provided by the different digital technologies, for example, support in transforming print into audible sound or thematically organised images constitute an incentive for the children's story making, but also a constraint due to the children having difficulties handling the software and devices.

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PART I

1. Introduction

This licentiate thesis will present research on learning activities where children in preschool class in collaboration create narratives with digital technologies. The general background of the thesis is an interest in young children's story making as a significant cultural form for communication and sense making, as well as an interest in children's development of literacy competences. In the light of the current expansion of digital technology in educational practices, the means for story making are changing. The increased use of digital technology in preschool and school challenges both traditional instructional practices and textbooks designed on the principles of print technology. Whether these new emerging activities, where children learn to read and write with the use of digital technologies, contribute to enhance learning outcomes is debated – often in a dichotomous manner - in mass media, and by politicians, laymen and scholars. On the one hand, there are arguments about how the use of such tools may enhance different aspects of children's literacy development (Lankshear & Knobel, 2003). For example, Parette, Boeckmann and Hourcade (2008) investigated young children's use of multimedia software, including multimodal means such as written language, images and sound, and they found that the particular software had the potential for enhancing development of literacy skills. On the other hand, claims are made about how digital technologies may entail barriers for children's development of reading and writing. For instance, Rosén (2012) maintains there is a relationship between frequency of computer use at home and negative results on reading comprehension tests performed by Swedish pupils of 9-10 years. She suggests that the reason is not the computer per se, but a redistribution of time, that is, children spend more time in front of the screen than with books, implicating less reading. Furthermore, there is research emphasising that education is not improved solely by the introduction of new technology, but rather technology creates new and distinctive contexts for learning, which simultaneously implies possibilities and constraints for learning (Lantz-Andersson, 2009; Säljö, 2010). An interesting question that emerges from this reasoning, in relation to my research, is how learning activities such as creating digital narratives engage early writers and the significance of digital technologies for how narrative activities unfold.

The present licentiate thesis consists of two empirical studies and an extended summary presenting and elaborating on earlier research relevant for the study, the theoretical and methodological premises, a summary of the studies, and finally a discussion of the findings. The research is placed within the field of Child and Youth Studies and conducted within the Swedish national research school for preschool teachers: Childhood, Learning and Didactics (FoBaSM). In order to gain knowledge of the new and different educational practices developing in relation to digital technology, the empirical material was generated in a primary school, more specifically in a preschool class setting, which is a one-year form of schooling for six-year olds in Sweden. The particular school was chosen due to its participation in a larger municipal investment project with digital technology, with the intent to enhance reading and writing skills. Hence, the participating six-year old children had some earlier experiences of digital technology in the school before the study took place and the teacher was trained in handling the technologies. Two groups of children, using technologically different tools, were observed. In the first study the children use a word processor and two speech-synthesized feedback software; the tools are designed to support reading and writing. In the second study, the story-making activity takes its starting point in images selected by the children from an Internet-based software named *Storybird*. The software provides opportunities for designing digital books with images and text.

Theoretically, this study is based on a sociocultural perspective on learning (e.g., Säljö, 2000, 2005; Vygotsky, 1987; Wertsch, 1998). Taking this perspective, people are seen as participants in social contexts with historical and cultural traditions, wherein they communicate and learn, that is, appropriate cultural tools such as language, signs and physical artefacts. An important theoretical concept from this perspective is mediation (Wertsch, 2007), that is, the idea that human action, including perceiving and taking part in the social and physical world, is shaped by the use of cultural tools. Introducing a new tool or sign in a practice does not simply facilitate the activity in terms of making it more efficient, but qualitatively transforms psychological functioning and practical operations (Wertsch, 2007). In regards to digital technologies, a sociocultural perspective implies that they constitute both objects for and means of children's literacy activities, for example, when children in play use different materials as representations for a technology (Razfar & Gutiérrez, 2013) or use it as a tool for writing. An illustrative example of this objectifying and utilisation of an invented tool for mediating speech is described by Wohlwend (2009), who in her research shows a girl playing in the housekeeping corner in the preschool pretending to call a friend by using a plastic carrot as a substitute for a cell phone.

To understand the activities the children in my studies are involved in, I will use the notion of literacy. Historically, the Anglo-Saxon word literacy was used for encompassing reading and writing (Gillen & Hall, 2013), but in more contemporary research the notion has been broadened, and the social, cultural, and historical aspects of literacy are emphasised (sometimes with the word in the plural – literacies – to denote its many forms). Seen as a social activity in which people participate, a literacy event is understood in relation to larger socio-historical literacy practices in which the event is situated (Razfar & Gutiérrez, 2013). Additionally, literacy now in extension to reading and writing encompass the use of images and symbols. The reason for choosing the notion of literacy in this study is grounded in the oral and written story making (partly utilising images) made by the participating six-year olds. Björklund (2008) reasons that, "narrative is an expression for literacy in a broad sense, since narrating in various forms supports and makes connections to the linguistic worlds of children" (p. 97, my translation). The narrative[1] genre, both oral and written, has a long tradition in educational practices, especially in preschool and the early years of education. Narratives are frequently used as carriers of culture and for entertaining (Klerfelt, 2007), for engaging children in reading and as tools for stimulating their writing development (Eriksen Hagtvet, 2002). Seen in this light, story making becomes an aspect of literacy.

However, if story making has a natural place in preschool and school practices, digital technology has had difficulties entering these educational institutions (Selwyn, 2008). The reason for this scenario is considered to be the traditional view on young children's learning as through 'the hand', and, moreover, a view of the computer as causing changes in children's behaviour in various ways and countervailing interaction (Klerfelt, 2007). Further obstacles for implementation include economical resources, teachers' lack of competence and insufficient possibilities for further education. However, the trend of utilising digital technology in educational practices is rapidly increasing, foremost in preschool (through computer tablets) and in the upper years in primary school through one-to-one (1:1) investments, that is, ratio one digital device per pupil (Fleisher, 2012). Hence, this development prompts studying the implications of the encounters between traditional educational practices and new digital technology (Lantz-Andersson, 2009; Selwyn, 2008). The research of the present thesis focuses on activities where six-year olds use various disposable cultural tools for story making, both cognitive/language-based and physical ones.

[1] *Narrative* is a scientific concept and could be seen as synonymous with *story,* which is used as an everyday term. In this study I will use the two words interchangeably, as is a common practice in the research literature (cf. Bruner, 2002). The concept of narrative will be further elaborated in the theory chapter.

The focus in the empirical studies is the collaborative narrative activities and products in relation to the use of specific digital tools. Thus, the children's spoken and written language together with the use of other tools, in this case foremost the technologies used, are seen as intertwined in the literacy event.

The extension of digital technology in educational practices reflects the surrounding world where new technical devices constantly are available on the market and become integrated in people's everyday lives. Today, many children from an early age have access to computers, digital cameras, tablets, mobile phones, and other technical equipment provided in their homes and in educational practices (Marsh, 2010). Digital toys are easily accessible, and thereby provide children with other opportunities to play, learn, and tell stories (Yelland, 1999). Thus, for most children in western cultures, digital technologies become natural tools for communication and learning. Further, the technological immersion in children's lives in relation to literacy has considerable implications. "This 'new literacy' environment is broader, more dynamic, fluid, multi-layered, and multimodal", Razfar and Gutiérrez (2013, p. 65) argue. Recent statistics show that children use media increasingly and at even younger ages. Relatively constant is television consumption, which still is the media-activity younger children, 2-8 years old, mostly engage in. However, the daily use of Internet among 5-8-year olds has trebled since 2010, especially via smart phones (Swedish Media Council's Annual Report, 2012/13).

The technology fusion in people's lives certainly has an impact on the curriculum for education. One of the central goals for the educational system internationally, is to educate children for the future, enabling participation and preparing for knowledge suitable for the needs of society (NMC Horizon, 2013). In the Swedish context, this is formulated as a political intention to "safeguard basic social objectives such as democracy and justice through the aim of allowing all citizens to utilise the advantage of information technologies" (Prop. 1995/96:125, p. 1, my translation). Additionally, the proposition declares that school has a particular responsibility for all children, regardless of background, social-economic status or gender, to be offered equal educational opportunities according to the goals in the curriculum and access to information and communication technology. Therefore, in this respect school is given a compensational role (Prop. 1995/96:125). In the current Swedish curriculum for the compulsory school and the preschool class, the national overarching goals and guidelines emphasise the use of new technologies in education. Children are expected to not only search for information as 'consumers', but also to communicate and create with digital technologies,

that is, to become active 'producers'. Thus, the message from the authorities is clear; it is essential that children use technology for learning and for developing literacy skills.

According to a review made by The Swedish National Agency for Education (2013), preschool teachers view digital technologies as important pedagogical tools, although they largely demand in-service training of how to use them with the children. Consequently, there is a necessity for further education and training for teachers, but importantly also to generate knowledge about how learning activities will be altered with the use of different digital technologies. Adopting a sociocultural view for understanding these changes, due to the impact of digital technology in younger children's literacy learning and development, through the notion of mediation has proven to be a powerful lens (Razfar & Gutiérrez, 2013). In line with the elaboration above, the present thesis will contribute to an understanding of *in situ* activities when children use technologies introduced to enhance their reading and writing skills.

Aim and research questions

The aim of this study is to explore children's collaborative story-making activities using digital technologies in the context of preschool class. More specifically, the interest is how the story-making activities are mediated by the technologies used, the teacher's participation, and the children's interaction. A second interest is what the story-making activities result in, that is, the created products in terms of digital narratives and their distinctive features. I will scrutinise the learning activity from the point of view of how the children *engage* in the task to create a collaborative story with the use of cultural tools, since learning is seen as contingent on this engagement.

In order to generate knowledge with this overarching aim, the following research questions are addressed:

- What kinds of activities emerge when children create narratives with digital technologies?
- What significance do the technologies have for mediating the activities and the narratives?
- How does the teacher, through her introduction and participation in the activity, mediate the children's engagement?

- What characterise the narrative genres the children's stories exemplify, and how can the relationship between the unfolding story-making activities and the products, that is, the produced narratives be understood?

The first two questions are of a more general character and are answered by both the first and the second empirical study. The third question is more focused in the first study. However, the question is partly answered also in the second study, in that the teacher's participation (in terms of scaffolding, see the theory chapter) is focused in the analysis. In addition to the two initial questions, the second study intends to provide an answer to the fourth research question. In all, the present study will contribute to the research field on young children's literacy development by giving account for the findings generated from investigating story-making activities with a focus on how the children engage with the available digital technologies and how these tools together with the teacher's participation mediate the unfolding activities.

Guidance for readers

The present thesis is structured in the following manner. In the next chapter I discuss the theoretical framework of a sociocultural perspective on learning. I also discuss, from the same theoretical perspective, narrative as a communicative and cultural tool, and the concept of scaffolding is elaborated. In the ensuing third chapter I make a review of studies concerning literacy, narrative and digital technology in relation to early years education, since the questions of interest in this study concern children's technology-mediated story-making activity. Thereafter follows chapter 4, presenting the educational setting in which the empirical material was generated, and how the studies were designed and conducted. Furthermore, a summary of the two empirical studies is given in chapter 5, and in chapter 6, implications of the empirical findings are discussed. Finally, in chapter 7 a summary in Swedish is presented.

2. Theoretical perspective

In this chapter I will present the sociocultural perspective that informs my study. Key concepts of this perspective, particularly cultural tools, appropriation, mediation and scaffolding will be presented.

The Russian psychologist Lev S Vygotsky's (1896-1934) cultural-historical theory has influenced many educators and researchers since his work became known outside Russia, several decades after his dead. Contemporary neo-Vygotskian scholars that have contributed to interpretations and elaborations, to what today is referred to as sociocultural traditions, include James Wertsch (e.g., 1998, 2003, 2007) and Roger Säljö (e.g., 2000, 2005, 2009). This study draws on such sociocultural traditions in which learning is fundamentally understood as a tool-mediated social process embedded within activity, context and culture. Of a particular interest is how individuals engage and learn in social activities and how learners use cultural tools (Bruner, 1996; Säljö, 2000, 2005; Wertsch, 1998). In line with this perspective, Jerome Bruner's theorising on the significance of narrative for human thinking will be adopted and applied as analytical guidance in studying children's story making. Hence, it is Bruner's later writings that have influenced my thoughts. From the 1980s he seems to be more concerned with the cultural importance for shaping human mind in contrast to an earlier view on learning as an individual cognitive process (Takaya, 2008). It is foremost texts written by these above-mentioned scholars that have informed the present study.

Tool-mediated activity from a sociocultural perspective

In this thesis, tool-mediated activity is used as the unit of analysis. In the context of the study, this implies analysing how children engage in story-making activities with each other and the teacher, and additionally with and in relation to the present digital technologies (and other tools). Wertsch (1998) emphasised tool-mediated action as the unit of analysis in order to understand the relation between agents (people) and the role of cultural tools as mediators. In analysing action, Wertsch claims, there is a need for looking beyond the agent in isolation by recognising the social context, and the nature of the cultural tools and how the agent uses them. This is necessary, especially considering abstract solutions of problems that are often built into tools, which we use to concretise operations, for instance by using a calculator. To not acknowledging these circumstances may result in us being, "unreflective, if not ignorant, consumers of a cultural tool" (Wertsch, 1998, p. 28). For this reason, it is relevant to

illuminate the impact of cultural tools in co-producing a dynamic mediated action. Wertsch's view, however, is criticised by Miller (2011) for foregrounding action instead of psychological signs (tools) as means for developing higher human mental processes. Central in his cultural-historical theory, Vygotsky placed word meaning (or signs) as the unit of analysis, since "his seminal contribution involved signs and the mediation of mental functions or consciousness" (Miller, 2011, p. 232). This was the problem of psychology, not human action, according to Miller. Although Vygotsky was mainly occupied with the problem of the relation between thought and language, Wertsch (1998), Säljö (2000) and others have developed this cultural-historical theory, particularly emphasising the role of cultural tools for human learning and development, especially in the light of the development of digital technology and what that implies for educational contexts.

My choice of tool-mediated activity as unit of analysis derives from an assumption that activity is constituted by people's participation, using various resources in carrying out actions. An activity is viewed as a unit, having a start and an ending, which is initiated either by someone spontaneously or organised, as in preschool and school. On the one hand, people's actions interplay with the activity; on the other hand, the activity interplays with the actions. Therefore, the activity and the actions within the activity are understood as mutually constituted and intertwined. By extending the unit of analysis to a tool-mediated activity, a possibility opens up for understanding the relation between participants' engagement in activities and a cultural and institutional practice. In the present thesis, this is accomplished in terms of studying young children's activities with an interest in their appropriation of various cultural tools, such as language, symbols, narrative and other physical tools, but also particularly how they interact with digital technology. This theoretical position, as every position, has implications for how to delimit what is studied, which will be elaborated below.
Learning is from a sociocultural perspective viewed as a social activity wherein the learner participates and appropriates, that is, gradually takes over (Säljö, 2000) physical and psychological/cognitive tools. Communication, as the mechanism of learning, constitutes the link between the individual and the collective/culture within a specific context, where the context is regarded as shaped through participants' engagement and negotiation, rather than something preceding action. Communication is seen as dynamic, and as an activity in which what we say and do do not precede each other, but are constituted in the situation (Säljö, 2000). A context can be perceived as a physical environment, but also as a cognitive and communicative context where we, for example, solve problems in collaboration in educational practices. Accordingly, how we develop our cognitive, communicative and social

abilities are contingent on what possibilities we have to interact and what cultural tools that are available. Therefore, the adopted sociocultural perspective is useful for investigating the use of new tools such as digital technology in educational settings and what this implies for the participants' learning. However, it should be noted that what is studied is not the learning outcome, but activities where learning is seen as a consequence of the engagement. Hence, seen from this perspective, mutual sense making by participants is a prerequisite for gaining new knowledge (Arnseth & Ludvigsen, 2006). Through speech as a mediator, we are able to get insight into each other's thoughts and interpretations and thereby create a mutual understanding for a certain problem or task. This means that sense made in a dialogue is analytically understood in relation to the context wherein the dialogue takes place (Säljö, 2000). For the present study, this reasoning entails studying empirically children's in-situ learning activity with a focus on the interaction between the children, the teacher, and the technologies, and the relation to the resulting products that in this case are digital stories.

Mediation through cultural tools

To explain what Vygotsky called higher human mental processes, which refers to the ability to actively remember, reason and solve problems, the concept of mediation in used (Wertsch, 2007). Mediation, is a central concept within sociocultural perspective, referring to the premise that people are not in direct contact with the surrounding world but interpret and act in it (both externally and internally) with cultural tools (Säljö, 2000, 2005; Vygotsky, 1987; Wertsch, 1998, 2003, 2007). In other words, mediation refers to the connection of human thinking and acting to what cultural tools are available and used. The concept of appropriation is employed to explain the ability of using these tools in a relevant way in different contexts (Pramling & Ødegaard, 2011). Becoming familiar with cultural tools tends to offer resistance and in order to be able to use a tool in an unconstrained way implies a long process of active sense making (Säljö, 2005). This process of appropriation, in terms of mastering the resistance offered by the cultural tools begins on the social level, as Vygotsky expressed in his "law of sociogenetic development" (Vygotsky, 1978). This means that, a child's cultural development starts on the social level (interpsychological) and then transforms the child on the individual (intrapsychological) level. The link between the external and internal process is the concepts that are used in communication. What concepts learners come in contact with in communication with others thus become pivotal to what insights they develop as learners (Säljö, 2000). Learning in this theoretical perspective can therefore be seen as people

appropriating psychological and physical tools in various contexts, where language is considered the most significant tool. In other words, ”the ability to perform various activities is seen as resulting from an increasing ability to structure the world by means of language” (Säljö, 2009, p. 207). This implies that the development of children is possible to delineate by their ability to use these tools in culturally appropriate ways (Razfar & Gutiérrez, 2013). As a consequence of this view of learning, narrative as a cultural tool, which will be studied in the present work, can be seen as a mediator with possibilities in transforming our mental processes in providing a communicative link between the social and the individual. This rationale is accordingly the basis for studying children's engagements in learning activities when they make digital stories.

Cultural tools

The concept of cultural tool refers to both cognitive, psychological tools (signs) and physical tools or artefacts, which have been developed through history by people to solve problems and carrying out different actions (Säljö, 2005). In his reasoning, Vygotsky made a distinction between tools and signs in the following manner:

> The tool's function is to serve as the conductor of human influence on the object of activity; it is *externally* oriented: it must lead to changes in objects. (…) The sign, on the other hand, changes nothing in the object of a psychological operation. It is a means of internal activity aimed at mastering oneself; the sign is *internally* oriented. (Vygotsky, 1978, p. 55)

Vygotsky made this distinction for analytical purposes to understand the higher forms of behaviour, which he wrote, could only be affected through the use of signs and not tools. However the distinction between tools and signs are difficult to maintain, since, for instance, the technology of writing is both an intellectual and a physical tool. This was recognised by Vygotsky who stated that sign and tool are separate although mutually linked in the mediated activity, suggesting that the use of a physical tool may broaden "the range of activities within which the new psychological functions may operate" (Vygotsky, 1978, p. 55). For the present thesis this reasoning can be applicable when analysing a mediated story-making activity where both psychological and physical tools are used in order to accomplish a given task.

Vygotsky primarily focused on psychological tools (language, writing systems and number systems) as mediating tools for human development. A basic premise of a sociocultural perspective is that language constitutes the premier tool for human thinking and

learning. Furthermore, language is seen as a collective resource under constant development, working as a cognitive, communicative and functional tool for the individual mind as well as between individuals and cultures (Säljö, 2000). It could also be argued that language is not restricted to verbal speech but includes gestures, bodily language and other modes of expression such as intonation and glances. From this broader view on language people are seen as creating meaning and communicate through using various semiotic tools provided by, for example, computers that offer multimodal possibilities such as images, font, sound, and layout. Flewitt (2013) suggests that the theory of multimodality offers a different perspective on communication since the sociocultural perspective has a narrow definition of language that needs to be extended to include other modes of expression; but reading Vygotsky's work clearly shows that his social analysis embraces the importance of semiotics (Miller, 2011).

Written language is central for western culture, in that learning, information, communication and memory are organised in written texts. Therefore, knowledge about the conventions of writing has significance for how we can participate in society. Written language functions as a mediating tool that structures our ideas about the world in culturally relevant ways (Säljö, 2000). The technology of writing makes it possible for communication to exist outside our bodies, rather than being tied to time and space as with speech, since speech is contextual (and transient) while text is separated from a local context. The modes of writing and speech are subjects under their own respective law, implying a disparity in difficulty level between these modes of expression. Although on the one hand, written symbols relate, directly or indirectly, to sound, in that sound yield the written words meaning (Ong, 2002). One the other hand, written symbols make sound into something more tangible. Yet, another important difference is that in verbal conversations much may be left implicit but still comprehensible for the listener (for a child, speech is motivated and shaped from a source of affective stimuli), while the written demands a deliberate action since written conventions are more conditional than the spoken language (Vygotsky, 1987). In the present thesis, this line of reasoning is used when analysing the children's story-making activities, which start in the mode of oral telling and then are made into written texts. The activity of making the transition between the oral and the written story making is one of the analytical interests of this thesis.

For a young child to appropriate the technology of writing involves resistance and difficulties, which can also be attributed to cultural tools in general. Appropriation does not only imply learning the alphabet and the relation between sounds and letters (the formative aspects), it also entails understanding written conventions that are historically built into words

and sentences. Still another aspect a child needs to grasp when appropriating the technology of writing is the demand of distance in a writing situation, that is, being able to take the perspective of a reader, or vice versa, when being a reader, to understand the perspective of the writer (Vygotsky, 1987). The ability to abstract is an important skill in the long process leading the child forward to become literate (Fast, 2007).

Narrative as a cultural tool

In this section, I will present a view on narrative as a significant tool for human communication and carrying out other important psychological functions. Through history, narrative has been employed by people to communicate, entertain, make sense of the world, and for handing down accumulated experiences to growing generations (Bruner, 1996; Säljö, 2005, Wertsch, 1998). Different features of plot and communicative genres provide stabilising functions in communication between generations (Ochs & Capps, 1996). Thus, narrative can be seen as a mediator of culture through times and changes in society. Narratives are not universal but culturally specific. Furthermore, many scholars emphasise the meaning-making function of narrative, implying that this cultural tool also mediates personal interpretations of experiences (Wells, 2009). Through various narrative genres such as fairy tales, gossip, personal experiences, and stories of everyday events, storytelling can be seen as a cultural tool for sense making that people have developed over time (Säljö, 2011).

Narratives of personal experiences or life stories could also be seen as mediating tools for constructing identities, defined by Ochs and Capps (1996) as, "verbalized, visualized, and/or embodied framings of a sequence of actual or possible life events" (p. 19). These narratives are usually told in a chronological order, which allows the narrator to hold together otherwise disconnected life events (Ochs & Capps, 1996). In this way, the construction of a story becomes a significant tool for communicating experiences and allows constructing a self that provides continuity through time and space (Engel, 1995*)*. As I have argued here, through referring to scholars within the narrative field, the functions of narratives are many and fundamental for people. However, this thesis will focus on children's story making as an instruction-based learning activity and therefore I will not elaborate further on the line of narrative theory addressing life stories.

According to the Oxford Dictionary, the English word narrative can be traced to late Latin, *narrativus* meaning 'telling a story' and with origin in the verb *narrare* and interestingly also from *gnarus* meaning 'knowing'. Thus, the aspect of knowing additionally

attributes to narrative as organiser of thoughts and a mediating tool for learning and remembering, which should be acknowledged. Vygotsky (1987) paid much attention to the child's intellectual development and the process of concept formation. He divided the child's way of making sense and communicating by using the distinction of scientific and everyday concepts, where the scientific is characterised by a structured and logical way of reasoning, primarily employed and developed in educational contexts. This can be exemplified by the emphasis in school on factual knowledge and scientific language. The concept of everyday is characterised by means of mundane ways of speaking and reasoning, established in everyday activities (Vygotsky, 1987). Other researchers, such as Engel (1995) and Bruner (2006) have reasoned in a similar way about a division of sense making. This is discussed by Engel, who by referring to Halliday, highlights the use of language as both a tool for thinking (the mathetic function) and communicating (the communicative function). She argues that, "narratives, like language more generally, have the same overarching functions; we construct stories to think with and to communicate" (Engel, 1995, p. 26). Bruner (2006) makes the distinction between a paradigmatic and a narrative way of reasoning. Accordingly, the paradigmatic mode is characterised by logic, and typified by a mathematical and scientific way of thinking, while the narrative mode concerns people's intentional actions and experiences. Bruner argues that both mind-sets provide different possibilities in, for example, organising knowledge, for making sense and remembering.

The expressions of the two mind-sets represent different discursive genres, that is, on the one hand, when the paradigmatic mode operates a more analytical way of speaking is used, as truthful as possible and with a minimised scope of interpretation. On the other hand, in narrative discourse, language is more expressive. To be a successful storyteller, employment of a wider scope of language is required, and the teller needs to leave room for the listener to interpret the words and underlying meanings (Bruner, 2006). It may appear that this distinction is dichotomous, but for instance Vygotsky (1987) resisted a detachment of the intellectual side of human mind from its affective side since people have interests, needs and motives that are governed by thoughts in one direction or the other. The distinction between narrative and paradigmatic – or everyday and scientific concepts – is analytical. In empirical discourse, there is no definite line between the two forms of communication.

However, the division of mind appears in educational practice in many ways. Examples of this are the text genres that children consume and produce, in the form of fairy tales and factual texts. Although, it is foremost the paradigmatic or scientific way of thinking that is foregrounded in school and Bruner (1996) criticises the educational system for having

a computational view of learning. He argues that our knowledge about narrative thinking is not as deep as about the paradigmatic, and that we do not know enough about how this sort of thinking is developed in childhood. However, what we know is that the ability to understand narrative emerges at a young age, and that the art of narration is not indigenous (though some scholars are talking about a predisposition to construct mental stories), but something we learn and develop through participating in a culture (Bruner, 1996; cf. Wells, 2009). Therefore, Bruner maintains that allowing children to practice narration for developing their ability to use it as a tool for sense making, thinking, learning and remembering, is an important task for education. In line with the above reasoning, it becomes interesting, especially with the introduction of digital technology in educational practices, to study how children create stories, and what language, tools and other cultural resources they use in these activities.

As previously mentioned, a premise of a sociocultural perspective is that narratives or stories are shaped and negotiated in interaction with others and used as communicative tools in interaction. Accordingly, narrative functions as a communicative cultural tool and as a resource for human sense making (Wertsch, 2002). Säljö (2005) states that, "language allows people to build stories, narratives with explanations, background descriptions and comprehensible coherence" (p. 90, my translation). However, in story making, two or more communicative expressions are often integrated, rather than only the verbal. People often narrate using also visual representations (images or graphics), gestures, facial expressions, and/or through song (Ochs & Capps, 1996), making it possible for people to share experiences with each other and to express moods and emotions with several senses. Also children make sense of the world by representing it in form of multimodal stories. They create stories based on experiences from, for example, school and home, as well as fictive ones with elements from traditional fairy tales and popular culture (Bruner, 1996; Dyson, 2001, 2003). Accordingly, story making is not performed in a vacuum since children use sources from the environment and create with all available resources, such as language, images, and other physical tools. As a consequence, narratives as cultural tools are changing with cultural and technological developments (Erstad & Wertsch, 2008). In acknowledging these changes, it becomes interesting to study, for example, how story making is formed, but also what sort of stories that are told in these changing circumstances.

New contexts for learning with digital technology

Seen from the perspective on learning taken here, the conditions for learning how to read and write change when digital technology becomes part of the activity. In line with this reasoning Wertsch argues:

> After having mastered means of representation such as writing and drawing on paper, a host of new challenges and possibilities have emerged with computer based graphics and word processing systems found in modern ICT. (Wertsch, 2003, p. 900)

Thus, historically, children have appropriated the ability to handle tools like pen and paper and are now faced with new possibilities and challenges when utilising digital tools for writing and drawing. For instance, digital software offers multimodal possibilities for story making, using images, sound, colours, and fonts. Consequently, this is a complex situation where, besides developing literacy, the child has to learn how to use the computer and keyboard as well as the functions of the software in question. As Razfar and Gutiérrez (2013) maintain, "children have to simultaneously become literate in the technology while pursuing the context of the narrative" (p. 66). In short, the computer as a tool changes our way of reading and writing, however, this does not entail that the computer produces anything by itself, but demands a competent user. Therefore, from a sociocultural perspective, technologies are not seen as neutral, but as mediators of knowledge, values and approaches to the world (Lantz-Andersson, 2009; Säljö, 2005).

The construction of new tools and the use of these are in constant progress, which create new conditions for human learning and the development of higher mental processes. Wertsch's (2003) interpretation of Vygotsky's theory implies that the introduction of a new physical or cognitive tool in an activity does not simply facilitate or enhance the activity, but qualitatively transforms it. However, the physical tools included in our social practices are often used without us being fully aware of the human insights built into these tools. This means that the inherent functions are becoming invisible. Therefore, as mentioned earlier, one can say that cognitive and physical tools are integrated, as is the case with a calculator that offers the management of difficult mathematical operations, without one actually needing to know how the calculations are done. Digital technology is another example, functioning as a psychological mediating tool, although the computer itself is a physical object. Hence, the borders between psychological and physical tools become blurry (Säljö, 2005). So, when studying children's tool-mediated activities this entails an awareness of the computer and

software as constituting both a tool for labour that alter the physical way of narrating, but also as a tool for developing higher order thinking.

These lines of thoughts can be applied in a broader perspective on social and individual activities that are changing due to altered mediation caused by a rapid technological development. For educational institutions this has implications in relation to how new technologies are implemented, which is often done without being attuned to the pedagogical practice (Lantz-Andersson, 2009; Säljö, 2010). Learning activities consist of intertwined social interactions that are changing, not solely due to the technology but other factors as well. Selwyn (2012) maintains that a situated learning activity is complex and it is reductionist thinking to ascribe agency to technology. Digital technologies create new contexts for learning and they are a part of historical events embedded in a specific practice with specific possibilities and constraints (Bonderup Dohn, 2009; Wertsch, 2007). As Kramsch and her colleagues (2000) write, "the semiotic medium is itself part of literacy events" (p. 82). Communicative practices are then seen as co-constituted by the medium used. Accordingly, they are not determined by the medium, rather dynamically negotiated via norms that are developed through the daily use of a technology in a specific context (Thorne, 2003). Selwyn states that:

> Following this line of argument there can be no predetermined outcome to the development and implementation of technologies. Instead technologies are subjected continually to a series of complex interactions and negotiations with the social, economic, political and cultural contexts into which they emerge. (Selwyn, 2012, p. 84)

Consequently, drawing on this theoretical basis, the viewpoint of the present study is that digital technologies interplay with participants' actions within an activity. Therefore, this study aims to delineate what kind of activities emerge when children create stories by using particular technologies.

The concept of scaffolding

In the second study of this thesis, the concept of scaffolding, as originally defined by Wood, Bruner and Ross in 1976, is employed to discuss the findings. More recently, the concept of scaffolding has been further discussed in the context of interactive and technology-enhanced classrooms (e.g., Englert et al., 2004; Warwick et al., 2013; Yelland & Masters, 2007). Due to its illustrative metaphor, scaffolding has been widely adopted in educational contexts, in part

having become overused as any kind of 'help' (Howe, 2013; Mercer & Littleton, 2007; Van de Pol & Elbers, 2013; Warwick et al., 2013). In this light, the concept of scaffolding may need some further elaboration in the context of contemporary educational practices (Littleton, 2013).

Wood, Bruner and Ross (1976) developed the metaphor of scaffolding from their studies with mothers and their children doing puzzles, by identifying how the mothers provided the children with support in solving problems and completing a task. The researchers delineated six key factors characterising scaffolding: the adult's recruitment of the child, reduction in degree of freedom in performance, direct maintenance of task performance, adult marking critical features, control of the child's frustration, and demonstration of a task solution. Wood and colleagues emphasised the importance of the learner's understanding of the task solution for a successful process. They clarified the concept in the following manner:

> This scaffolding consist essentially of the adult 'controlling' those elements of the task that are initially beyond the learner's capacity, thus permitting him [or her] to concentrate upon and complete only those elements that are within his [or her] range of competence. (Wood et al., 1976, p. 90)

However, scaffolding is not merely used for discussing the completion of a specific task, but also for developing "higher skills" in a child, in terms of gaining the competence of solving more complex tasks (Wood et al., 1976, p. 89). Therefore the concept "extends to the language and symbols the participants use in their effort to create meaning and mutual understanding" (Elbers, Rojas-Drummond & Van de Pol, 2013, p. 1). Wood, Bruner and Ross (1976) acknowledged the nature of the social interaction between the child and the adult as critical for the child's skill acquisition. For that reason, the concept can be linked to Vygotsky's notion of the zone of proximal development, ZPD (Mercer & Littleton, 2007; Van de Pol & Elbers, 2013). In short, ZPD is used for understanding the interaction between a child's learning process and development. ZPD is explained in terms of, "what a child can do with assistance today she will be able to do by herself tomorrow" (Vygotsky, 1978, p. 87). Within the zone of proximal development, the learner's performance is guided by the more experienced through scaffolding (Mercer & Littleton, 2007). However, ZPD is characterised by negotiation between the participants, implying viewing the child as active in the process.

Scaffolding provided by the adult or the more capable peer has to be special and sensitive and guide the child in completing a task by gained self-supported competence (Littleton, 2013). Moreover, scaffolding is considered highly temporary and to be gradually decreased, aiming at transferring the responsibility to the child (Van de Pol & Elbers, 2013). The most central characteristic of scaffolding is contingency, in terms of adaption to the child's understanding (Van de Pol & Elbers, 2013). In a classroom context, the teacher, in challenging the children in their learning, has to give contingent support and more control upon children's encountered problems rather than their successes in order to estimate their understanding of the task. Thus, what determines scaffolding is "the *adaption* of the degree of control" to a child's understanding, rather than level of degree of control (Van de Pol & Elbers, 2013, p. 33, italics in original). The difficulty lies in finding the balance between the child's understandings and challenging task elements. There is research on scaffolding in relation to early childhood education (e.g. Sun & Rao, 2012). However, in relation to digital technology the concept needs to be further investigated. An extended concept of scaffolding will be elaborated on when discussing the findings.

3. An overview of previous research

In this chapter, a selection of Nordic and international, foremost Anglo-Saxon, research relevant for the present thesis, will be presented. The starting point of this thesis, as I have already mentioned, is a digital story-making activity, and this activity is seen as a literacy event in which children make use of their literacy competences. Consequently, the narrative activity is seen as one aspect of literacy. For this reason, research addressing the concept of literacy and its redefinition will initially, albeit briefly, be reviewed. Further, I will present studies investigating narrative in relation to early childhood education and to the narrative genre as a mediating tool into the technology of writing. To locate this study in a wider discourse, a selection of studies focusing on digital technology and learning in relation to literacy will be reviewed. Additionally, since the focus here is a tool-mediated story-making activity, research concerning digital story making will be discussed.

A changing view on literacy

The concept of literacy has been changing over time and there are several ways to relate and understand the concept, depending on theoretical perspective, although it is foremost about reading and writing. Explanations of literacies are to be found within different scientific disciplines, such as linguistics that focus on the language form, and anthropology in the form of comparative studies of literacy between cultures (Kress, 1997). During the main part of the 20th century, literacy research was at first dominated by behaviouristic psychology that emphasised reading. Representatives for the behaviourists, for example B. F. Skinner, had an idea of children as objects for learning and passive receivers of knowledge in need of an adult. A consequence of this reasoning led to scholars considering research on young children's understanding of literacy as pointless (Gillen & Hall, 2013). However, later on cognitive psychology became influential in research through the texts by the constructivist Jean Piaget. Learning was now understood as an individual and linear process, in parallel with biological development, although literacy research was still focusing foremost on reading skills (Razfar & Gutiérrez, 2013).

In line with these current ontological and epistemological standpoints in research, and along with changes and opinions in society, different images of the writing child have been constructed, which have had consequences for formal education. Early writing instruction in school was formalised and fragmentised, in that it was centred on letter sound

and symbolic relationship leading to the training of isolated skills (Hermansson, 2011). These pedagogical ideas were followed by developmental psychological thoughts on children's writing as a universal development following a predetermined pattern, which implied an educational writing instruction in a fixed order (Hermansson, 2011). However, during the Second World War another conceptualisation of literacy as functional emerged and this had consequences for how reading was considered, not just as an independent decoding skill but also by taking its social aspects into account (Gillen & Hall, 2013). This different perception has its ground in the changing structure of the labour market wherein a larger group of people with advanced writing and readning skills were needed (Hermansson, 2011).

Eventually a shift in paradigm was taking place at the time when Mary Clay in 1966 introduced the concept of emergent literacy in her studies of young children's behaviour with books, reading and writing long before starting school. The body of research working from an emergent literacy perspective seeks to find patterns in children's written texts over time. Scholars within this field emphasise, in terms of children's writing behaviour, that scribbling in particular is crucial for children in learning the technology of writing, and that emergent writing "precede and develop into conventional literacy" (Wells Rowe, 2013, p. 424). This view on literacy opened up for a broader approach on young children's text production and research began to investigate, for instance, speech-print links, spatial arrangements of marks in drawings and writing, and text genre (Wells Rowe, 2013). Another prominent scholar, Shirley Brice Heath (1983) describes in her classic work, *Ways with Words* how children early become socialised in literacy through the linguistic, social and cultural contexts they participate in. Thus, from having studied children's literacy development in mostly experimental environments, researchers, as the two latter mentioned above, now began to take an interest in children's learning both in and out of school contexts, encompassing literacy in terms of a wider sociocultural perspective, which is an important change (Bagga-Gupta, Evaldsson, Liberg & Säljö, 2013). This chapter will concentrate on elaborating on literacy from this point of view and will not go further into the historical description of the concept of literacy (for further reading of the development of literacy historically, see e.g., Björklund, 2008; Gillen & Hall, 2013).

One may claim that by looking upon literacy as something universal, including a set of separate predetermined skills to be learned, that can be applicable on different kinds of individuals, contexts and educational settings, one reduces the possibilities to discover all the various social environments where young children in interaction with others develop their reading, writing and narrating. From a sociocultural perspective, literacy, or rather multiple

literacies, is viewed foremost as a sense making and communicative activity embedded in historical, social and cultural contexts, rather than a view of literacy as autonomous (Street, 2003). Therefore, the sociocultural perspective challenges earlier theoretical approaches and bodies of research that consider development of literacy as something starting in formal settings (Razfar & Gutiérrez, 2013). The analytical agenda of studying literacy activities, rather than single objects or skills, as for instance understanding of the grapheme phoneme relation, entails a different kind of knowledge. Accordingly, as in the present thesis, studying a particular literacy activity provides opportunities for understanding children's development in relation to what possibilities and constraints, for example, digital technology offers for developing literacy competences.

Literacy practices and events

In light of the above reasoning, literacy is understood as a social and communicative phenomenon. Literacy practices can be understood as actions, including written text, taking place in the wider historical, social and cultural contexts in which they intentionally are constituted and altered. Street (2003) refers to the concept as an, "attempt to handle the events and the patterns of activity around literacy events" (p. 78). Another definition of literacy practice is, "a powerful way of conceptualising the link between the activities of reading and writing and the social structures in which they are embedded" (Barton & Hamilton, 2000, p. 7). In relation to the present study, this implies that the classroom, in which children are given writing tasks, constitutes the social and cultural context with structures the young children have to relate to and draw upon. However, the literacy practices are not of focal interest here, although they provide support in how the written language is used within the institution. Rather, the unit of analysis in this thesis is an in situ story-making activity, seen as an event where children negotiate meaning, interact and potentially learn. Literacy events are viewed as observable episodes deriving from the current literacy practice, and they refer to particular repeated activities (Barton, 2007; Barton, Hamilton & Ivanic, 2000). Hence, the events constitute parts of the contextual practice wherein they are shaped. In a more specific way, an event including the participants' talk and interactions involves writing in one way or another (Brice Heath, 1983).

Many studies investigating literacy activities have the written text as a starting point; however, people are interacting with the written words through other semiotic systems, such as speech, mathematical system and images (Barton et al., 2000). In line with this perception,

representatives for 'New Literacy Studies'[2] propose that literacy within sociocultural practices is, "ways with printed words" which are "inextricably integrated with ways of talking, thinking, believing, knowing, acting, interacting, valuing and feeling" (Gee, 2000, p. 30). This broadened definition of literacy has implications for how to understand children's early literacy development, especially when doing research within educational settings. As mentioned previously, it is not only a set of reading or writing skills needed to be learned, but also the research lens has to be directed to how children appropriate literacy competences with use of the available cultural tools. Following this reasoning, preschool and school can be seen as embedded parts of children's social and cultural environment, in which they can experience literacy events. However, as research importantly has concluded, children's out-of-school practices are not to be neglected in understanding their literacy development (Spencer et al., 2013). Although, in the present thesis, limitations are made in studying particular instructional literacy events in situ, where there are possibilities to discover the various modes that children use as tools in narrating.

Narrative as a cultural tool in educational practices

From a sociocultural perspective, the observed activities in the study are seen as a literacy event where the narrating is part of the child's learning how to read and write. Consequently, narrative should be regarded as one aspect of literacy, and therefore a relevant competence to develop in educational settings (van Oers, 2007). In school, however, literacy practices tend to be reduced and decontextualized into "versions of reading and writing" (van Oers, 2007, p. 301) although becoming literate in a Vygotskian perspective is about developing the "ability of using sign systems for personal and interpersonal purposes within specific cultural practices" (van Oers, 2007, p. 303). These sign systems are symbolic and function as mediators for an abstract way of thinking, which is necessary for being literate. In his studies of narrative competence, van Oers, investigated young children's "ability to produce a system of (spoken and written) utterances (meant to be coherent)" (p. 304). In collaboration, the children narrated, both verbally and in writing by adding predicates that extended or modified

[2] New Literacy Studies represents an 'ideological model' of literacy in terms of viewing literacy as a social practice, and in "recognition of multiple literacies, varying according to time and space, but also contested in relation to power" (Street, 2003, p. 77). Thus, NLS is linking literacy to other dimensions of social practices such as power structures including authority and resistance (Razfar & Gutiérrez, 2013). However this latter aspect of critical literacy will not be elaborated in the present study.

the plot. By studying these utterances, the teacher or the researcher can assess the child's increased competence (van Oers, 2007).

Accordingly, literacy and narrative are two research fields that are brought together in this thesis for the reason of narrative genre being considered to be one part of literacy. This has previously been done in a study on the youngest children in preschool where the findings showed that already 1 to 3-year olds are participating in literacy events consisting of many overlapping parts, without a relative order, such as narrating, drawing, written text and symbolic reading in picture books (Björklund, 2008). The result revealed that the children were engaged in literacy and gradually building knowledge of telling in interaction with others and multidimensional artefacts. The narrative activity opens up for literacy, in that, through narration the young children act and express their experiences in communication with the surroundings, Björklund (2008) argues.

Telling stories is a part of children's everyday life. Narratives emerge at home together with the family and in play with peers, and they are about experienced events but also fictional ones (Engel, 1995; Fast, 2007). These narratives are culturally and socially formed by a specific use of language that is practiced in the children's home environment, whereas when the children bring their features of storytelling from home to school, they are gradually adapting them to fit the features of school stories (Brice Heath, 1983). A similar conclusion was drawn by Dyson (2003), who argues that children's own production is adapting to the school context, and is expressed for the school in traditional ways, such as group singing or dramatic play. The reason for the occasional discrepancy between stories made up at home and school may be due to diverse language practices in children's home environment that in varying degrees are corresponding to the school practice. This has consequences for the children's educational achievement, in that, the children who are the most successful according to school assessment are the ones who come from linguistic contexts that are similar to the school practice linguistics (Brice Heath, 1983). A longitudinal study performed in England investigated the importance of the home for young children's emergent literacy (Wells, 2009). The research team followed 32 children from the age of 15 months to twelve years of age in their home environment, in preschool and further to school. The study looked into differences in children's cultural and linguistic contexts, and the main finding points to the fact that the general knowledge of literacy appropriated by the age of five has a strong connection to later school achievement (Wells, 2009). The explanation for this was searched for by identifying four explicit literacy activities small children are involved in: looking at picture books and talking about them, listening to someone telling a story, drawing

and painting, and writing or scribbling. It was found that the activity providing the most successful result on reading comprehension in the second school year was listening to stories. By listening to a story, the child receives an understanding, firstly for, ”the sustained meaning-building organization of written language and its characteristic rhythms and structures” and secondly, ”children vicariously extend the range of their experience far beyond the limits of their immediate surroundings” (Wells, 2009, p. 171). Thus, these experiences enrich children’s understanding for the written language, but more significantly narrating contributes to a broadening view of a here-and-now perspective to a wider understanding of the world outside the local environment. If children and teachers in preschool and school use narrating, it may become an effective tool for sharing knowledge and for, as Wells refers to it, shaping mental models of the world. This reasoning can be regarded as an argument for the necessity of children to practice their ability to narrate in educational practices.

However, telling a story by means of how to select and arrange events into a coherent plot requires knowledge which a young child may need assistance in developing by a more experienced person (Wells, 2009). This has, for example, been seen in an empirical study conducted in two Nordic preschools on children’s (1 to 4 years of age) appropriation of the ability to narrate (Pramling & Ødegaard, 2011). The two activities analysed in the study consisted of one fictional story that was introduced by a teacher and one everyday story spontaneously initiated by a child. By picking up the children’s fragmentary utterances and asking questions and giving suggestions of new elements, the teachers scaffolded the children in extending the stories. More specifically, the teachers supported the children’s appropriation of storytelling skills through asking questions concerning who was there, what happened, and where and when it took place. These questions directed the children’s attention to key narrative components, such as agent(s), actions and events, and setting. Additionally it was shown that curiosity and expression of emotions are significant ingredients for developing the narrative (Pramling & Ødegaard, 2011). This conclusion could be compared to Vygotsky’s (1987) argument that in every conversation there are motives emerging from sources of affective stimuli.

Narrative as a cultural tool fills many functions and is used for different purposes in early childhood education. Children in the preschool age gain experience of narrative, whereby they learn how to tell stories, and share them with each other in everyday preschool practices. In an empirical study conducted over several years, children were observed when oral storytelling was initiated in preschools, and approximately 3500 stories were collected

and written down (Nicolopoulou, 2011). In analysing the large material it became evident that for inspiration the children borrowed for examples themes, characters, and plots from their peers but also from sources like traditional fairy tales, TV shows and other media (Nicolopoulou, 2011). However, the children did not solely imitate these elements, but selectively appropriated and modified them to suit their own purposes (cf. Dyson, 2003; Vygotsky, 2004). Even though both girls and boys were using similar references these were transformed and adapted into different structures of sense making, resulting in substantively different stories. Thus, one implication of this is that the sources of the children stories cannot be interpreted in isolation but has to be contextualised in a wider practise in which they emerge and become a part of (Nicolopoulou, 2011). In terms of Bruner's theorising, Nicolopoulou formulates this in the following manner, "conceptions of narrative structure cannot just focus on plot structure as a sequence of events but need to combine setting, characters, and plot in a narrative whole that serves as a vehicle of meaning" (2011, p. 31). When studying children's story making and their final stories these aspects must be considered, as well as the situated context in which they are created.

Narrative as a vehicle to writing

As clearly shown above, children are involved in different kinds of narrating in, for instance, early childhood education. Narrative, among other purposes, is used as a vehicle to engage children in writing (Eriksen Hagtvet, 2002; Klerfelt, 2007). Through emergent writing, children will have possibilities to express things differently than through speech, and by learning how to write in various genres, such as informative (factual) texts or narratives (fairy tale, rhymes, fantasy or non-fictional) the children may develop a richer language (Liberg, 2007). Children's pathways towards the technology of writing can be tortuous and move ahead in diverse manners. Initially, the children's narrating is based on images and drawing in supporting the written, but eventually the function of the visual language is decreasing in favour of the written symbols (Klerfelt, 2007). The first texts young children produce are often structured with a short initial clause or orientation of the topic, and then followed by sequences of events linked by conjunctions such as *and then* or *and so* (Taube, 2011). Furthermore, the content of stories is personal, in the sense of being about events children have invented or experienced (Taube, 2011).

As an incentive, popular cultural media can offer ways into the world of reading and writing (Arthur, 2001; Dyson, 2003; Marsh et al., 2005; Urbach & Eckhoff, 2012; Wohlwend,

2009). Arthur states this by writing, ”rather than being a unitary pathway via books, there are multiple pathways to literacy, with popular culture being a path taken by many children” (2001, p. 300). As mentioned earlier, the sources to children’s play and story making are to a large extent found in their experiences from popular media, constituting an essential part of children’s everyday life, and forming a common platform and a shared understanding (Arthur, 2001; Dyson, 2003; Fast, 2007). This common base of knowledge is created from mass-produced toys, computer games, films and TV shows, which can be said to contribute to different literacy events. Through such experiences, children gain knowledge and understanding of images, symbols, plots and sounds, which they decontextualize from the original and recontextualize for their own aims and use it in their narratives and emergent writing (Dyson, 2001, 2003; Nicolopoulou, 2011; Urbach & Eckhoff, 2012). This intertextuality between media offers a rich material for sense making, playing, drawing and narrating (Arthur, 2001). Although, one should keep in mind that popular media is a much-debated subject, in terms of so called low and high culture, and whether it provides gender stereotypes. Below, are two examples illustrating this tension emerging in school practice.

Intertextuality in creative work is described in an ethnographic study with Afro-American children in the first school year (Dyson, 2003). In the study, the children were instructed to write a story about a freely chosen topic resulting in written texts related to familiar references such as songs from the radio, films, sports and so forth. By this open-ended instruction the children could meet the new educational practice and the expectations of literacy with their cultural knowledge, which proved to be successful (Dyson, 2003). An example of the contrary is found in another study, about a boy who was skilled in oral telling, using many elements borrowed from popular media, but eventually he was told by the teacher not to use these elements (Urbach & Eckhoff, 2012). According to the teacher, the narrating was affected negatively, in that the plots did not become structured but consisted of a simple adding of characters and events (Urbach & Eckhoff, 2012). However, the resulting instruction led to a shortening of the boy’s stories and they did not reflect any emotions or atmospheres. The scholars suggest that the teacher’s acting was a consequence of her unawareness of popular media as a tool for literacy. Their overall conclusion is that children’s personal experiences and popular media are often used as mediators for narrating, as a vehicle for writing stories as well as for oral telling. In the next section, additional conceptualisations of literacy in the light of new technology will be discussed.

Digital technology and early childhood literacy

The field of knowledge of digital technology and early childhood literacy is relatively new compared to the long history of literacy. Additionally, the area is somewhat problematic since technological development is rapidly evolving (Burnett, 2010). An overview of empirical research on digital technology and literacy in early childhood education, covering the years between 2003 and 2009, was conducted by Burnett (2010). Her work builds on Labbo and Reinkings' (2003) mapping of the research field from 1960s to 2002, and Lankshear and Knobel (2003) who reviewed studies made between the years of 1999 and 2002. From these summaries some trends can be outlined, in that the first overview foregrounds the technology of word-processing that to a large extent supports existing print-based literacy (Labbo & Reinking, 2003). The meta-analysis made by Lankshear and Knobel (2003) confirms this finding and calls for a wider perspective to offer teachers' possibilities to understand children's various literacy practices. Burnett's review focuses on 36 empirical studies that link literacy and classrooms activities mediated through a computer. She identifies three research areas positioning technology as: *a deliverer of literacy, a place for interaction around text*, and *a medium for sense making*. The main part of the studies, namely 23, is placed under the first category, with an investigative focus on cognitive models of reading or writing. The results from these studies imply that the computer plays different roles depending on focus, such as a replacer of the teacher or as a motivation tool. In the other two categories the studies are all adopting a sociocultural model of literacy, with interests in children's engagement with digital texts as formed by and being a co-constructor of the culture in the classroom. Burnett (2010) suggests that a few of these studies could to some extent underplay the relation between the interaction and sense making emerging through the texts. However, in the third research area, consisting of 10 studies, technology has a subordinated function, with the emphasis on the employment of the computer for mediating sense making and engaging participants through the digital texts, such as e-mails, recorded storytelling and narrative through digital images. Each of these texts are treated differently in the overviewed studies, although, there is a consensus in seeing children as producers and consumers to varying degrees. In conclusion, Burnett (2010) finds that there is a need for more explorative research on younger children's engagement with digital texts, also given the children's experiences with technology in and out of pedagogical practice. This reflection is still adequate in a more recent review where the authors maintain the significance for research to focus on children as, "being' rather than 'becoming' literate" (Burnett & Merchant, 2013, p. 583), and they want to "draw our attention to the place of new technology in the ecology of

meaning-making which in itself provides a context for children's early literacy" (p. 583). For the present thesis, the intention is to place it foremost in Burnett's (2010) third category, as its focal interest is studying children's learning activities in story making with digital technologies. Although what is studied is not learning as an outcome, rather learning in these activities is seen as an integral part of the activity. In line with Barton, Hamilton and Ivanic (2000), it is assumed that children in negotiated tool-mediated interactions move beyond individual literacy knowledge and sense making.

As previously mentioned, in pace with the emergence of digital technologies new "multiliteracies" have been introduced as an attempt to broaden the concept. With the word 'multi' as a marker for changing communicative conditions, it indicates at the same time the need for different competences in using digital technology (Aarsand, Melander & Evaldsson, 2013). Film literacy, television literacy, and digital or techno-literacy are some examples of several terms used (Livingstone, 2009). Media literacy could be defined as being able to access, understand, and communicate in activities with different media, appropriate within the early years education (Marsh, 2005). Aarsand and his colleagues (2013) provide a similar definition, although in a more detailed way by referring to Gitelman, who divides media literacy in two operational levels. The first level concerns physical technologies, such as computers, TV and mobile phones, used for communication and by its materiality determines the possibilities for employment. This is exemplified with the software Word that is designed for writing texts, but not for story making with sound and still or moving images (Aarsand et al., 2013). As a parallel, in the present thesis the story making tools consist of various digital technologies, such as word processor, speech-synthesized feedback software as well as Internet-based software designed for story making. Thus, the inbuilt possibilities and constraints in these tools set the frame for narration. The second level of media literacy includes the social and cultural practices that are developed in conjunction with the technologies, and this is the level used by Aarsand et al. (2013). Hence, many attempts are made to interpret literacy for understanding the relation to digital technology.

Already in 1996, researchers within The New London Group[3] argued for the literacy concept to include multimodal texts. The earlier dominating printed book text, as the only way to be literate, has to a lager extent been replaced by a multimodal world. Children's engagement in semiotic activities with digital technologies implicates a complexity regarding literacy learning. This means that focus on literacy as print-based cannot be emphasised since

[3] The New London group consisted of ten educators and researcher who met in New London, New Hampshire, in the United States, to discuss their concern for the state of literacy pedagogy (The New London Group, 1996).

children today has several ways of approaching texts (Marsh, 2010). Text today is not limited solely to written letters, rather viewed in a wider perspective including still or moving images and sound. However, in this thesis, text is used in a narrow way; a distinction is made between the written and image, for analytical reasons. How children write with digital tools, such as text messages on the mobile phone or on the computer, enable a writing that is not linear. This may entail several possibilities to move along various paths in appropriating the written language. Additionally, images, signs and symbols are expanding in the digital media (Kress, 1997). This development, ”mobilizes multiple activities as mediators of learning” (Livingstone, 2009, p. 86), and implies a broadening focus on literacy. This emergence requires a critical perspective on children’s “semiotic practices embedded with values that are locally negotiated and contested by children” (Razfar & Gutiérrez, 2013, p. 71).

New competences for digital story making

For children to encounter these multimodal possibilities and various interfaces of the digital environment, different competences are needed than for example drawing or writing with pen and paper. Stephen and Plowman (2003) have identified some of the necessary competences:

> Becoming ICT literate includes learning to navigate the text, understanding the structure of multimedia documents, locating and retrieving information and understanding the meaning of icons and the conventions of the computer screen. (Stephen & Plowman, 2003, p. 226)

In a more deepened and narrow way, Jansson (2011) has revealed competences needed for using diverse modes for creating digital stories. In a case study, four boys in a primary class diagnosed with autism worked with four story-making projects using multimedia software tools. Based on a cultural-historical perspective, the study aimed at identifying and analysing the learning potential and processes while the boys created stories. When analysing the children’s working activities with the technological tools, such as picture and animation software, font, colours and sound, the creative aspects and emergent competences become apparent as the children combine the available resources to solve problems (Jansson, 2011). This can be exemplified by the selected images that the boys added together in new contexts for enhancing a plot, or the creative use of letter sizes, or speech and thought bubbles linking text and image. Jansson found that the narrative tasks entailed the children to contend in mastering the communicative modes through several ways of expression, such as figuring, recording and play sound. In addition, this story-making project allowed for a development of

the narrative competence, in the sense of the boys expanded the narrative model used in aspects of imagining actions, and embodying the actors with emotions and intentions (Jansson, 2011). The study was designed as a collaborative research project by the scholar and the teacher to enable better learning for children. Similar design projects, with the aim of developing digital tools for narrating has been conducted earlier (e.g., Bayon et al., 2003; Decortis & Rizzo, 2002; Gelmini-Hornsby et al., 2011). A review of these studies shows that the focus is mostly directed towards developing virtual environments and technical devices, but also on creating scaffolding systems for the improvement of narrating.

Digital story making

Compared to traditional storytelling that has existed since ancient times, digital story making[4] is a rather new phenomenon. In the early 1990s, Joe Lambert and Dana Atchley founded the Center for Digital Storytelling in USA (Lambert, 2013). Their aim was to educate and provide assistance to people in creating and sharing their digital stories. However, due to the rapid increase of available technological tools such as digital cameras, computer tablets and software applications, the accessibility has made it easier for novices to produce digital narratives by themselves. This development of digital story making is supposed to become a powerful tool for the 21st century classroom (Robin, 2008). As discussed earlier, educational practices have an important role in supporting young children in their narrative development, and multimodal software may offer new pathways into the world of stories. Research focusing on younger children's digital story-making activities in preschool and preschool class is however still an emergent field. One study is conducted by Klerfelt (2004) who has studied children in the age of 4-6 years in a preschool when creating stories with the computer in collaboration with each other and a teacher. Klerfelt (2004) maintains that the functions of the computer change the children's story making, in that the images, text and sound unite in new ways. The result shows that the narrative structure and the expression in the children's illustrations changed, whereas the images were accentuated before the written text. The findings show how children's digital narrative can constitute a link between the pedagogical practice and the media culture, since the image-based stories reflected children's world. According to Klerfelt, both structure and content appears differently from the traditional

4 In the discussion chapter I discuss the terms story telling and story making.

adventure- and folktales in the narratives. They often consist of long series of everyday sequences about animals, walks and people; themes that are common in children's life.

In conclusion, from a sociocultural perspective the narrative genre is considered to be a product of collaboration, an integral part of social actions where every individual acts from his or her experiences. The studies accounted for above show that story making is something already young children are socialised into and could be developed by scaffolding from a more competent person. One implication of this reasoning is that children's story making should be understood from the situated context in which they are created and told, with the premise that the narrating is both formed and supported by the context and are process of recontextualisation of experiences. The sources are derived from the children's entire cultural and social experiences. Additionally, in line with the research discussed above, it can be argued that preschool and school (together with the children's families) have an important mission to support children in their development of narrative competences. Furthermore, there is consensus among scholars who maintain that there is a positive relation between early narrative competence and later achievements in school (Heilmann, Miller & Nockerts, 2010; Wells, 2009).

4. Methodology

In relation to the area of investigation and the research questions posed in the present thesis, the methodology is discussed in this chapter. The present research takes a qualitative approach. A qualitative method is characterised by the researcher's proximity to the subject he or she wants to study, thereby being able to deepen the understanding for how the subjective world is constituted, that is, how people act, shape and share meaning in their social and cultural environment (Cohen et al., 2011; Holme & Krohn Solvang, 1991). Thus, the assumption is that individuals interpret the world from their experiences and that they constantly create and recreate it. All human action, including the researchers', is a result of that interpretation related to specific social rules, and actions can only be understood in that relation (Hughes, 2010). For these reasons, qualitative research approaches are adequate to use in educational practices for understanding the complex activities emerging in a classroom. For example, in the present studies, the interest is on how the story-making activities are mediated by the teacher's interaction and instruction and the digital technologies, but also on the interaction between the participating children. Consequently, a qualitative method is chosen for generating empirical data, which will be elaborated on below.

In the following, the research context and setting, the methods and the analytical work are presented and discussed. Thereafter, the ethical aspects and the credibility of the study are discussed.

Research setting

Initially, to enable an understanding of the educational context of the two studies, a description of the emergence of the preschool class in Sweden to its current form will be presented. Then follows an account of the specific research setting and the digital technologies.

The emergence of the preschool class a particular form of schooling

The preschool class is the educational practice that six-year-old children participate in. This one-year form of schooling is optional and located within the Swedish educational system with the aim of forming a bridge between preschool and primary school. Historically, educational practices for six-year olds have existed in various forms, as part-time groups or as day-care centres aiming to prepare children for entering school. In political investigations

ever since the 1940s, there have been discussions concerning the relation between preschool and school and the proper age for compulsory school attendance (SOU, 1997:21). The government set up a committee[5] in 1968, with the assignment to investigate the structure and pedagogical content in preschool, which in 1975 resulted in a new law declaring all six-year olds the right to a preparatory school year (SOU, 1997:21). Furthermore, the many years of discussion about a flexible school start was in 1991 to culminate in a decision that involved the right for six-year olds to attend compulsory school if the parents so desired (SOU, 2010:67). However, most six-year olds stayed in their old practice in preschool despite this opportunity. In the historical year of 1998, a recurring and bearing thought to give all six-year olds equal access to a continuing schooling led to the transfer of responsibility for early childhood education from the Ministry of Health and Social Affairs to the Ministry of Education. However, already in 1996 the government's intention of integration between preschool and school was announced and the responsibility for childcare was transferred to the Ministry of Education (SOU, 1997:157). The reform of integration, which by this time was formulated, is grounded in the idea of a lifelong learning and a holistic approach to the child and its knowledge (Prop. 1997/98:6). It is suggested that an educational practice for the six-year olds now will constitute a form of schooling of its own within the official school system. Accordingly, in the school year of 1998 the optional preschool class was implemented and was to follow a new goal document in terms of a revised curriculum for the compulsory school, Lpo94 (SOU, 1997:21).

It was accentuated that preschool and school had to embrace a mutual view on the learning child, the teachers' role and on the pedagogical work. Thus, the intention of the government was to intertwine the two pedagogical traditions in the practices of preschool class, and the collaboration between the professions was to result in a new pedagogical approach constituting a uniform education (SOU, 1997/98:6). The assumption was that it would lead to an increased quality throughout the whole educational system. The idea of a lifelong learning coincide with a contemporary research view on, for example, children's early reading and writing development as a self-initiated explorative process that begins early in children's life (Brice Heath, 1983; Hermansson, 2013; Fast, 2007; Liberg, 2006).

However, differences in pedagogical tradition within preschool and school have proven difficult to reconcile. The preschool core practice is described as building on a complete care perspective for the child including free play, and the practice is characterised

[5] The committee was called "Barnstugeutredningen".

with a here-and-now perspective. Meanwhile, school is focusing on subjects, by means of formal lessons of structured learning of certain contents (SOU, 1997/98:6). An early evaluation of the integration by the Swedish National Agency for Education (2001) shows an ambiguous picture of the resulting reform. However, what can be gathered is that preschool class practice to a large extent has adapted to the organisation of school, with teacher instructed knowledge-based activities that clearly are separated from more free activities. Additionally, the evaluation reports that there seems to be a link between the degree of cooperation and integration of the two traditions that impact on how the work with early reading and writing are conducted in preschool class (Swedish National Agency for Education, 2001). Findings from more recent research show that instructional work with written language in preschool class is still very similar to the traditional way of instructing formal reading and writing in school (Skoog, 2012). This implies a practice of free play and formal education of writing conventions as parallel processes with few possibilities to informal and explorative investigations of the communicative aspects of written language with a supportive teacher. Interestingly, by taking the six-year old children's voices and their perception of preschool class practice as a starting point, Ackesjö (2013) shows that the child eventually changes view on preschool class and school, in sense of, the preschool child considers preschool class as a place where you learn how to read and write, and later as a six-year old, looks upon school practice as a place where you learn things whilst preschool class provides possibilities for play (Ackesjö, 2013). Hence, how the child perceives the everyday practice may differ from how researchers or educators view these educational contexts.

With the new school law and curriculum for the compulsory school and recreation centre that was implemented in 2011, the preschool class practice is included in the overall goals and guidelines, however not subject to the syllabuses. Three concepts are particularly emphasised in the overall goals: language, learning and developing a personal identity. Furthermore, the school system should enhance children using modern technology for developing knowledge, communication, creation and learning. Still, the preschool class pedagogy shall maintain the preschool perspective on knowledge and learning (Swedish National Agency for School Improvement, 2006).

Today approximately 96 per cent of the Swedish six-year olds are enrolled in preschool class practice (Statistics from Swedish National Agency for Education, 2014). The organisational solution for scope of practice varies between the local communities, but many preschool classes are situated within school buildings and there are both homogeneous and age-integrated groups.

In January 2014, the Swedish government presented a proposal of an extended schooling, implying a mandatory school start by the age of six. The intention for this proposition is to clarify the life-long educational perspective and at the same time emphasising the pedagogical methods adapted to young pupils age.

The preschool class setting of this study

In the present thesis, the two studies were conducted in a public school located at the outskirts of a smaller town in Sweden. The school was selected due to its participation (since 2009) in a larger municipal project with the youngest children on writing and digital technology – *Learning to read through writing*. Hence, the aim of the project is to use digital writing to strengthen the reading skill and to facilitate children's writing development. Through this project the school has received additional funding for in-service training of the teachers as well as computers with devices and various software.

Two different groups of six-year old preschool class children enrolled in age-integrated class (6-8 years) were observed during several story-making activities. The first group consisted of nine children (5 boys and 4 girls). However, one boy was absent during the observations. The observations of this group constitute the empirical data for the first study. In the second group there were eight children (4 girls and 4 boys), and the generated data from this group constitute the material for the second study. The children were all Swedish native-speakers. These sixteen children had previous experience of digital technology in school practice prior to these studies, and they had been introduced to how to compose a narrative, for instance, structuring the events in temporal order with a beginning, middle and ending. Consequently, this sample may not correspond to an average population in the country; although, activities as those observed in the studies are becoming increasingly common in Swedish early childhood educational settings. In both studies, the preschool teacher, who had special training in information technology, is the same.

The digital story-making software

The software used in the story-making activities varied in the two groups, implicating different possibilities and constraints for writing and narrating depending on the inbuilt functions and design of the software (cf. Aarsand et al., 2013). In the municipal project, *Learning to read through writing,* three software products were included to enhance the children's emergent writing: a word processor, *Liber office*, and two speech-synthesized

feedback computer software applications, *The Speaking Keyboard* and *Vital*. The functionalities of the former software aim to support, for instance, spell checking, and the two latter software products aim to support young users' understanding of the phoneme and grapheme relation, in terms of transforming print into audible sound. For example, when using the *Speaking keyboard* the writer hears the corresponding phoneme when typing a letter key on the keyboard, while the *Vital* software supports in reading words, sentences or whole texts when pressing the spacebar. These speech-synthesized feedback software are marketed by the providers as compensatory digital aids, and are employed foremost within special pedagogy for supporting children or adults with for example dyslexia. However, they have also been adopted in early childhood education to underpin the young children's writing development. During the observations in the first group, the children wrote their stories with these technologies.

In analogy with the previous group, the second group of six-year olds participated in the project using the described software above. Already before the observations for this study took place the teacher initiated an Internet-based software designed for story making named *Storybird*, which became the digital tool used in this group during the research. *Storybird* offers a large variety of images illustrated by artists from all over the world to select from, and possibilities to add written text for a story. The images are organised by theme, such as dogs, cats, and happiness. The story maker selects an initial theme, whereupon several images become visible, and thereafter the story maker decides the amount of images he/she wants in the story. In this sense, *Storybird* differs from the digital technologies mentioned above. Additionally, the software does not offer spell checking or sound application, however, important features provided are appealing layout and design of the final product and opportunities for worldwide publishing.

Method

In this section the research method is presented ensued by the study design and procedure. Thereafter, the analytical work is described, including the tools employed for analysing the produced material (the children's digital stories).

Video-based observation

The primary focus of the present thesis is a story-making activity with digital technologies, implying that the choice of video-based observation, as a qualitative method is appropriate

since it enables documenting the *in situ* interaction and communication that take place in the activity. As a resource for generating data, video technology offers possibilities to observe children's complex actions together with physical artefacts, such as the computer. The method allows capturing visual (and auditory) aspects of social interaction when they take place, rather than as in the case with other research methods such as field notes, where the data is re-presented by the researcher (Jordan & Henderson, 1995). Plowman and Stephen (2008) argues that,

> Based on the notion that the research setting is directly knowable through what we see, video is considered to provide more potentially illuminating data than questionnaires, interviews or field notes because it appears to represent the complexities of social life. (p. 93)

In other words, video recordings allow for more revealing details than other methods, which is essential for analysis. For instance, in the analytical work conducted here, speech, intonations, gestures, facial expressions and sounds become important modes for the children in the narrative collaboration, which would not have been possible to capture to this extent with, for example, field notes or audio tape recordings. In line with this analytical agenda, analysis of these modes is significant to include for understanding the children's contingent utterances and replies. Further, how they respond to the teacher's instruction cannot be understood solely by interviewing them, rather the negotiated conversation is principal for such interpretation.

Video-based observations provide empirical material as they occur and are rich documentations. The raw data can repeatedly be played without limitations and discussed with other researchers in the community. However, this method is not entirely unproblematic. There are critical aspects to consider; for instance, the researcher's choice of the video-taped activities, and the camera lens angle, which is directed against something specific, thus implying that the film is representing only a part of the ongoing event and therefore not providing the whole picture (Lantz-Andersson, 2009). However, in this thesis the activities take place within a limited area – in front of the screen. Therefore it could be argued that the main part of the interaction and communication is captured. Although obtaining complete data of reality is impossible (Plowman & Stephen, 2008).

The attention the video camera receives from the participating children may cause problem by stealing focus from the activity and thereby change the participants' interaction.

Initially, this happened in the first study when some of the children paid much attention to the video camera, and perhaps in the second study when the children spoke very quietly at the beginning. However, if the task is interesting enough, the awareness of the camera will soon fade out (Jordan & Henderson, 1995). Yet, another problem can emerge when children show resistance to participate in video observations (Klerfelt, 2007). On the contrary in this case, the observed children were eager to participate. Limitation of the technology is additionally a factor that may influence the production of data, for example the quality of the video film can vary depending on the environment, lighting and number of talking persons nearby.

Analysing video observation

In line with a sociocultural perspective, Interaction Analysis allows studying knowledge and action as socially constituted. Furthermore, learning is seen as distributed in ongoing social and material contexts (Jordan & Henderson, 1995; Lantz-Andersson, 2009). This allows for bringing together the theoretical and empirical approach to illuminate social interactions, including the mediational tools, in the instructional activities studied in the present thesis (cf. Plowman & Stephen, 2008). Scholars using the method of Interaction Analysis are interested in analysing the everyday interaction of speech and non-verbal communication, such as gestures, gazes and bodily orientations, which are visible and can be recorded on film (Jordan & Henderson, 1995). How people move, for instance, their gazes from a person to an object and back again, or changing focus of attention, are, arguably, of importance when analysing learning situations (Jordan & Henderson, 1995). This is significant for illuminating how people co-ordinate the collaboration, but also how they participate, engage in and conduct a task (Heikkilä & Sahlström, 2003). In analysing the generated empirical data, the Interaction Analysis method provides possibilities to study the children's narrative collaboration, including how they make sense of each other's utterances, which is seen in the uptake of the prior utterances or in neglecting to take up on what is said. Furthermore, in detail the children's handling of the technology, both verbally and physically, is possible to clarify through the video-based observation.

Analysing stories

When analysing stories the view of narrative, as created in social, cultural and historical contexts is informed by a sociocultural perspective (Vygotsky, 1987). Narrative as a cultural tool is transformative in nature, as cultural tools in general, since it is a product of an

interdependent invention (Erstad & Wertsch, 2008). The assumption is that people create stories in interaction with others and in interplay with the contextual conditions. Consequently in analysing stories, these conditions need to be considered in order to understand the story structure and content. For the present thesis, this implies that the resulting stories have to be interpreted in the light of the story-making task being instructed by a teacher and framed by the institutional and cultural context. In addition, the conditions for narrating differ in the two studies, in terms of the possibilities and constraints offered by the different digital technologies used. Hence, when analysing the children's stories the analyst has to consider both the contextual and the interactional aspects for interpreting the product (Nicolopoulou, 2011).

The empirical data generation

The empirical data builds on video documentation of approximately 7 and ½ hours of films in total. The recorded films contain all the story-making activities observed and the teacher-lead instructions. Additionally, fifteen of the produced digital stories made by the participating children were collected.

Before the studies took place I met the children on different occasions to introduce myself and to tell them about the research. Through my profession as a preschool teacher who previously worked in a preschool class in the community, the children accepted me as such, and I was recognised by the time of the visits for the observations.

Observations in the first group of six-year olds took place on two occasions during the spring semester 2012. The empirical findings from analysing these observations were reported in the first article (Skantz Åberg, Lantz-Andersson & Pramling, 2013). On the first occasion, the children were introduced to the task of writing a story in dyads on the computer. Since this kind of instructional task was a regular activity due to the writing project, the children had previous experiences and could arrange all the technological devices. During the story making, the child-dyads sat spread out in the classroom with the laptop computers and headphones. One video camera on a tripod was initially directed towards the teacher during the instruction and then towards two boys that was particularly observed. The camera position was directed diagonally from the front since the furnishing did not allow for another option. Throughout the activity the researcher participated as an observer, although by moving around and occasionally communicating with the four dyads when negotiating the

collaborative narrating. The children took initiative to communicate but the researcher was aware of not making any comments to affect the unfolding stories.

On the second occasion the writing task took place in a similar way as the previous with an opening instruction by the teacher. However, at this occasion, the researcher had a more passive role and stayed behind the cameras to be less intrusive. The two girls who were subject for this video observation sat in an adjacent room to the classroom, which allowed the researcher to hear the synthesized speaking voice since headphones was not necessary. Two cameras were used this time for the reason of recording what happened on the screen and the interaction between the children. One lens was directed towards the girls diagonally from the front and the other was placed behind the children focusing on the screen. However, the children were moving the laptop between them, resulting in the second video recording to be inadequate since the screen was insufficiently visible on the film. For this reason the second film was not useful. During these two observations, in total approximately 60 minutes of video material was produced and 644 utterances have been transcribed. In addition, seven of the written narratives were collected. The eighth story is missing due to a technical failure.

The data generation for study number two was conducted in the spring semester 2013, during three occasions with the second group of children. This resulted in 6 and ½ hours of film and all together eight digital stories. This study is reported in Skantz Åberg, Lantz-Andersson and Pramling (under review). One video camera on a tripod was mostly used, directed at the dyads diagonally from the front, aiming to film both the faces and the screen. However, in some cases two cameras were used for capturing the activities, directed towards the children's faces and on the screen more explicitly. The variation depended on the researcher's access to video cameras. On the first occasion, four of the eight children were introduced to the Internet-based software *Storybird,* and together with the teacher they made a prototype story, whereupon the children were instructed to create a story by themselves in pairs. This procedure was repeated with the other four children during the researcher's second visit. On the third story-making activity all eight children collaborated in pairs in making their second story directly without instruction. Between the researcher's visits the group had been employing the software as part of the educational practice a couple of times. The teacher informed the researcher that the stories had been presented on the interactive whiteboard for the other classmates.

Transcriptions of the video films

Transcription of video film is a selective process informed by theoretical and methodological standpoints. This entails that transcription is part of the analytical work, rather than solely a means of representing data in another medium (Heath, 2011). Regularly, as in this study, empirical data is translated into a text-based medium, which poses methodological challenges (Plowman & Stephen, 2008). Interactions, for example, are multi-layered and filled with fine-tuning gestures and spoken undertones that occasionally are problematic to re-present in print. Inevitable information is lost along the way, since, "transcription translates the 'raw' data into an easily accessible, paper-based tool for analysis but produces an incomplete representation of the video recording" (Plowman & Stephen, 2008, p. 6). However, there are no complete representations as every representation as such is a reduction and modification. The analysis here is therefore conducted by continuously going back to the original empirical material, that is, the video recordings.

The transcriptions were made at different levels in the two studies, guided by the research questions. In the first study, in order to delineate, as rigorously and sensitive as possible, the distribution of the children's sequential turn taking and the teacher's interaction in the activity, a transcription key derived from Conversation analysis (CA) was used. CA and Interaction Analysis share the basis assumption that knowledge is a social phenomenon, situated and developed in interaction, where CA work typically emphasising the very micro details of interaction, like lengths of pauses (e.g., Goodwin & Heritage, 1990). However, the analysis in my studies are not conducted in a strict CA manner but inspired by certain aspects of the conventions, such as, intonation or prosody, which may be of significance for what unfolds in the dynamic interaction. For this reason the video films recorded during the observations in the first group was transcribed as a whole, in a vertical script-like format. Children's communicative competences differ from adult's, in sense of contingency in talk, and they tend to, "frequently 'tune out' the utterances of their partners" (Ochs, 1979, p. 46). A child's answer to a question does not necessarily have to be an answer to the other speaker's prior utterance, rather an answer to his/her own previous remark. In addition, children's nonverbal responses are as frequent as verbal. Consequently, transcription written as a script from top to bottom may mislead the reader as it, "tends to impose a contingent relation between adjacent utterances of different speaker" (Ochs, 1979, p. 47). The chosen transcript model may therefore affect the understanding as well as the readability. However in her text, Ochs (1979) refers to research on very young children, whereas in this thesis the participants are older, six years of age, and are assumed to have appropriated more communicative

competences. In addition to the speech, the observed children's gestures and gazes were included in the transcription. In the second study the focus was directed to the relation between the children's unfolding story making, mediated by the teacher and the digital technologies, and the final products (narratives). Therefore, the video recordings were initially broadly transcribed, and after reviewing the entire data set several times, selected parts were transcribed in more detail according to Interaction Analysis, by paying close attention to interactive talk, gestures and gaze. However, a vertical transcript model was used, similar to the one in the first study.

The translation work

Translation from one language to another may cause problems in terms of finding consistent words or expressions that reproduce the meaning as close as possible in the second language. In the present study this problem was encountered especially through the teacher's use of a certain word, which prompted a negotiation among the observed children, and had consequences for the evolving plot. This translation difficulty had to be addressed in the first article since it had significance for the result. Finding correspondence between a Swedish and an English word is a dilemma (Lantz-Andersson, 2009).

Furthermore, to represent the children's utterances in an accurate manner the researcher discussed a few translations of utterances with an English native-speaking fellow researcher (who also speaks Swedish) with knowledge of how six-year olds would express themselves in English. Likewise, the translations of the stories were treated with care, and the characteristics of the children's occasional misspellings were emulated.

Analytical steps

Video recordings often generate a rich material that may cause difficulties in interpretation of activities. However, the analysing work for both studies started with the researcher viewing the generated video films several times as a whole to gain a broad understanding and to discern aspects of the evolving activities that had significance for the participants' actions. This first analysing step was performed similarly in the two studies; meanwhile, the second step varied on the basis of the research questions, this step is therefore clarified separately below.

Study I

The second step of the analysis was to structure the material in relation to the research questions, and to offer the reader a picture for understanding the contextual conditions in which the story-making activities took place. For this, a selection of excerpts was made due to their clear illustration of how the teacher's instruction and interaction mediated the activities, and how the children interacted with each other. Excerpts of the children's engagement with the computer and the software, in writing a story, were selected in respect to the possibilities and constraints provided by the technologies. A more detailed analysis on these excerpts was then made, informed by the theoretical concepts of sociocultural theory, such as mediation. Hence, the analytical focus was on the evolving activities, rather than on the resulting stories. Therefore, a deep narrative analysis was not performed on the final stories made in study one.

Study II

In this study, the analytical agenda is two-fold; firstly, the story-making activity and the characteristics of the final stories, and secondly to clarify the relation between the activities and the stories. Initially, in this second step, three stories were selected to represent the different approximations of a narrative genre that was found. The starting point for the story making is images provided by the software. Thus, in a general sense all stories can be seen as examples of a picture book, and created within a fictional genre. First, the narrative content and structure, such as plot, characters, environment, temporality and coherence were analysed with narrative theory in line with Bruner (1996). Second, since the stories are regarded as picture books, Nikolajeva and Scott's (2001) framework for examining the complex relationship between the images and the written text was used.

The next step was to select excerpts displaying how the negotiated story making came to contribute to the three different stories. At the core of the analysis were those sequences when the children selected the images in *Storybird* and when they elaborated on the plot to each image. The teacher's scaffolding was also of special interest in these excerpts.

Research ethics

The initial contact with the participating teacher was taken during the spring semester in 2012, and permission to visit the school and conduct the studies was provided by means of the school headmaster.

To ensure the participating children in the first group their ethical rights, the parents were informed of the study design and conditions together with the children during separately held conversations with the teacher. As a complement, the same information was given in written form. The children in the second group and their parents, however, only received written information. All children were allowed to participate. Children's participating in research requires paying special attention to ethical issues and is not without challenges. Hence, engaging a child is a question of gaining its consent and this may be received by creating relationships between children, researcher and teacher, which has to be based on trust and respect (Dockett, Einarsdottir & Perry, 2009). These considerations have to be acknowledged throughout the entire process, from the planning stage to analysis and publishing of results (Coady, 2010). For the purpose of becoming acquainted with the children, the teacher and the school environment before bringing the video camera the researcher visited the two groups. Furthermore, to acknowledge the children's voluntary participation, they were informed about their right to abort participation at any time during the recorded activities. None of the children showed any sign of inconvenience when being filmed, neither verbally nor bodily. Although, the specially focused children in the first group, (at the second occasion), initially spoke very quietly. However, as the researcher left the camera they began to speak louder and focused on the narrating task.

The present thesis adheres to the ethical guidelines of the Swedish Research Council, where the information requirement is the first guideline. I consider this accomplished by the written information and the conversations between the teacher, the parents and children. I have not spoken to the parents in person but with the children, explaining the aim of the visits. The second guideline, the anonymity requirement, implies that the researcher anonymizes the participating individuals. In the information to the parents, it was specified that all written texts reported from the research would be anonymized. Therefore, in the two articles all names are fictional and the research setting is unrecognisable. The confidential requirement implies that the empirical material is not accessible for unauthorised. Who is authorized or not is not a decision made by the researcher, but other scholars who are interested in the findings. In the consent form it is informed that the anonymized material may be used in data sessions with other researchers.

Reflections on the credibility of the study

To ensure the credibility of a qualitative study is a question of the ability to offer a reliable and valid account for the generated data. Additionally, a degree of internal consistency in the presentation of the study is a criterion of quality (Larsson, 2005) that affects the reliability. That is, how the research questions, choice of methods for generating data and methods of analysis are coherent, and that the resulting discussion reflects the questions at issue. These choices are contingent on ontological and epistemological standpoints. Furthermore, scholars have previous knowledge and values functioning as an interpreting filter between the object of research and the researcher (Holme & Krohn Solvang, 1991). This is unavoidable, and therefore the scholar should come forward and in a reflective manner try to understand her influence on the research, in terms of, for instance sample, study design, perception etcetera, rather than eliminating her role, which, arguably, is impossible (Cohen et al., 2011). In other words, the credibility is improved by the researcher's explicit account for her pre-understanding (Larsson, 2005).

Through my profession as a preschool teacher in the community where the present studies are conducted, I had knowledge of the investments that have been made, and I had access to the implementation of digital technologies and in the service training for teachers. Additionally, I was informed of the large municipal writing project in which the participating school took part, although I have not been involved in it. Thus, these circumstances partly constitute the background of my research interest, and closeness to what is studied. However, at the same time this could implicate expectations of what may be found in the empirical data. Edwards (2010) warns us "integration of identity of the researcher with the production of research texts has raised questions about the reliability of the text" (p. 158). This implicates that the writing process needs to be a reflective process from which the researcher has to distance herself.

The meaning of validity of research varies across different qualitative approaches. However, validity foremost concerns interpretation of observations in correspondence to a theoretical framework (Edwards, 2010; Peräkylä, 2011). For the present thesis, this means that theoretical concepts drawn from sociocultural theory are defined and employed in the analysis and description of the results. The concepts are chosen from an epistemological standpoint where learning is seen as a consequence of social interaction and situated within a historical, social and cultural context.

Peräkylä (2011) deals with validity in research based on video recordings and transcripts in conversational analysis (CA). He maintains that sequences of data that

conversational analysis provides through including "analysis of the next speaker's interpretation of the preceding action" (p. 378) secure validity, by means of, displaying the speaker response of an utterance as a proof of the researcher's interpretation. Truthfulness in analytical claims can also be achieved through Interactional Analysis since this method pays attention to interactional turn taking. Reporting analysis of empirical data, in terms of displaying excerpts, allows for a transparency in that the reader can "see how the analytical distinctions made are grounded in data" (Wallerstedt, Pramling & Säljö, 2014, p. 372). A question relevant for the present thesis since the area of interest is story-making activities in preschool class is what claims can be made in connecting talk to institutional contexts of interaction, which according to Peräkylä (2011), is also a question of validity. In the analysed excerpts, this is shown in the teacher's utterances during the instruction and interaction with the children, along with the institutional framework, such as the time aspect and the expectations of a created product as typical for a school context.

Alvesson and Sköldberg (1994) pose the rhetorical question if one can generalise beyond the empirical material, and answer themselves that this is a question of the epistemological standpoint and what is meant by generalisation. It can be argued that on the basis of a sociocultural perspective, with its toolbox of concepts used in this study, makes it possible to discern features of the field and to see patterns in research over single situations and activities. Thus, the theoretical framework and relating to previous research allow for a discussion of the possibility to generalise and to make knowledge claims also from smaller studies. The conclusions drawn may then be of significance in a larger context.

5. Summary of the studies

The present thesis consists of two empirical studies on instructional activities performed within the context of a preschool class setting, with a particular interest in how children engage in an activity of creating a story using various digital technologies. In both studies three interacting agents – the children, the teacher and the digital technologies (cf. Stephen & Plowman, 2008) – participate, although, the technologies through their design provide different conditions for narrating. The first study explores what kind of activities emerge when children in collaboration write stories using digital tools such as word processor and speech-synthesized feedback computer software. To broaden the material for studying children's story making the digital tools differ in the second study, in that story-making software providing illustrating images is used.

Mutual findings in the two studies show that the story-making activities are introduced by the teacher as a child-friendly way of engaging the children in the technology of writing. The art of narrating forms a background figure in the teacher's introduction of the activities and in her scaffolding, and as a consequence, two agendas can be discerned in sense of the children orienting themselves foremost to making a story and handling the technology, whilst the teacher's participation in the activity foregrounds writing.

Another result found in both studies is the children's use of a variety of resources to narrate, such as speech, gestures, images, and cultural experiences, but also visual-spatial competence by orienting towards the screen and arranging the semiotics that appear. The inherent possibilities provided by the different digital technologies, for instance, support in hearing typed letters or thematically organised images constitute an incentive for the children's story making, but also constraints due to the children having difficulties handling the software and devices.

Study I

Skantz Åberg, E., Lantz-Andersson, A., & Pramling, N. (2013). 'Once upon a time there was a mouse': Children's technology-mediated storytelling in preschool class. *Early Child Development and Care*. DOI: 10.1080/03004430.2013.867342

The aim of this study is to explore what kind of activities emerge when six-year old children write a digital story using word processor *Liber Office* and two speech-synthesized feedback computer software, *Speaking keyboard* and *Vital*. Of focal interest is how the storytelling is mediated by these technologies as well as the teacher's introduction and participation. The

functionalities of the software aim to support spell checking and the young users' understanding of the phoneme and grapheme relation. When using the *Speaking keyboard* the writer hears the corresponding phoneme when typing a letter key on the keyboard, while the *Vital* software supports in reading whole words or sentences.

Predominantly, previous research shows that the word processor enhances children's writing as indicated by longer texts and increased interaction in supporting each other. Furthermore, the speech-synthesized feedback software is found to have a positive impact on children's writing development when the child has reached a certain level of cognitive awareness of sound/letter relation (Shilling, 1997). However, when new technologies as those used in this study are implemented in educational settings, scholars have argued that this entails different demands for teachers and children (Gibson, 2010; Lantz-Andersson, 2009; Leeuwen & Gabriel, 2007; Yelland, 2011). Therefore, the present study aims to contribute to knowledge of how these kinds of activities are mediated by digital technologies and the participants.

In this study, eight children, six years old, enrolled in a preschool class, were observed during two occasions. Four of these children were particularly observed and video recorded for approximately one hour as they engaged in the story making by working in pairs and handling the technologies.

The overall results of the study illustrate that what mainly mediate the storytelling activity is the teacher's introduction and her participation throughout the activity, the functionalities of the digital technologies and the children's knowledge of conventions of writing. The analysis shows how the teacher's introduction and rounding off the task mediates the unfolding narration, by having implications for how the narrative content comes to be formed. For example, when introducing the activity on the first occasion, the teacher frames the task by urging the children to write a nice story. This entails a negotiation between two children about the choice of a suitable protagonist for their story. As a consequence, instead of selecting the initial suggestion made by one of the children – the superhero Mega-dude – they decide to use a mouse as protagonist in order to adjust to the teacher's expectation. In other words, the negotiation ends with the children taking over the teacher's mode of reasoning and they regulate their actions in the sense of selecting, as they believe, a nicer character. On the second occasion, however, the teacher introduces the activity in a less-specified way, mediating more space for the other two observed children to negotiate about which character to be used for their story.

The children are benefiting from the technologies by using them as physical tools for writing but also as meditators for sense making, inspiration for the narrative plot, and for developing literacy skills. However, handling these technologies demands other skills than forming alphabetic letters by hand, in terms of selecting the right keys on the keyboard. As a consequence, the children's lack of operational skills occasionally causes an impediment, for example when the devices do not function properly. One example of this is when one child is spelling and not hearing the speech-synthesized feedback in the headphones. This, in fact, partly directs the children away from the narrating. Findings in the empirical data show how the ability to handle the technology and the level of literacy development has significance for how the children negotiate and establish the division of labour. An example of this is one child's argumentation for dividing the labour in writing two or three words each, because of her slower writing peer. It was observable in the empirical data that the child in the pair who was more familiar with the conventions of writing had an advantage in the interaction.

The participating teacher does not to a large extent contribute to the children's elaboration of the story plot during these observations, as she foremost directs their attention to technical issues and writing, arguably because of the school's participation in a municipal writing project. Thus, the focus on writing clearly structures the activity through the teacher's actions, and the actual story making occasionally becomes subordinate. Arguably, however, the children have previous experiences of a narrative construction and having appropriated this cultural tool makes it possible for the children to collaboratively establish a digital story.

Study II

Skantz Åberg, E., Lantz-Andersson, A. & Pramling, N. (under review). Narrative genre and the negotiated nature of tool-mediated activity.

This study addresses a learning activity in a preschool class with a software providing images as a starting point for story making. The research questions posed in analysing this activity are: i) how does the digital technology mediate the story making, ii) how does the teacher scaffold the children in the activity, and iii) what constitute the different approximations of a narrative genre the children's stories exemplify?

Researchers that take an interest in digital story making have previously often designed their studies with a focus on developing software products, devices or applications for enhancing children's narrating (cf. Bayon, et al., 2003; Chong & Lee, 2012; Decortis & Rizzo, 2002; Gelmini-Hornsby et al., 2011). Although, findings indicate that the teacher's participation is crucial for how the activities unfold, implying that studies exploring the

relationship between the actual story-making collaboration and the resulting stories are needed within this field of research (cf. Klerfelt, 2004).

Eight six-year olds in preschool class were observed during their story making on three occasions including the teacher's introductions. The empirical data consist of approximately 6 and ½ hours of video recorded films. The child-dyads made two stories each, which in total mean eight digital stories (books). These books constitute a part of the empirical material and are referred to as approximations of a narrative genre. The study includes an analysis of how these approximations of a narrative genre come to vary due to the evolving nature of the story-making activities. Excerpts from the participants' communication are selected to illuminate the reasons for these variations. The children are in their emerging writing development and therefore the teacher scaffolds the children in writing down their oral storytelling on a paper as a model for them to subsequently copy on the keyboard.

Three approximations to a narrative genre are analytically discerned among the produced digital stories and named, *coherent narrative, disconnected narrative* and *fragmented narrative*, respectively. The first story is referred to as coherent in that it contains an evolving plot including an encountered problem by the characters. A disconnected narrative is recognised as series of separate events, which do not interrelate into a coherent plot; and finally, a fragmented narrative means that texts and images in most part are interrelated but not sequentially coherent, and with few narrative elements. An example of a *coherent narrative* is the story *The Book of Friends*.

Once upon a time there was
A RABBIT THAT
was Swinging

THE FOXES TOOK THE
SWING FROM THE RABBITS

THE RABBITS WANTED TO
CLEMB WITH THE PANDOS.

Though the teacher's scaffolding to some extent impedes the children's evolving story making by focusing on writing to one picture at the time, the narrative becomes coherent. The rationale for *The Book of Friends* becoming a coherent narrative is understood as one of the children having previously appropriated the form of a narrative structure which he makes use

of in this process. Furthermore, the text, imagery and their relation contribute to the final result, that is, how the children complete their book.

One example in the data of a *disconnected narrative* is *The Story of Cats*.

Once upon a time there was a cat that had very sharp claws

It was a black cat that was good at catching mice in the dark

The grey cat were to have a party

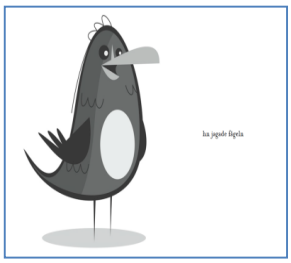
It was a cat that stayed up at night and saw a mouse

The collaborative story making and negotiating develop as the children orally filling in each other's utterances. However, similarly to the process summarised above, the teacher scaffolds the children in completing their story by focusing on one specific image at the time and by reducing the oral telling in transforming it into written text. One of the children tries to interconnect a character between two images, which implies knowledge of a narrative construction. However, the teacher explicitly delimits the child's oral telling and as a result the story becomes disconnected.

The third example, *The Lonely Dog,* is referred to as a *fragmented narrative*.

This dog was nice to others

This dog was mean



H[e] chased the bird

Initially, this activity starts as an oral intensive elaboration between a pair of two other children in the group, as they negotiate while looking at the images on the screen. However, the story-making activity is delimited due to the teacher's reduction and her focus on one specific image at the time and does not result in a rich evolving plot, but in a rather short demonstrative text.

In conclusion, for the children the instructional task is foremost a story-making activity, while the teacher approaches it as a writing task. The main finding is the teacher's mediation of the activity by scaffolding in directing questions, focusing on one image at a

time, and reducing the oral telling when transforming it into text. Consequently, the children direct their telling to each image instead of an overarching plot, and as a result this leads to the different approximations of a narrative genre. However, and importantly, the teacher's support should not be seen as erroneous. Rather, she scaffolds the children in simplifying the task since she is aware of the children's emergent writing and anticipates the difficulties of appropriating the conventions of this cultural tool. The analysis of the story-making activity highlights the importance of the teacher's participation, which arguably, becomes crucial for the final result, regardless of the resources inherent in the software.

6. Discussion

This research builds on an interest in preschool class children's collaborative story making as a cultural form of communication, sense making, and literacy development. The overall purpose of the present thesis is to investigate what kind of activities emerge when six-year olds are instructed to narrate with digital technologies, and how the teacher, the technologies and other cultural tools mediate the story-making activities. Of particular interest is to analyse how the in situ activities evolve, and clarifying how the children's final products come to vary. The findings of the two studies contribute to an understanding of how an instructed task in a preschool class setting unfolds into a complex and multi-layered activity. The first study shows how the teacher's introduction, her participation and the situation structure both the children's interaction and their negotiation about the narrative content. The computer and the software applications used in the story-making activity for enhancing writing and reading offer both possibilities and constraints for literacy learning. The children benefit from the speech-synthesized feedback software in hearing the synthesized voice when typing letters on the keyboard and writing words. One example of constraints, however, is that the software applications were found to direct the children away from narrating due to, for instance, difficulties in operating the technological devices. Much of the children's effort was put on managing division of labour and discussions about writing conventions, partly because of the technologies but also due to their varied abilities to write. The relation between the collaborative story-making activities and the resulting stories is analysed in the second study. The analysis shows that the stories come to vary into what is analytically referred to as approximations of a narrative genre, as contingent on the relations between image and text, content and structure. This variation is understood as a result of primarily the teacher's scaffolding in simplifying the task. By summarising and reducing the children's oral telling in transforming it into written symbols, the teacher presents a written-down model for the children to copy on the keyboard. Additionally, she directs the children's attention to one image at the time, rather than on shaping a coherent evolving plot. Thus, the thematically structured images provided by the software, offering for example support in narrative coherence, were not used to any great extent.

The main findings and their implications will now be discussed.

Instructional activities in early childhood education

In order to understand the characteristics of the investigated activities, it is necessary to acknowledge their embeddedness in an institutional, social and cultural context (cf. Wertsch, 1998), which mediates the evolving activities. In early childhood education, such as the preschool class, activities similar to the ones observed in the present thesis are organised by the teacher, wherein the children are given tasks. However, a much-debated issue is how to arrange teaching and learning in this intermediate form of schooling (Pramling Samuelsson, 2006), and what subject content should be included in the curriculum. As discussed earlier in the methodology chapter, the political intentions of bridging the two pedagogical traditions of preschool and school into one particular form of schooling have to a large extent resulted in a competitive situation between play and subject-oriented school activities (Thörner, 2007). The main reason for this outcome Thörner (2007) argues, is the adaption of the preschool class to the school environment, implicating what practice or teaching is possible to perform due to the spatial outline (often not suitable for a six-year olds' physical needs), and the temporal framework structuring the practice. These institutional conditions are highly salient in the activities analysed in the two studies: the spatial aspect in form of the children sitting in front of a screen during the observations, but also the lesson format and the daily routines, such as lunch. These conditions are part of the mediation of the activities. One example of this is when one child includes an event in the plot of their story by suggesting that the protagonist should have pancakes for dinner, after having heard the teacher urging for a story ending due to the upcoming lunch break.

In the context of this thesis, it is how the children understand the instructional school-based activities that come to the fore. As argued by Greiffenhagen (2008), tasks are perceived as goal-oriented and are, "defined in and through participants' activities" (p. 36). In line with his statement, through my analysis of the collaboration and interaction in the observed story-making activities, I argue that the children are aware of the purpose of the instructed task. They are orienting towards producing a story with the digital technologies and do so by negotiating with each other and adjusting to the teacher's requirements. This is evident, for instance, in that the children accept her reduction of their oral telling in the second study, or when they in the first study choose another protagonist to adjust to the instruction of writing a nice story. This single word, *nice,* causes negotiation between two children leading to a different plot than the one first suggested by one of the children. However, the teacher seems to have another agenda than the children, which can be discerned

by her focusing on and scaffolding the conventions of writing, rather than the children's appropriation of a narrative genre. Her intentions remain implicit in her introductions. Results from recent research show that literacy activities in the preschool class are often structured exercises to practice linguistic awareness or training letters and sounds, and that particularly writing activities are of a formal print-based character (Skoog, 2012). Even though Skoog shows examples of other forms of writing where the children have the possibility to write, for example, fairy tales or writing about a picture, the teacher guides the activities. In sum, the result from this research implies that the teachers focus foremost on formal aspects, rather than the content and the functional aspects (Skoog, 2012). This overarching pattern is analogous with the findings of the present study.

Many children in the western world today have access to digital technologies and media, expanding the possibilities for literacy learning. In order to respond to these "new learning scenarios" the school system has to adapt to children's ways of knowledge building and provide contexts for collaborative learning and possibilities for multimodal communication, as Yelland (2011, p. 35) suggests. Furthermore, she argues that such learning is not a matter of reproduction; instead education has to be oriented to problem solving and embrace an explorative approach. She suggests that for children to master literacy (and numeracy), this new kind of task design is needed for motivating purpose, but also for providing space for using previous experiences and knowledge, which is necessary for developing "higher-order thinking skills in a rich way" (Yelland, 2011, p. 37). The observed story-making activities in this study could be seen as response to an instructional task designed with an awareness of the fact that children are narrating based on their own experiences, using input from media and other cultural tools, directed to authentic receivers. Even if the narrative knowledge that the children display is not taken into account by the teacher in a way that develops this fundamental form of communication, this kind of task enables learning opportunities (cf. Crook, 1994; Stephen & Plowman, 2008), since the narration constitutes a social link between the participant's interaction and the individual child. Narratives, like language more generally, serve as meditational tools for thinking and communicating. Thus, story-making activities provide possibilities for the appropriation of new cultural tools, implying transformations of communicative and intellectual processes, fundamental for development from a Vygotskian (1987) perspective.

Story-telling or story-making activity

As mentioned previously, the reason for addressing this particular kind of activity is primarily that narratives are often used as tools for engaging children in literacy events, as a way of enhancing their reading and writing development. However, it is not entirely clear how to refer to the activities studied; whether they are examples of *story-telling* or *story-making* activities, since what the children do encompass speech and writing as well as other modes. In the research literature, scholars use these terms interchangeably, although I claim that there is a distinction in the notions, of which I have become aware during the research process. Telling primarily refers to speech. However, in the observed activities several communicative modes are additionally integrated, such as gestures, written symbols, sound, images, and occasionally colour. Therefore, since the activities are carried out with several semiotic means (i.e., are multi-modal in character) and additionally for defining how children bring together different parts such as image and written texts, with the aim of composing something new, *story-making* can be seen as a more functional term. In relation to technology, this term is useful since creating a story digitally provides an array of both symbols and other semiotic signs.

Through history, people have been making up stories using various modes to express themselves, for example, speech, visual representations, gestures, and bodily movement (Ochs & Capps, 1996). However, in early childhood education, oral storytelling has been foregrounded as the premier way for a child's expression at the expense of other ways of communicating. In line with Jansson (2011), I maintain that it is important to avoid dichotomies between oral telling, seen as the natural way, and narration with digital tools considered as artificial. Hence, rather than considering these two notions as separate phenomena, they may be regarded as a new way of viewing children's complex narrative activities, preferably referring to them as *story-making activities*, as I do in the present study.

Scaffolding in a technology-mediated activity

In reading through the empirical material and during the analytical work with the second study, the concept of scaffolding became useful. The findings imply, in line with for example Yelland and Masters (2007), that the concept as originally defined by Wood, Bruner and Ross in 1976 has to be extended in order to understand the altering teaching and learning processes that take place in digital technology contexts. There is a contemporary scholarly debate on how to conceptualise scaffolding processes in relation to technology-mediated education (see

e.g., Elbers et al., 2013). Yelland and Masters (2007) suggest that effective scaffolding would include a range of cognitive and affective strategies, but also technical strategies such as the computer (features of the program), thus "the computer and the type of task used create a context which is a type of scaffold" (Yelland & Masters, 2007, p. 380). Through their research on primary class children and interactive whiteboard use in the classroom, Warwick and colleagues (2013) reason in a similar way and make a distinction between direct and indirect scaffolding. By direct scaffolding they pertain to the original idea that a teacher provides a sensitive and contingent support during the children's performance of a task. With indirect scaffolding they refer to what a teacher does in advance, for instance, when planning a lesson by designing the task or selecting appropriate software, maintaining that indirect scaffolding "still has a form of contingency because it is based on the teacher's informed judgment (from their prior knowledge of the child)" (Warwick et al., 2013, p. 43). With both direct and indirect scaffolding, the teacher provides for a temporary contingent support that is gradually decreased by handing over the responsibility of solving the task to the child.

By distinguishing indirect from direct scaffolding, the concept becomes a useful tool for gaining a deeper understanding of what scaffolding processes look like. For instance, in the present study, the indirect scaffolding is noticed by the planning for the story-making activities wherein the teacher makes a judgment on the children's previous achievements and the possibilities to solve the task within a limited amount of time. Additionally, her choices[6] of software applications contribute to the different characters of the story-making activities and evidently motivate and make the children pursue the narrative, although in different ways. For example, the *Storybird* software that provided images seemed to trigger the children's fantasy more than the other software applications.

One characteristics of scaffolding is the teacher's restriction of the degree of freedom in the activity, allowing the children to concentrate only on a few elements of the task at a time (Wood et al., 1976). The choice of software, which could be referred to as indirect scaffolding, may, for example, imply limitations in what is possible to do or not do on the screen (cf. Warwick et al., 2013). Additionally, by instructions, questions and support during the unfolding activities, the teacher's direct scaffolding implies removing obstacles that risk the children to fail. During the collaboration in the second study, more than in the first, the teacher supported the children in transforming the mode of oral to written language by reducing the children's oral narrating. The reason for this is argued to be the children's

[6] The software applications used in the first study were, however, determined by the school-development department in the community as part of the municipal writing project.

comprehensive telling due to the inspiring images provided by the software used in this group. The teacher anticipated the children's difficulties in this transformation process, and by focusing on contingent support the teacher facilitated for making them succeed with the performance of the task. However, her foregrounding of the technology of writing entailed no re-reading of the stories during the collaboration. This lead to few connectives weaving the images together, which had consequences for the coherence of the stories made. Furthermore, one key feature of scaffolding is the transfer of responsibility to the child, which can be questioned in relation to my study in terms of whether the children's copying of the teacher's prewriting can be said to fulfil that criterion.

Scaffolding with digital technologies

The choice of mediating tool for learning is of great significance since digital technology offers both possibilities and constraints. The design of the technologies or software provides a structure for what is possible to perform, that is, inherent in software applications certain features of the program are built in by the designers with the intension to function as scaffolding support. This is discussed by Englert and colleagues (2004) in a comparative study on how a Web-based software impacted on young writer's composition of narratives when using a supported paragraph activity, in comparison to free writing on the computer and writing with pen and paper. They found that the software with the supported paragraph enhanced the children's writing and from that finding suggest that,

> Designed carefully, technology might bridge this gap by controlling or prompting those elements that are beyond children's range of initial competence, while permitting them to concentrate on the writing aspects that are within their grasp. (Englert et al., 2004, p. 7)

In line with this suggestion, I contend that the two speech-synthesized feedback software used in the first study may be seen as filling the gap between the children's knowledge of letter form and sound, in that the synthesized voice supports the children in reducing this relational difficulty which may redirect the focus from the substantive content and thereby the solution of the task. However, the children need to have reached a certain awareness of this relationship to benefit from this direct scaffolding (cf. Shilling, 1997). The story-making software used in the second study provides images offering inspiration, which conceivably trigger a richer narration. It can be argued that similar activities could have been done with, for instance, cut-out pictures from a magazine on paper. However, the technology makes a

difference since it is providing a large amount of illustrated images to select from, implying the final result to look professional with a nice layout that can be printed or published online. The images also offer support for a coherent plot by the thematic and sequential organisations. Thus, the software design provides coherence through this organisation resemblance in the imagery, for example in the environment (e.g., a forest) or by theme (such as cats or dogs). However, simultaneously as being a scaffolding resource, this design holds an inherent problem in that the conflict that makes a story worth telling is made more difficult. This is seen in the study by a child-dyad that selected a cat theme for their story and wanted an image of a dog (presumably for chasing a cat) but did not find any in their chosen theme.

The concept of scaffolding refers to a temporal act and, as Warwick and colleagues (2013), maintain, the support is eventually and gradually taken away and the responsibility is handed over to the child. When is comes to digital technology, the aim is to support the child in handling the technology on her own. This can be pursued in different ways depending on which tools are in use. As the case in the first study, a long-term use of speech-synthesized technology will lose its scaffolding function when it becomes redundant, that is, when the child has appropriated the technology of writing. In this phase the teacher can remove the software application.

New literacy competences in the digital age

In the beginning of this century, the European Union chiselled out key competences necessary for the future citizens in the modern knowledge society (European Commission, 2006). One of these competences is digital competence, which they state to be important and define as confidence in handling ICT and be critical in digital use for work, in leisure time and in communication. The notion of digital competence could be regarded as an overall term. Erstad (2010) makes an effort to organise general competences that define the operational aspects of technology and its informational content employed in school practice. These competences are possible to assess in learning activities for the teacher, since they are perceivable. A basic skill for instance, Erstad claims, is to be "able to open software, sort out and save information on the computer" (2010, p. 62). Empirically in the present study it is shown that most of the children have appropriated this basic skill. However, Erstad's listed competences are not connected to subject content or to specific technologies. So alongside with aspects of handling technology, which I have considered and illustrated in this research

as part of the complexity in the activities, learning how to make digital products partly entails other competences in, for instance, navigating the space on the screen, interpreting its semiotics, and composing written text and images to create a coherent story. In this sense, to a large extent the same capabilities are scaffolded in the observed story-making activities as was before the digital age, such as support in the conventions of writing.

As noted by Bagga-Gupta (2013), in literacy activities linking between the written word, the oral, tactile and auditive modalities provide connections into a central artefact (in the present case a digital story). This linking is pursued in the interaction between the participants and the technologies, implicating a need for communicative competence. With the assumption that the digital technologies do not act upon the children, in terms of the children being passive consumers (Burnett, 2010), but rather the interaction and sense making are dynamic in the story-making activity, these communicative competences could develop with verbal as well as non-verbal modes that the children make use of through mediation of technology and cultural tools. Within the institutional context, when children are given the possibilities to show how to relate various elements and shape a new product during a story-making activity, learning in terms of communicative development becomes visible for the teacher to assess. Thus, print-based educational practices are challenged by new contexts of literacy learning where narrating is made with support of digital technology, that is, how the children make use of the technologies in their literacy progress.

Literate development, among other things, means to appropriate different narrative genres. One kind of book produced by the children (in study II referred to as a coherent narrative) is a more extended narrative than the other identified approximations of a narrative genre. However, different genres are here not to be considered hierarchically ordered. Rather, from a socio-culturally informed perspective, an important feature of development is the ability to communicate in a variety of genres. Narrative competence has to be learned in a social and cultural context, as narrative is an essential communicative and sense making practice (Bruner, 1996). This competence becomes increasingly important in an information society, where it is critical to develop communicative abilities for evaluating and transforming information into knowledge (Säljö, 2012). Knowledge in different genres is needed for understanding various types of texts and their messages, such as technical manuals, political information and novels. Additionally, participation in various social media and wiki-worlds on the Internet demands communicative competences. Bagga-Gupta and Säljö (2013) write about this contemporary phenomenon as collective authorship. Given that even young children enter preschool and school with multimedia experience from home, which implies a

variety of genre familiarity in children's literacy practice, Lotherington (2011) purport that teachers need to rethink literacy epistemologically as well as pedagogically. The present study contributes to this rethinking through studying – and discussing the implications of – what activities evolve when children take on the task of making a story with the assistance of digital technologies.

Conclusion

The present thesis shows how tool-mediated activities, where technologies are used for learning and for developing literacy skills, are developed in a preschool class setting. When a new tool is implemented in a practice, something is qualitatively changing. However, the changes seen in this study are in this regard far from dramatic. In fact, the results of this research on an overarching level become part of the field of research on technology and learning concluding that teachers cannot be replaced by technologies (e.g., Selwyn, 2012); an insight that by no means is new. This work also contributes to a didactical discussion, by analytically studying how the technologies and other contextual recourses together with the teacher's mediating role and the various ways they scaffold the children in appropriating literacy in the ongoing activities (cf. Greiffenhagen, 2012). The findings indicate the importance of discussing this in a wider perspective, that is, what a focus on formative aspects of writing and narration (i.e. *how*), rather than functional aspects (i.e. *what*) implies for the children's learning and engagement in society. I argue that such substantive questions ought to be emphasised in research on early childhood education in order to meet societal demands on new abilities.

7. Sammanfattning

Barns berättande med digitala verktyg. En redskapsmedierad aktivitet i förskoleklass

Inledning

Föreliggande licentiatuppsats handlar om lärandeaktiviteter där barn i förskoleklass tillsammans skapar berättelser med digital teknologi. Bakgrunden till uppsatsen är ett intresse för yngre barns berättande som en betydelsefull kulturell form för kommunikation och meningsskapande, samt ett intresse för barns skrivutveckling. I ljuset av den pågående expansionen av digital teknologi i utbildningssammanhang förändras sätten att berätta. Huruvida aktiviteter där barn lär sig läsa och skriva med digitala verktyg bidrar till ett ökat lärande är omdebatterat. I dikotomi argumenteras det å ena sidan för att multimodala mjukvaror har potential för att öka läs- och skrivinlärningen (Parette, Boeckmann & Hourcade, 2008), och å andra sidan för att datoranvändandet minskar barns läsande och att konsekvensen blir försämrad läsförståelse (Rosén, 2010). Dock finns det forskning som betonar att implementering av digital teknologi i utbildningspraktiker skapar nya och distinkta kontexter för lärande, vilket medför både möjligheter och svårigheter (Lantz-Andersson, 2009; Säljö, 2010). Mot bakgrund av detta resonemang uppstår frågan hur aktiviteter, som att skapa digitala berättelser, engagerar nybörjarskrivare och vilken betydelse den digitala teknologin har för hur berättaraktiviteten utvecklas.

Denna licentiatuppsats består av en kappa och två studier som empiriskt undersöker och besvarar uppsatsens frågeställningar. Dessa studier redovisas i två artiklar där det genererade datamaterialet analyserats utifrån ett sociokulturellt perspektiv (Säljö, 2000, 2005; Vygotskij, 1978, 1987; Wertsch, 1998).

Syfte

Syftet med licentiatuppsatsen är att undersöka barns kollaborativa berättande med digital teknologi i en förskoleklass. Mer specifikt är intresset riktat mot hur berättaraktiviteten medieras av den använda teknologin, lärarens deltagande och barnens interaktion. Ett ytterligare intresse är vad berättandet resulterar i, det vill säga de skapade produkterna i form av digitala berättelser och deras karaktäristika. I linje med ett sociokulturellt perspektiv

studeras lärandeaktiviteten med utgångspunkt i hur barnen engagerar sig i uppgiften att skapa en berättelse i samarbete, då lärande här förstås som beroende av detta engagemang.

Frågeställningar

- Vilken typ av aktiviteter uppstår när barn skapar berättelser med digital teknologi?
- Vilken betydelse har teknologin för medieringen av aktiviteterna och för narrativen?
- Hur medierar läraren, genom sin introduktion och deltagande, barnens engagemang?
- Vad kännetecknar den narrativa genren som barnens berättelser exemplifierar och hur kan relationen mellan den utvecklande berättaraktiviteten och produkten, det vill säga de producerade narrativen, förstås?

Teoretiska utgångspunkter

Föreliggande licentiatuppsats bygger på den sociokulturella tradition där lärande förstås som en redskapsmedierad social aktivitet, vilken är inbäddad i en kontext och en kultur, där den lärande deltar och approprierar (gradvis tar över) fysiska och psykologiska/kognitiva redskap (Säljö, 2000, 2005; Vygotskij, 1978, 1987; Wertsch, 1998). Således är redskapsmedierad aktivitet vald som analysenhet på grundval av antagandet att människor deltar i, kommunicerar och konstituerar aktiviteter genom sina handlingar och användandet av kulturella resurser (såsom kommunikativa förmågor, erfarenheter, begreppslig kunskap eller resurser tillhandahållna av t.ex. datorn såsom symboler, bilder, ljud och typsnitt). *Mediering* är ett centralt begrepp som refererar till antagandet om att människan inte står i direkt kontakt med världen utan tolkar, upplever och agerar i den med kulturella redskap som ofta under en lång historia har utvecklats av människan (Säljö, 2005; Wertsch, 2003, 2007). Hur vi utvecklar våra kognitiva, kommunikativa och sociala förmågor är därför beroende av vilka möjligheter vi har att interagera och vilka kulturella redskap som finns att tillgå. Av den anledningen är det sociokulturella perspektivet användbart i studier av hanteringen av nya redskap som digital teknologi i utbildningspraktiker. Perspektivet implicerar även att ett barns lärande kan beskrivas i termer av dess förmåga att använda dessa redskap på ett kulturellt ändamålsenligt sätt (Razfar & Gutiérrez, 2013).

Ett centralt kulturellt redskap för människans tänkande och lärande är språket, det talade och det skriftliga. Språket förstås som en kollektiv resurs som är i ständigt förändring och utvecklas och fungerar som ett kognitivt, kommunikativt och funktionellt verktyg för det

individuella tänkandet liksom mellan individer och kulturer (Säljö, 2000). Med utgångspunkt i det sociokulturella perspektivet ses språk här i ett vidare perspektiv som även inkluderar gester, kroppsspråk och andra uttryckssätt såsom intonation och blickar. Människor skapar mening och kommunicerar genom att använda tillgängliga semiotiska redskap, till exempel genom att använda datorer vilka erbjuder multimodala möjligheter att kommunicera och skapa mening genom bilder, typsnitt, färger, ljud och layout.

Vilka kunskaper vi har i skriftspråket har betydelse för hur vi kan delta i vår västerländska kultur. Skrivande ses här som en teknologi vilken möjliggör kommunikation utanför våra kroppar och som ett redskap för tänkande, lärande, information och memorerande. Det talade och det skrivna språket lyder under egna respektive lagar (Ong, 2002), vilket innebär skillnader i svårighetsgrad mellan de två uttrycksformerna. För ett barn är talet motiverat och skapat från en källa av känslomässig stimuli, medan det skriftliga kräver en mer avsiktlig handling (Vygotskij, 1987). I de deltagande barnens berättande sker en transformation mellan det verbala och det skriftliga uttryckssättet, vilket utgör ett av de analytiska intressena i denna licentiatuppsats. I denna transformering är lärarens deltagande viktigt genom hennes stöd till barnen och deras skapande av en berättelse. För att förklara lärarens handlingar används delvis begreppet *scaffolding* såsom det definierades av Wood, Bruner och Ross, 1976. En pågående diskussion bland forskare visar att begreppet behöver omdefinieras i relation till användningen av digital teknologi i klassrum (jfr Englert m.fl., 2004; Van de Pol & Elbers, 2013; Warwick m.fl., 2013; Yelland & Masters, 2007). Föreliggande uppsats ansluter sig till den diskussionen genom att analysera hur läraren genom planering av aktivitet, val av teknologi och de inbyggda resurserna i mjukvarorna ger barnen olika stöd i berättaraktiviteten.

Narrativ har genom historien används av människan som ett redskap med många funktioner, såsom kunskapsförmedling och underhållning. Berättandet är kulturspecifikt och kan anses utgöra ett medierande verktyg genom tider och förändringar i samhället. Genom skilda narrativa genrer, såsom sagor, skvaller och vardagsberättelser kan berättande ses som ett kulturellt redskap för meningsskapande och för tolkning av personliga erfarenheter (Ochs & Capps, 1996; Säljö, 2011; Wells, 2009). Kompetens att kunna berätta i olika genrer är något som måste utvecklas i kommunikativa och sociala sammanhang, till exempel kan och bör förskolan och skolan utgöra sådana sammanhang (Bruner, 1996).

Tidigare forskning

För att förstå de observerade aktiviteterna i denna uppsats används det sociokulturella begreppet *literacy event*. Skälet till det är grundat i de deltagande sexåringarnas berättande som sker verbalt, genom skrift och delvis med bilder. Literacy events förstås som observerbara språkliga händelser sprungna ur den vidare sociala, historiska och kulturella literacy praktik vilken de är inbäddade i och där deltagarna skapar mening genom förhandling och interaktion (Barton, 2007; Barton, Hamilton & Ivanic, 2000). Barns deltagande i literacy events startar tidigt både i hemmet (Brice Heath, 1983) och i förskolan (Björklund, 2008) och involverar skrivande på något sätt. Forskning visar att barn gradvis bygger upp en kunskap i berättandets konst i interaktion med familj och kamrater men även i förskolan. Dock behövs stöd i att utveckla narrativ kompetens (Björklund, 2008; Pramling & Ødegaard, 2011; van Oers, 2007; Wells, 2009). I denna uppsats avgränsas dock intresset genom att studera en särskild situerad och instruerad literacy event, där möjligheter finns att upptäcka de olika sätt barn använder för att berätta.

Narrativ används, bland annat, som ett medel i förskoleklassen och i de tidiga skolåren för att engagera barn i skrivandet (Eriksen Hagtvet, 2002; Klerfelt, 2007). Flera studier har visat att barns personliga erfarenheter och upplevelser samt innehåll hämtat från populärkulturell media medierar berättandet (Arthur, 2001; Dyson, 2001, 2003; Marsh m.fl., 2005; Urbach & Eckhoff, 2012). Media utgör en väsentlig del i barns vardag och bildar en gemensam plattform och förståelse, vilket kan bidra till olika literacy events (Fast, 2007).

Kunskapsfältet gällande digital teknologi och literacy i förskolan och i de tidiga åren i skolan är relativt nytt i jämförelse med forskningsfältet literacys långa historia. Tre forskningsöversikter som redovisar studier gjorda från 1960 till 2009 (Burnett, 2010; Labbo & Reinking, 2003; Lankshear & Knobel, 2003) visar att den övervägande andelen studier utförda under denna tidsperiod fokuserar på teknologi som stödjer utveckling som kan relateras till text-baserad literacy och få studier undersöker barns läsande av, skrivande och interagerande med digitala texter (Burnett & Merchant, 2013). Ett fåtal studier utgår från det sociokulturella perspektivet och undersöker yngre barns användande av datorer i meningsskapande syfte och som engagerar användarna genom digitala texter såsom e-post eller berättande med digitala foton (Burnett, 2010). Labbo och Reinkings (2003) översikt visar att teknologi som ordbehandlingsprogram i allmänhet ökar barns skrivande i termer av längre texter. Talsyntesprogram, liknande de som används i studie 1, har positiv inverkan på

barns skriftspråksutveckling när barnet har fått en förståelse för relationen mellan bokstav/ljud.

Forskare som intresserar sig för digitalt berättande har designat studier med fokus att utveckla mjukvaror, tekniska utrustningar eller applikationer i syfte att förbättra möjligheterna för barns berättande (jfr Bayon m.fl., 2003; Chong & Lee, 2012; Decortis & Rizzo, 2002; Gelmini-Hornsby m.fl., 2011). Några av studierna lyfter fram lärarens deltagande som central för hur berättaraktiviteten utvecklas, vilket är överensstämmande med fynden i föreliggande studie. En studie som undersöker yngre barns kollaborativa digitala berättande i relation till den slutliga produkten har funnit att datorns funktioner förändrar barnens berättelseskapande genom att bild, text och ljud förenas på nya sätt (Klerfelt, 2004).

Studiens kontext

De två studier som utgör det empiriska underlaget för denna licentiatuppsats är utförda i en kommunal skola i utkanten av en mindre stad i Sverige. Skolan är vald med anledning av dess medverkan i ett kommunalt projekt – att skriva sig till läsning med digital teknologi – som riktar sig till de yngsta barnen.

Två grupper med sexåringar inskrivna i en åldersintegrerad förskoleklass observerades under ett flertal berättaraktiviteter med digital teknologi. Den första gruppen bestod av 9 barn (5 pojkar och 4 flickor, dock var en pojke inte närvarande vid observationstillfällena). Observationerna i denna grupp konstituerar det empiriska datamaterialet till den första studien. I den andra gruppen fanns det 8 barn (4 flickor och 4 pojkar) och den genererade empiriska datan från denna grupp utgör materialet för den andra studien.

Olika mjukvaruprogram användes i de två gruppernas berättaraktiviteter, vilket implicerar skilda möjligheter och hinder för skriftspråkande och berättande. Anledningen är de inbyggda funktionerna och designen av mjukvaran (jfr Aarsand m.fl., 2013). I det kommunala skrivprojektet ingick tre program, ett ordbehandlingsprogram *Liber Office*, och två talsyntesprogram *Talande tangentbordet* och *Vital.* Dessa mjukvaror är särskilt utvalda för att stödja barnens skrivande och de användes av den första gruppen under berättaraktiviteterna. Den andra gruppen skapade berättelser med ett Internet-baserat program *Storybird,* vilket är designat för berättande och erbjuder ett stort antal illustrerade bilder.

Studiens metod

Som datagenererande metod föll valet på videoobservationer då detta möjliggör rik dokumentering av den interaktion och kommunikation som utspelar sig i den situerade aktiviteten mellan deltagarna och datorn (Jordan & Henderson, 1995). Tal, intonation, gester, ansiktsuttryck och ljud är några av de kommunikativa sätt barn använder i sitt berättande, därför har interaktionsanalys (Jordan & Henderson, 1995) använts i det analytiska arbetet av videofilmerna. Interaktionsanalys erbjuder möjligheter att studera barnens kollaborativa berättande genom hur de tolkar varandras yttranden. Dessa yttranden kan förstås genom den respons barnen ger tidigare uttryck eller genom negligering av det som sagts.

Vid observationstillfällena användes vanligtvis en kamera på stativ riktad mot ett par barn diagonalt från sidan för att fånga deras ansikten men även något av skärmen. Vid några tillfällen användes två kameror riktade explicit mot ansikten respektive skärm. Det samlade empiriska materialet består av cirka 7 ½ timmars videofilm.

Transkriptionerna är utförda på olika nivåer vägledda av de två studiernas frågeställningar. I första studien, för att synliggöra barnens sekventiella turtagning och lärarens deltagande i aktiviteten, har en transkriptionsnyckel inspirerad av Conversation analys (CA) använts. CA delar samma antagande som Interaktionsanalys om att kunskap och handlande är sociala fenomen, situerade och utvecklade i interaktion. Emellertid betonar CA mikrodetaljer av interaktion såsom pauser och dess längd som inte till fullo använts i min transkriberingsmodell (jfr Goodwin & Heritage, 1990). Hela materialet från den första studien är transkriberat. I den andra studien är delar av materialet transkriberat enligt Interaktionsanalysens metod (Jordan & Henderson, 1995). De utvalda delarna fokuserar de sekvenser i barnens berättande som medieras av läraren och den digitala teknologin då de särskilt åskådliggör relationen till den slutliga produkten.

15 stycken digitala berättelser är insamlade. I föreliggande uppsats analyseras berättelserna i ljuset av att de är initierade av läraren och inramade av den institutionella och kulturella kontexten. I den andra studien är åtta berättelser skapade utifrån bilder och utgörs av den fiktiva genren. Inledningsvis kategoriserades berättelserna och tre valdes ut för att representera de variationer av en narrativ genre som upptäcktes. Dessa analyserades gällande innehåll och struktur, såsom handling, karaktärer, miljö, tidsaspekt och samstämmighet (Bruner, 1996). Då berättelserna ses som exempel av bilderböcker har Nikolajevas och Scotts (2001) terminologi använts i analysen av relationen mellan bilderna och de skrivna texterna.

Sammanfattning av delstudierna

Det övergripande syftet med föreliggande licentiatuppsats är att undersöka vilka aktiviteter som uppstår när sexåringar i förskoleklass är instruerade att berätta med digital teknologi och hur läraren, teknologin och kulturella redskap medierar berättaraktiviteten. Ett särskilt intresse är att analysera hur den situerade aktiviteten utvecklas och att därefter klarlägga anledningen till att barnens slutliga berättelser kom att variera.

Studie I undersöker vilka aktiviteter som uppstår då de observerade barnen skriver berättelser med ordbehandlingsprogrammet *Liber Office* och två talsyntesprogram, *Talande tangentbordet* och *Vital*. Syftet med teknologiernas funktioner är att de ska stödja barnens skriftspråkande genom stavningskontroll och förståelse av relationen bokstav/ljud genom transformering av skrivna bokstäver till hörbart ljud. En andra frågeställning är hur berättaraktiviteten medieras av dessa teknologier liksom av lärarens instruktion och deltagande. Resultatet visar hur lärarens instruktion och avrundning av aktiviteten medierar berättelserna genom att strukturera både barnens interaktion och förhandling om berättelsernas innehåll. Datorn och mjukvaruprogrammen erbjuder möjligheter för att utveckla literacy, dock finns det hinder i form av svårigheter i att hantera teknologin vilket visar sig leda bort barnen från berättandet för att istället diskutera arbetsfördelning och skrivkonventioner.

I studie II adresseras berättaraktiviteter där sexåringar använder ett Internet-baserat berättarprogram, *Storybird,* vilket erbjuder illustrerade bilder som utgångspunkt för berättandet. I analogi med första studien undersöks vilka aktiviteter som uppstår och hur de medieras av lärarens deltagande och den digitala teknologin. Dessutom analyseras relationen mellan den interaktion och förhandling som pågår under berättandet och vad som konstituerar de variationer av den narrativ genre som berättelserna utgör. Huvudresultatet visar att skälen till berättelsernas variation beror på lärarens scaffolding i aktiviteten. Detta sker genom att läraren ställer frågor, leder barnens berättande till en bild i taget istället för till den övergripande handlingen och genom att reducera barnens muntliga berättande i transformationen till det hon skriver ner som en modell för barnen att kopiera på tangentbordet. Emellertid ska inte lärarens handlande ses som hinder i utvecklandet av en sammanhängande berättelse, utan hennes scaffolding avser att förenkla uppgiften då hon förutser barnens svårigheter att appropriera skriftspråkets konventioner.

Gemensamt resultat för de två studierna visar att berättaraktiviteterna är introducerade som ett barnvänligt sätt att engagera barnen i skriftspråkets teknologi. Berättandets konst utgör en bakgrundsfigur i lärarens introduktion och hennes scaffolding, och som en

konsekvens kan två agendor urskiljas i den meningen att barnen främst är orienterade mot att skapa en berättelse medan lärarens deltagande prioriterar skrivandet. Ett annat resultat är att barnen använder en variation av resurser för att berätta såsom tal, gester, bilder och kulturella erfarenheter, men även visuellt-spatiala kompetenser i form av orientering mot skärmen och att arrangera de tecken och symboler som är synliga. Inbyggt i de olika digitala teknologiernas design finns möjligheter som stöttar genom att till exempel transformera skrift till hörbart ljud eller genom tematiskt organiserade bilder, vilka utgör en motivation för barnens berättande. Det finns även hinder i form av svårigheter att hantera mjukvaruprogrammen, datorn och kringutrustningen.

Diskussion

I diskussionsavsnittet förs ett resonemang kring studiens huvudresultat och dess implikationer.

Instruerade aktiviteter i förskoleklass och de tidiga åren i skolan

För att förstå de undersökta aktiviteternas karaktär är det nödvändigt att erkänna deras inbäddning i en institutionell, social och kulturell kontext (jfr Wertsch, 1998), vilken medierar aktiviteten. I analysen av det empiriska materialet är de institutionella villkoren synliga i berättaraktiviteterna, vilka kan sägas ha anpassats till den rådande skolmiljön (jfr Thörner, 2007). Detta är exempelvis möjligt att se genom att barnen får uppgifter att lösa inom en viss tidsram (lektion) vilken är styrd av rutiner såsom lunchrast. En nyligen publicerad avhandling visar att literacy-aktiviteter i förskoleklass ofta utgörs av strukturerade övningar i syfte att öva språklig medvetenhet eller att träna bokstav och ljud, och att särskilt skrivövningar har en formell karaktär (Skoog, 2012). Avhandlingen visar, i linje med denna studie, att lärarnas fokus riktas mot de formella aspekterna snarare än innehåll och funktionella aspekter. Många barn i väst har idag tillgång till digital teknologi och media. Yelland (2011) argumenterar för att teknologin ökar barns möjligheter till lärande av literacy och att skolan därför måste anpassa sig till detta nya scenario och skapa kontexter för barns förändrade sätt att lära. Nya former av uppgifter med explorativ ansats krävs i motiverande syfte, men även för att möjliggöra rum där tidigare erfarenheter och kunskap kan användas, vilket är nödvändigt för att utveckla färdigheter i bland annat att resonera och reflektera. De i studien observerade berättaraktiviteter kan ses som ett svar på Yellands efterfrågade uppgifter där barnen berättar utifrån sina egna erfarenheter med inspiration från exempelvis media. Även om läraren inte

beaktar barnens narrativa kunskaper på ett sätt som utvecklar denna grundläggande form av kommunikation, kan aktiviteten erbjuda möjligheter till lärande.

Scaffolding i en redskapsmedierad aktivitet

Under analysen av studierna framkommer att begreppet scaffolding, såsom det ursprungligen definierades av Wood, Bruner och Ross 1976 behöver utvidgas för att förstås i relation till nya undervisningsformer och lärprocesser i förändring som ett resultat av den digitala teknologins implementering i utbildningssammanhang (Elbers m.fl., 2013; Van de Pol & Elbers, 2013; Yelland & Masters, 2007). Warwick och hans kollegor (2013) gör en distinktion mellan direkt och indirekt scaffolding, där direkt scaffolding åsyftar originalidén om lärarens känsliga och bidragande stöttning under barnets utförande av en uppgift. Med indirekt scaffolding refererar de till vad läraren gör innan, exempelvis, planerar för lektionen genom att designa uppgifter eller välja en lämplig mjukvara. Med denna åtskillnad blir begreppet ett värdefullt redskap för att skapa en djupare förståelse för hur scaffolding-processen kan gestaltas. I föreliggande studie kan indirekt scaffolding noteras genom lärarens planering av berättaraktiviteten där hon bedömer att barnen har möjlighet att lösa uppgiften med hjälp av sina tidigare erfarenheter och kunskaper. Hennes val av program medverkar till de olika aktiviteternas karaktärer och programmen motiverar uppenbarligen barnen och får dem att fullfölja den givna uppgiften.

Scaffolding av digitala teknologier

Digitala teknologiers eller mjukvaruprograms design erbjuder strukturer för vad som är möjligt att utföra, det vill säga, inneboende i mjukvarans applikation finns en viss support som är inbyggd av designers. Detta diskuteras av Englert m.fl. (2004) i relation till en komparativ studie i vilken de fann att om ett digitalt verktyg är designat med noggrannhet kan det uppfylla ett av kännetecknen för scaffolding, nämligen att fylla luckor i användarens kunskaper med syfte att låta henne koncentrera sig på att lösa uppgiften. I linje med detta resonemang bedömer jag att de två talsyntesprogram som används i den första studien skulle kunna ha motsvarande stödjande funktion genom att den syntetiska rösten reducerar den relationella svårigheten mellan bokstav och dess ljud.

Programvaran i den andra studien tillhandhåller en stor mängd illustrerade bilder vilka inspirerar och tänkbart berikar ett berättande. Programmets design erbjuder möjligheter till att skapa en sammanhängande handling genom dess tematiska organisation av bilder där likheter i bildspråket (miljö, färger eller återkommande karaktärer) har en stödjande funktion. Samtidigt som denna funktion verkar som direkt scaffolding kan designen innebära ett

problem gällande svårigheter att hitta bilder för att skapa en spänning eller en konflikt i handlingen vilket är betydelsefullt för att berättelsen ska bli värd att lyssna på.

Nya literacy kompetenser i den digitala teknologins tidsålder

Erstad (2010) gör ett försök att lista generella kompetenser som definierar det operativa handhavandet av teknologi. Dessa kompetenser är för läraren observerbara i lärandeaktiviteter och kan bedömas. Emellertid är inte Erstads listade kompetenser kopplade till specifika teknologier eller till något ämnesinnehåll. Parallellt med de operativa aspekterna, vilka jag har tagit i beaktan och illustrerat i analyserna som en del av komplexiteten i aktiviteterna, innebär lärande i hur man skapar digitala produkter andra nödvändiga kompetenser. Exempelvis behövs kunskaper i hur man navigerar på skärmen, men även hur man tolkar dess semiotik samt komposition av skriven text och bild för att skapa en sammanhängande historia. Jämförelsevis med dessa kompetenser stöttas i de observerade berättaraktiviteterna alltjämt de kompetenser som var nödvändiga innan den digitala tidsåldern, såsom support i skrivkonventioner. Aktiviteter där den digitala texten är central för deltagarna möjliggör en kontext för att utveckla kommunikativa kompetenser genom att en länkning mellan det skrivna ordet, de verbala, taktila och auditiva modaliteterna ges utrymme (Bagga-Gupta, 2013).

Narrativ kompetens blir alltmer betydelsefullt i vårt informationssamhälle. Det är väsentligt att utveckla denna kommunikativa förmåga för att kunna värdera och transformera information till kunskap (Säljö, 2012). Kunskap i olika genreformer behövs för att förstå skilda typer av texter och dess budskap, såsom tekniska manualer, politisk information eller noveller. Sociala medier är ytterligare ett forum som kräver en kommunikativ kompetens. Detta samtida fenomen beskriver Bagga-Gupta och Säljö (2013) som ett kollektivt författarskap. Barn får idag tidigt erfarenhet av olika genrer via media som implicerar en mångfald av literacy-praktiker vilka de tar med till förskolan och skolan. Lotherington (2011) föreslår att lärare behöver tänka om vad gäller deras uppfattning om hur tidigt lärande i läsning och skrivning går till. Föreliggande licentiatuppsats bidrar med detta nytänkande genom att studera och diskutera implikationer av de aktiviteter som utvecklas då förskoleklassbarn får i uppgift att skapa berättelser med assistans av digitala teknologier.

8. References

Aarsand, P., Melander, H., & Evaldsson, A.-C. (2013). Om media literacy-praktiker i barns vardagsliv. In S. Bagga-Gupta, A-C. Evaldsson, C. Liberg & R. Säljö (Eds.), *Literacy-praktiker i och utanför skolan* (pp. 41-63). Stockholm: Gleerups.

Ackesjö, H. (2013). Children crossing borders: School visits as initial incorporation rites in transition to preschool class. *International Journal of Early Childhood, 45,* 387-410. doi:10.1007/s13158-013-0080-7

Alvesson, M., & Sköldberg, K. (1994). *Tolkning och reflektion. Vetenskapsfilosofi och kvalitativ metod*. Lund: Studentlitteratur.

Arnseth, H.C., & Ludvigsen, S. (2006) Approaching institutional contexts: Systemic versus dialogical research in CSCL. *International Journal of Computer-Supported Collaborative Learning, 1*(2), 167-185.

Arthur, L. (2001). Popular culture and early literacy learning. *Contemporary Issues in Early Childhood, 2*(3), 295-308.

Bagga-Gupta, S. (2013). Literacies som handling. Den språkande människan och praktikgemenskaper. In S. Bagga-Gupta, A.-C. Evaldsson & Säljö, R. (Eds), *Literacy praktiker i och utanför skolan*, (pp. 19-40). Stockholm: Gleerups.

Bagga-Gupta, S., Evaldsson, A.-C., Liberg, C., & Säljö, R. (Eds.). (2013). *Literacy-praktiker i och utanför skolan*. Stockholm: Gleerups.

Barton, D., Hamilton, M., & Ivanic. R. (2000). *Situated literacies: Reading and writing in context.* London: Routledge.

Barton, D. (2007). *Literacy: An introduction to the ecology of written language* (2nd ed.). Oxford: Blackwell.

Bayon, V., Wilson, J. R., Stanton, D., & Boltman, A. (2003). Mixed reality storytelling environments. *Virtual Reality, 7*(1), 54-63.

Björklund. E. (2008). *Att erövra litteracitet. Små barns kommunikativa möten med berättande, bilder, texter och tecken i förskolan* (Doctoral thesis, Gothenburg Studies in Educational Science, 270). Göteborg: Acta Universitatis Gothoburgensis.

Bonderup Dohn, N. (2009). Web 2.0: Inherent tensions and evident challenges for education. *Computer-Supported Collaborative Learning, 4*, 343–363. doi: 10.1007/s11412-009- 9066-8

Brice Heath, S. (1996). *Way with words: Language, life, and work in communities and classrooms* [with a new epilogue]. New York, NY: Cambridge University Press.

Bruner, J. S. (1996). *The culture of education*. Cambridge, MA: Harvard University Press.

Bruner, J. S. (2002). *Making stories.* New York, NY: Farrar, Strauss and Giroux.

Bruner, J. S. (2006). Narrative and paradigmatic modes of thought. In *In search for pedagogy Volume II: The selected works of Jerome S. Bruner* (pp. 116-128). New York, NY: Routledge.

Burnett, C. (2010). Technology and literacy in early childhood educational settings: A review of research. *Journal of Early Childhood Literacy, 10*, 247-270. doi:10.1177/1468798410372154

Burnett, C., & Merchant, G. (2013). Learning, literacies and new technologies: The current context and future possibilities. In N. Hall, J. Larson & J. Marsh (Eds.), *Handbook of early childhood literacy* (pp. 575-586). London: Sage.

Chong, X. S., & Lee, C. S. (2012). Developing a pedagogical-technical framework to improve creative writing. *Educational Technology Research and Development, 60,* 639-657. doi: 10.1007/s11423-012-9242-9

Coady, M. (2010). Ethics in early childhood research. In G. Mac Naughton, S. A. Rolfe & I. Siraj-Blatchford (Eds.), *Doing early childhood research: International perspectives on theory and practice* (2nd ed., pp. 73-84). Berkshire, England: Open University Press.

Cohen, L., Manison, L., & Morrison, K. (2011). *Research methods in education*, (7th ed.). London: Routledge.

Crook, C. (1994). *Computers and the collaborative experience of learning*. London: Routledge.

Decortis, F., & Rizzo, A. (2002). New active tools for supporting narrative structures. *Personal and Ubiquitous Computing, 6*(5), 416-429.

Docket, S., Einarsdottir, J., & Perry, B. (2009). Researching with children: Ethical tensions *Journal of Early Childhood Research, 7,* 283-29. doi 10.1177/1476718X09336971

Dyson, A. (2001). Where are the childhoods in childhood literacy? An exploration in outer (school) space. *Journal of Early Childhood Literacy, 1*(9), 9-39.

Dyson, A. (2003). Welcome to the Jam. *Harvard Educational Review 73*(1), 328-361.

Edwards, A. (2010). Qualitative designs and analysis. In G. Mac Naughton, S. A. Rolfe, & I. Siraj-Blatchford (Eds.), *Doing early childhood research: International perspectives on theory and practice* (2nd ed., pp. 155-175). Berkshire, England: Open University Press.

Elbers, E., Rojas-Drummond, S., & Van de Pol, J. (2013). Conceptualising and grounding scaffolding in complex educational contexts. *Learning, Culture and Social Interaction, 2*, 1-2. doi: 10.1016/j.lcsi.2012.12.002

Engel, S. (1995). *The stories children tell: Making sense of the narratives of childhood*. New York, NY: W.H. Freeman.

Englert, C. S., Manalo, M., & Zhao. Y. (2004). I can do it better on the computer: The effects of technology-enabled scaffolding on young writers' composition. *Journal of Special Education Technology, 19*(1), 5-21.

Eriksen Hagtvet, B. (2002). *Skriftspråksutveckling genom lek. Hur skriftspråket kan stimuleras i förskoleåldern*. Stockholm: Natur och Kultur.

Erstad, O. (2010). Educating the digital generation: Exploring media literacy for the 21st century. *Nordic Journal of Digital Literacy, 5*(1), 56-72.

Erstad, O., & Wertsch, J.V. (2008). Tales of mediation: Narratives and digital media as cultural tools. In K. Lundby (Eds.), *Digital storytelling, mediatized stories: Self representations in new media* (pp. 21-39). New York, NY: Peter Lang.

Fast, C. (2007). *Sju barn lär sig läsa och skriva. Familjeliv och populärkultur i möte med förskola och skola* (Doctoral thesis, Uppsala Studies in Education, 115) Uppsala: Acta Universitatis Upsaliensis.

European Commission. (2006). Key competencies for lifelong learning: A European reference framework. Directorate-General for Education and Culture. Retrieved from http://europa.eu/legislation_summaries/education_trainin_youth/lifelong_learning/c11090_en.htm

Fleischer, H. (2012). What is our current understanding of one-to-one computer projects: A systematic narrative research review. *Educational Research Review,7*(2), 107–122.

Flewitt, R. (2013). Multimodal perspectives on early childhood literacy. In N. Hall, J. Larson & J Marsh (Eds.), *Handbook of early childhood literacy* (pp. 295-309). London: Sage.

Gibson, I. (2010). Changing landscapes: Rethinking technology practice in teacher education for the 21st century from an early childhood context. In D. Gibson & B. Dodge (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2010* (pp.1435-1442). Chesapeake, VA: AACE

Gelmini-Hornsby, G., Ainsworth S., & O'Malley, C. (2011). Guided reciprocal questioning to support children's collaborative storytelling. *Computer-Supported Collaborative Learning 6,* 577-600. doi:10.1007/s11412-011-9129-5

Gee, J. P. (2000). A sociocultural perspective on early literacy development. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 30-42). New York, NY: The Guilford Press.

Gillen, J., & Hall, N. (2013). The Emergence of early childhood literacy. In N. Hall, J. Larson & J. Marsh (Eds.), *Handbook of early childhood literacy* (pp. 3-17). London: Sage.

Goodwin, C., & Heritage, J. (1990). Conversational Analysis. *Annual Review of Anthropology, 19, 283-307.*

Greiffenhagen, C. (2008). Unpacking tasks: The fusion of new technology with instructional work. *Computer Supported Cooperative Work, 17*, 35-62. doi: 10.1007/s10606-007-9068-x

Greiffenhagen, C. (2012). Making rounds: The routine work of the teacher during collaborative learning with computers. *Computer-Supported Collaborative Learning, 7*, 11–42. doi:10.1007/s11412-011-9134-8

Heikkilä, M., & Sahlström, F. (2003). Om användning av videoinspelning i fältarbete. *Pedagogisk Forskning i Sverige,8*(1-2), 24-41.

Heilmann, J., Miller, J.F., & Nockerts, A. (2010). Sensitivity of narrative organization measures using narrative retells produced by young school-age children. *Languag Testing, 27,* 603-626. doi:10.1177/0265532209355669

Hermansson, C. (2011). Images of writing and the writing child. *Nordisk Barnehageforskning, 4*(2), 41–59.

Heath, C. (2011). Embodied action: Video and the analysis of social interaction. In D. Silverman (Eds.), *Qualitative research* (3rd ed., pp. 250-269). London: Sage.

Holme, I. M., & Solvang, K. B. (1991). *Forskningsmetodik. Om kvalitativa och kvantitativa metoder*. Lund: Studentlitteratur.

Howe, C. (2013). Scaffolding in context: Peer interaction and abstract learning. *Learning, Culture and Social Interaction, 2*, 3-10. doi: 10.1016/j.lcsi.2012.12.005

Hughes, P. (2010). Paradigms, methods and knowledge. In G. Mac Naughton, S. A. Rolfe & I. Siraj-Blatchford (Eds.), *Doing early childhood research: International perspectives on theory and practice* (2nd ed., pp. 35-61). Berkshire, England: Open University Press.

Jansson, A. (2011). *"Almost as a writer" – multimedia narration: Learning for and in storytelling inspired by Vygotsky* (Doctoral Thesis, Department of Education, 8). Stockholm: Stockholm University.

Jordan, B., & Henderson, A. (1995). Interaction Analysis: Foundations and practice. *Journal of the Learning Sciences*, *4*(1), 39-103.

Kramsch, C., A'Ness, F., & Lam, E. (2000). Authenticity and authorship in the computer-mediated acquisition of L2 literacy. *Language Learning & Technology, 4*(2), 78-104.

Klerfelt, A. (2004). Ban the computer – or make it a storytelling-machine: Bridging the gap between children's media culture and preschool. *Scandinavian Journal of Educational Research, 48*(1), 73-93.

Klerfelt, A. (2007) *Barns multimediala berättande. En länk mellan mediakultur och pedagogisk praktik* (Doctoral thesis, Gothenburg Studies in Educational Science, 256). Göteborg: Acta Universitatis Gothoburgensis.

Kress, G. (1997). *Before writing*: *Rethinking the paths to literacy.* London: Routledge.

Labbo, L., & Reinking, D. (2003). Computer and early literacy education. In N. Hall, J. Larson & J. Marsch (Eds.), *Handbook of early childhood literacy* (pp. 338-354). London: Sage.

Lambert, J. (2013). *Digital storytelling: Capturing lives, creating community.* (4th ed.) [EBL Reader].

Lankshear, C., & Knobel, M. (2003). New technologies in early childhood literacy research: A review of research. *Journal of Early Childhood Literacy*, *3*(1), 59-82.

Lantz-Andersson, A. (2009). *Framing in educational practices: Learning activity, digital technology and the logic of situated action* (Doctoral thesis, Gothenburg Studies in Educational Science, 278). Göteborg: Acta Universitatis Gothoburgensis.

Larsson, S. (2005). Om kvalitet i kvalitativa studier. *Nordisk Pedagogik*, *25*(1), 16-35.

Leeuwen, C., & Gabriel, M. (2007). Beginning to write with word processing: Integrating writing process and technology in primary classroom. *The Reading Teacher, 60*(5), 420-429.

Liberg, C. (2007). Läsande, skrivande och samtalande. In *Att läsa och skriva - forskning och beprövad erfarenhet*. Retrieved from www.skolverket.se

Littleton, K. (2013). Adaptation and authority in scaffolding and teacher–student relationships: Commentary on the Special Issue 'Conceptualising and grounding scaffolding in complex educational contexts'. *Learning, Culture and Social Interaction, 2*, 52-55. doi: 10.1016/j.lcsi.2013.01.003

Livingstone, S. (2009). *Children and the Internet.* Cambridge: Polity Press.

Lotherington, H. (2011). Digital narratives, cultural inclusion, and educational possibility: Going new places with old stories in elementary school. In R. Page & B. Thomas (Eds.), *New narratives: Stories and storytelling in the digital age* (pp. 254-276). Lincoln, NE: University of Nebraska Press.

Marsh, J., Brooks, G., Hughes, J., Ritchie, L., Roberts, S., & Wright, K. (2005). Digital beginnings: Young children's use of popular culture, media and new technologies.

Retrieved from http://www.digitalbeginnings.shef.ac.uk/DigitalBeginningsReport.pdf

Marsh, J. (2010). Childhood, culture and creativity: A literature review. Newcastle: Creativity, Culture and Education. Retrieved from http://www.creativityculture education.org/wp-content/uploads/CCE-childhood-culture-and-creativity-a-literature-review.pdf

Mercer, N., & Littleton, K. (2007). *Dialogue and the development of children's thinking: A sociocultural approach*. [EBL Reader]

Miller, R. (2011). *Vygotsky in perspective.* Cambridge: Cambridge University Press

Nicolopoulou, A. (2011). Children's storytelling: Toward an Interpretive and sociocultural approach. *StoryWorlds: A Journal of Narratives Studies,* 3, 25-48.

Nikolajeva, M., & Scott, C. (2001). *How picturebooks work*. New York, NY: Garland.

NMC Horizon Project Short List, 2012 K-12 Edition (2013). Higher Education Edition. Retrieved from http://www.nmc.org/pdf/2013-horizon-k12-shortlist.pdf

Ochs, E. (1979). Transcription as theory. In E. Ochs & B. Schieffelin (Eds.), *Developmental pragmatics*. New York, NY: Academic Press.

Ochs, E. & Capps, L. (1996). Narrating the self. *Annual Review of Antropology. 25*, 19-43.

van Oers, B. (2007). Helping young children to become literate: The relevance of narrative competence for developmental education. *European Early Childhood Education Research Journal*, *15*, 299-312. doi: 10.1080/13502930701679718

Ong, W. J. (2002). *Orality and literacy: The technologizing of the word* (2nd ed.). London: Routledge. [EBL Reader]

Parette, H. P., Boeckmann, N. M., & Hourcade, J. J. (2008). Use of writing with symbols 2000 software to facilitate emergent literacy development. *Early ChildhoodEducational Journal, 36*(1), 161-170.

Plowman, L., & Stephen, C. (2008). The big picture? Video and the representation of interaction. *British Educational Research Journal, 34*, 541-565. doi: 10.1080/01411920701609422

Pramling, N., & Ødegaard, E. E. (2011). Learning to narrate: Appropriating a cultural mould for sense-making and communication. In N. Pramling & I. Pramling Samuelsson (Eds.), *Educational encounters: Nordic studies in early childhood didactics* (pp. 15-35). Dordrecht, the Netherlands: Springer.

Pramling Samuelsson, I. (2006). Teaching and learning in preschool and the first years of elementary school in Sweden. In J. Einarsdottir & J. T. Wagner (Eds*.), Nordic childhoods and early education: Philosophy, research, policy, and practice in*

Denmark, Finland, Iceland, Norway, and Sweden (pp. 101-131). Greenwich, CT: Information Age.

Prop. 1995/96:125. *Åtgärder för att bredda och utveckla användningen av Informationsteknik*. Retrieved from http://www.riksdagen.se/sv/Dokument-Lagar/Forslag/Propositioner-och-skrivelser/tgarder-for-att-bredda-och-ut_GJ03125

Prop. 1997/98:6. *Förskoleklass och andra skollagsfrågor*. Retrieved from http://www.regeringen.se/content/1/c6/02/51/72/0376c7a7.pdf

Peräkylä, A. (2011). Validity in research on naturally occurring social interaction. In D. Silverman (Ed.), *Qualitative research* (3rd ed., pp. 365-382). London: Sage.

Razfar, A., & Gutiérrez, K. D. (2013). Reconceptualizing early childhood literacy: The sociocultural influence and new directions in digital and hybrid mediation. In N. Hall, J. Larson, & J Marsh (Eds.), *Handbook of early childhood literacy* (pp. 52-79). London: Sage.

Robin, B.R. (2008). Digital storytelling: A powerful technology tool for the 21st Century classroom. *Theory into Practice, 47*, 220-228. doi: 10.1080/00405840802153916

Rosén, M (2012). Förändringar i läsvanor och läsförmåga bland 9- till 10-åringar. Resultat från internationella studier. In *Läsarnas marknad, marknadens läsare – en forskningsantologi*. Stockholm: Fritzes Offentliga Publikationer.

Selwyn, N. (2008). From state-of-the-art to state-of-the-actual? Introduction to a special issue. *Technology, Pedagogy and Education, 17*(2), 83-87.

Selwyn, N. (2012). Making sense of young people, education and digital technology: The role of sociological theory. *Oxford Review of Education 38*, 81-96. doi**:**10.1080/03054985.2011.577949

Skantz Åberg, E., Lantz-Andersson, A., & Pramling, N. (2013). 'Once upon a time there was a mouse': children's technology-mediated storytelling in preschool class. *Early Child Development and Care*. doi:10.1080/03004430.2013.867342

Skoog, M. (2012). *Skriftspråkande i förskoleklass och årskurs 1.* (Doctoral thesis. Studies in Education, 33) Örebro University.

Shilling, W. (1997). Young children using computers to make discoveries about written language. *Early Childhood Education Journal, 24*(4), 253-259.

SOU 1997:21. *Växande i lärande. Förslag till läroplan för barn och unga 6-16 år*. Stockholm: Fritzes Offentliga Publikationer.

SOU 1997:157. *Att erövra omvärlden. Förslag till läroplan för förskolan.* Stockholm: Fritzes Offentliga Publikationer.

SOU 2010:67. *I rättan tid? Om ålder och skolstart.* Stockholm: Fritzes.

Spencer, T., Knobel, M., & Lankshear, C. (2013). Researching young children's out-of-school literacy practices. In N. Hall, J. Larson & J Marsh (Eds.), *Handbook of early childhood literacy* (pp. 133-174). London: Sage.

Stephen, C., & Plowman, L. (2003). International Journal of Early Years Education, 11, 223 234. doi:10.1080/0966976032000147343

Stephen, C., & Plowman, L. (2008). Enhancing learning with information and communication technologies in pre-school. *Early Child Development and Care, 178*, 637-654 DOI:10.1080/03004430600869571

Street, B. (2003). What's "new" in New Literacy Studies? Critical approaches to literacy in theory and practice. *Current Issues in Comparative Education*, *5*(2), 77–91.

Swedish Media Council's Annual Report (2012/13). *Småungar & medier. Fakta om små barns användning oh upplevelser av medier.* Retrieved from http://www.statensmedierad.se/Kunskap/Ungar--Medier/Statistik-pa medieanvandningen-hos-barn-08-ar/

Swedish National Agency for School Improvement (2006). *The Swedish pre-school class one of a kind*. Retrieved from www.skolutveckling.se

Sun, J., & Rao, N. (2012). Scaffolding preschool children's problem solving: A comparison between Chinese mothers and teachers across multiple tasks. *Journal of Early Childhood Research*, *10,* 246–266. doi: 10.1177/1476718X11415578

Säljö, R. (2000). *Lärande i praktiken. Ett sociokulturellt perspektiv.* Stockholm: Prisma.

Säljö, R. (2005). *Lärande och kulturella redskap. Om lärprocesser och det kollektiva minnet.* Stockholm: Norstedts.

Säljö, R. (2009). Learning, theories of learning, and units of analysis in research. *Educational Psychologist*, *44,* 202-208. doi:10.1080/00461520903029030

Säljö, R. (2010). Digital tools and challenges to institutional traditions of learning: Technologies, social memory and the performative nature of learning. *Journal of Computer Assisted Learning*, *26*(1), 53-64. doi: 10.1111/j.1362729.2009.00341.x

Säljö, R. (2011). Att lära och minnas i vardagliga verksamheter. In R. Säljö (Ed.), *Lärande och minnande som social praktik* (pp. 13-42). Stockholm: Norstedts.

Säljö, R. (2012). Literacy, digital literacy and epistemic practices: The co-evolution of hybrid minds and external memory systems. *Nordic Journal of Digital Literacy, 7*(1), 5-19.

Takaya, K. (2008). Jerome Bruner's theory of education: From early Bruner to late Bruner. *Interchange, 39*, 1-19. DOI: 10.1007/s10780-008-9039-2

Taube, K. (2011). *Barns tidiga skrivande.* Stockholm: Norstedts.

The New London Group. (1996). A pedagogy of multiliteracies : Designing social futures. *Harvard Educational Review, 66*(1), 1-31.

The Swedish National Agency for Education. (2001). *Att bygga en ny skolform för 6-åringarna. Om integrationen förskoleklass, grundskola och fritidshem. Rapport 201*. Retrieved from http://skolverket.se/publikationer

The Swedish National Agency for Education. (2013). *It-användning och it-kompetens i skolan. Rapport 386.* Retrieved from http://skolverket.se/publikationer

Thorne, S. (2003). Artifacts and cultures-of-use in intercultural communication. *Language Learning & Technology, 7*(2), 38-67.

Thörner, A. (2007). *Att vara sex år och gå i förskoleklass*. Projektrapport från Institutionen för pedagogik, nr 1:2007. Högskolan i Borås.

Urbach, J., & Eckhoff, A. (2012). Release the dragon: The role of popular culture in children's stories. *Contemporay Issues in Early Childhood, 13*, 27-37. doi:10.2304/ciec.2012.13.1.27

Van de Pol, J., & Elbers, E. (2013). Scaffolding student learning: A micro-analysis of teacher–student interaction. *Learning, Culture and Social Interaction, 2*(1), 32-41. doi:10.1016/j.lcsi.2012.12.001

Vygotsky, L. S. (1978). *Mind in society*: *The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Vygotsky, L. S. (1987). *The collected works of L. S. Vygotsky, Volume 1: Problems of general psychology, including the volume* Thinking and Speech (R. W. Rieber & A. S. Carton, Eds., N. Minick, Trans.). New York, NY: Plenum.

Vygotsky, L. S. (2004). Imagination and creativity in childhood. *Journal of Russian and East European Psychology, 42*(1), 7-97.

Wallerstedt, C., Pramling, N., & Säljö, R. (2014). Learning to discern and account: The trajectory of a listening skill in an institutional setting. *Psychology of Music, 42*, 366-385. doi: 10.1177/0305735612472384

Warwick, P., Mercer, N., & Kershner, R. (2013). Wait, let's just think about this': Using the whiteboard and talk rules to scaffold learning for co-regulation in collaborative science activities. *Learning, Culture and Social Interaction. 2,* 42-51. doi: 10.1016/j.lcsi.2012.12.004

Wells, G. (2009). *The meaning makers: Learning to talk and talking to learn* (2nd ed.). [Channel View Publications]

Wells Rowe, D. (2013). Recent Trends in research on young children's authoring. In N. Hall, J. Larson, & J Marsh (Eds.), *Handbook of early childhood literacy* (pp. 423-447). London: Sage.

Wertsch, J. (1998). *Mind as action*. New York, NY: Oxford University Press.

Wertsch, J. (2002). *Voices of collective remembering*. New York, NY: Cambridge University Press.

Wertsch, J. (2003). Commentry on: Deliberation with computers: Exploring the distinctive contribution of new technologies to collaborative thinking and learning. *International Journal of Educational Research, 39*, 899-904. doi:10.1016/j.ijer.2004.11.012

Wertsch, J. (2007). Mediation. In H. Daniels, M. Cole & J. V. Wertsch (Eds.), *The Cambridge companion to Vygotsky* (pp. 178-192). New York, NY: Cambridge University Press.

Wood, J., Bruner, J.S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychological and Psychiatry, 17*(2), 89-100.

Wohlwend, K. (2009). Early adopters: Playing new literacies and pretending new technologies in print-centric classrooms. *Journal of Early Childhood Literacy, 9*, 117-140. doi: 10.1177/1468798409105583

Yelland, N. (1999). Technology as play. *Early Childhood Education Journal*, (*26)*4, 217-220.

Yelland, N., & Masters, J. (2007). Rethinking scaffolding in the information age. *Computers & Education, 48*, 362–382. doi:10.1016/j.compedu.2005.01.010

Yelland, N. (2011). Knowledge building with ICT in the early years of schooling. *He Kupu, 2*(5), 33-44.

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Appendix I

MEDGIVANDEBLANKETT*(för vårdnadshavare till elever under 15 år)*

2013-02-01

Till dig som är förälder till en elev på XXXXXX-skolan

Medgivande till elevens medverkan i en forskningsstudie om lärandeaktiviteter i relation till berättelseskapande och IKT i skolan.

Vid några tillfällen under vårterminen kommer en forskarstuderande vid Göteborgs universitet att genomföra en studie på er skola. För detta behöver vi lärarens, samt föräldrars eller vårdnadshavares medgivande. Den forskarstuderande heter Ewa Skantz Åberg och handledare är Niklas Pramling och Annika Lantz-Andersson.

Nedan följer en kort presentation av studien
Studien kommer att undersöka hur sexåringar skapar berättelser med hjälp av digitala verktyg.
Studiens design innebär att elevernas interaktion i skapandet av berättelser med hjälp av t ex dator kommer att videodokumenteras. Forskningsmaterialet kommer att användas för analys av kommunikationen och samspelet och enskilda elevers prestationer kommer inte att fokuseras eller bedömas. De elever och den personal som medverkar på videoinspelningarna kommer att vara anonyma i den rapportering som kommer ut av studien. Namn kommer att ändras till fiktiva namn i de texter som publiceras av studien. Om bilder från videoinspelningarna används vid rapporteringar kommer även de att anonymiseras så att eleverna inte är möjliga att känna igen. Vi kommer också att samtala med eleverna om deras uppfattningar kring arbetet med berättelserna. Eventuella berättelser kan också komma att samlas in. Materialet kommer sedan att användas inom forskningssammanhang.

De vårdnadshavare som inte givit sitt medgivande att låta sina barn delta i studien eller om barnet själv inte vill medverka i studien kommer han/hon inte att videofilmas.

Allt arbete inom den inledande studien kommer att ske i enlighet med Personuppgiftslagen (1998:204)*.
Inspelningar kommer att förvaras på sätt som innebär att obehöriga inte kan få tillgång till dem. Vi vill betona att det är aktiviteter i relation till digitala verktyg i skolan, som vi är intresserade av och inte av enskilda elever eller lärare.

Personuppgiftsombud för Göteborg universitet är Kristina Ullgren.
Kristina.Ullgren@adm.gu.se. Ansvarig för personuppgifterna är Göteborgs universitet.

Kontaktpersoner vid frågor eller funderingar

Forskarstuderande: Ewa Skantz Åberg
031-7862484, ewa.skantz.aberg@gu.se
Handledare: Niklas Pramling
031-7862563 niklas.pramling@ped.gu.se
Handledare: Annika Lantz-Andersson
031-7862275, annika.lantz-andersson@ped.gu.se

Underskrift av vårdnadshavare

Eftersom denna typ av datainsamling kräver vårdnadshavares medgivande ber vi därför er föräldrar att meddela i talongen nedan om ert barn får delta i denna studie.
Medverkan i undersökningen är frivillig och barnets vårdnadshavare kan när som helst välja att avbryta medverkan. Om eleven själv inte vill medverka i studien kommer han/hon naturligtvis inte att behöva göra det.

_ _

Talongen lämnas in till pedagogerna på XXXXX senast den 11 februari 2013

Medgivande till elevens medverkan i en forskningsstudie om lärandeaktiviteter i relation till berättelseskapande och IKT i skolan

□ Ja, jag ger tillstånd till att mitt barn deltar i studien. Inspelningarna får användas i forskningssammanhang.

Datum:_____ Elevens namn:_____

Målsmans underskrift: _____

Målsmans namn: _____

*Målsmans underskrift: _____

* Vid delad vårdnad, båda föräldrars medgivande

Målsmans namn _____

Appendix II

Transcription key

[	point of overlap onset
]	point at which utterance terminates
(0.0)	lapsed time in tenths of a second
,	comma indicates a gap between utterance which is too short to time, more like a very short pause
(.)	a gap of approximately on tenth of a second
word	underline indicates speaker emphasis
↑ ↓	marked shifts in higher or lower pitch in utterance immediately following arrow
!	animated and emphatic tone
?	rising intonation, not necessarily a question
:	prolongation of immediately prior sound
::::	the more colons the longer the sound is drawn out e.g. ye::ar
(….)	indicates a fading away which is unintelligable
( )	inability to hear what was said
(word)	dubious hearings or speaker identification
(( ))	transcribers descriptions rather than or in addition to transcriptions