How Children can Support Their Learning to Write and Read by Computer in the Early Years of School

Marja Nurmilaakso
University of Helsinki, Finland

Abstract

Over the last decades the nature and form of what children can choose to read has changed radically, partly as a consequence of rapid technological advances and the increasing dominance of the image. The research questions were: 1) *How do children learn to read and write by computer?* 2) *How can one support children's learning during the transition from pre-school to primary school?* and 3) *How can we support learning during the transition from pre-school to primary school in the future?* This work is based on a questionnaire that was sent to kindergarten and primary school teachers in the Helsinki area. Only 27 teachers in the pre-school or primary school answered the questionnaire. Following this, the questionnaire was also sent to kindergarten and primary school student teachers. The results show that that it is easy for children to acquaint themselves with the computer keyboard and that children actually enjoy playing by writing on computer. The respondents said that children must, at first, train to write by hand, then by computer.

Keywords: computer, pre-school, primary school, writing, reading

The current generation of young learners is literally the first of the Information Age. These children are developing in a world infused with the media and digital materials – a world where distinctions between television, computers, films and books are fast becoming blurred, where all experiences are multi- rather than mono-media (Wild, 2000).

Over the last few decades the nature and form of what children can choose to read has changed radically, partly as a consequence of rapid technological advances and the increasing dominance of the image. The multimodal texts now readily available commonly include sound and music, voices, intonation, stance, gesture and movement, as well as print and image, and exist in different media such as computer screen, film, radio and book (Cremin, 2007). These multi-modal texts have changed the ways in which meaning is constructed. Over recent years, there has been increasing attention to the importance of accessing and responding to children's perspectives on issues and events that are relevant for them. This trend has been influenced by several agendas, for example,

the United Nations Convention on the Rights of the Child, which recognises children's rights to be consulted and heard on matters that affect them. Underpinning these approaches to listening to children's voices has been the philosophy that children are valued as people, as citizens, right now, as well as for the contributions they may make in the future. In this way, early childhood is not regarded as merely a preparation for later adolescence and adulthood. Children are skillful communicators who utilise a range of strategies to share their expertise. They are active agents, who influence the world around them, as well as being influenced by it (Dockett & Perry 2012). Instead, teachers' attitudes to computers and media are sceptical. Tella (2003) acknowledges that teachers' resistance to multimedia, such as computers and mobile phones, in education is worrisome because teachers, at all levels, are key in shaping the knowledge society. Possible reasons for teachers' low motivation to use technology in their teaching could stem from a fear of seemingly obscure and dauntingly complex concepts such as e-learning, which, according to Tella (2003), is a kind of cliché. Karevaara and Thuss (2002) also stress that few teachers really understand what "technologies" mean. Chen and Chang (2006) are of the same opinion. Although computer technology has been recognised for its great potential to enhance teaching and learning, the results of various studies indicate that many early childhood teachers are not ready to integrate computers into the classroom.

Stephen, Ellis and Martlew (2010) studied active learning pedagogical practices that are familiar in pre-school settings in the 1st form of primary school. According to them, no one task or form of interaction could be identified as more engaging than another for children. The more open-ended activities where children interacted with peers at small world play, shared books, searched together for letters to build words, explored number bonds produced periods albeit with distractions, of involvement and some examples of intense and sustained engagement. On the other hand, some children were observed to be engaged (sometimes intensely engaged) when painting or drawing, copying words, writing "number stories", engaging in the construction or involved in imaginative play on their own. Vygotsky (1994) wrote imitation and instruction play major roles in a child's development. They bring out the specially human qualities of the mind and lead children to new developmental levels. In learning to speak, as in learning school subjects, imitation is indispensable. What children can do through co-operation today, they can do alone tomorrow.

Learning to Read and Write by Writing on Computer

How Children Learn to Read and Write

According to the Core Curriculum for Pre-school Education in Finland (2010), children should be told fairy tales, stories, narrative factual texts, poems, etc., so as to provide a chance for them to enjoy what they hear. Children will live with what they hear, they will obtain material for their thinking, and their ability to understand their own and other peoples' lives will strengthen. They will start to understand the significance of reading. They will become interested in asking questions, drawing conclusions and evaluating what they have heard. The objective shall be to inspire children's interest in observing and exploring the spoken and written language. The targets of exploration may include various texts, expressions, individual words, letters and sounds in a context that is meaningful for children. The development of linguistic awareness shall be

supported through playing with language, talking nonsense, rhyming as well as through exploring the written forms of language diversely. Children will gain experience of how to convert speech into written language and writing into spoken language both through examples see by adults and through their own attempts to read and write.

In studies that were made about fifteen years ago, some staff had reservations that the presence of a computer would create a situation in which competition to use the computer might cause conflict among the children. Other staff thought that some children might be excluded because of a lack of skills or that some children would want to spend their time exclusively engaged in computer-based activities. After a great deal of discussion and reflection, the decision was made to purchase a computer as well as a table specially designed to accommodate the size of the children so that access would be as easy as possible. After two months, the staff were convinced that they had made right decision (Wild 2000).

Wild (2000) claims that a computer programming language specially created for children of pre-school and primary age would radically change the ways in which young children learn in schools. Computers can provide a context for learning in which socialisation would be based on the potential of the individual, an empowering sense of one's own ability to learn anything one wants to know, conditioned by deep understanding of how these abilities are amplified by belonging to cultures and communities. Digital storytelling facilitated professional dialogue in several ways (Savvidou, 2010). Firstly, it allowed for asynchronous communication, so that stories were exchanged without constraints of time or place. Stories were responded to within several days or weeks and were recorded in lecturer's offices or homes later to be uploaded onto the departmental website. Moreover, the flexibility of digital storytelling created the potential for participants to be both consumers and tellers of stories.

According to Burnett (2010), whilst studies of reading explore literacy learning as a process of interaction between the child and the computer as a surrogate teacher, studies of writing use the computer as a stimulus for children's composition. In both sets however, the focus is on literacy as an individual endeavour with multimedia elements designed to meet objectives associated with the existing print literacy curriculum. Technology's position is as a delivery of literacy (Burnett 2010).

The Norwegian pedagogue Arne Trageton (2007), in his project "Playful Computer Writing" studied six-year-old children in classes in different parts of Norway, three in Denmark, one in Finland and one in Estonia. The project started in 1999. Trageton followed these children for three years. Students had in their classrooms some computers, where only word processing was possible. The schools got old computers from firms, from the community and from parents. All writings were created in printed letters. Formal handwriting, usually taught in the 2nd form in Norway, was delayed to the 3rd form. Trageton's assumption was that the children then would learn formal correct handwriting much faster than in the 2nd form. According to Trageton, it saves time for more important areas in language education.

How a Teacher can Support a Beginning Reader or Writer

According to Vygotsky's (1978), what a child can do in cooperation today he/she can do alone tomorrow. Therefore, the only good instruction is that which marches ahead of development and leads it.

Bronfenbrenner (1970) talked about a broadened conception of the teacher's role. Not only must he/she herself function as a motivating model, but it becomes his/her responsibility to seek out, organise, develop and coordinate the activities of other appropriate models and reinforcing agents both within the classroom and outside. The total school should be actively involved in furthering the development of the older child and, subsequently, younger children in the process. For pre-school or primary school children, an older child, particularly of the same sex, can be a very influential figure, especially if he/she is willing to spend time with his/her younger companion. For example, in pre-school or primary school, pupils can have "a older brother or sister". In this case, it becomes the responsibility of the older pupil to get to know his/her younger "sibling" and his/her family, to escort him/her to and from school, play with his/her friends, teach him/her games and, last but least, become acquainted with his/her progress and problems in school, reading with and him/her, helping and encouraging him/her to learn.

Children are naturally disposed to playing with words. An educator guides children's observations, teaches them how to act in different situations, describes and explains events. Children are offered models for learning languages and concepts, and they are spoken to in such a way that they understand. For the child's developmental environment to support the development of language skills, it should be stimulating and activating. The environment should allow the child to observe both spoken and written language.

It has been observed that children's engagement in a activity rose when there was a supportive adult (not necessarily a teacher) alongside, but fell there was no help to remind the group about each stage of a task (Stephen, Ellis, & Martlew, 2010).

Purpose of the study

The Research Questions and Method

The research questions were: 1) *How do children learn to read and write by computer?* 2) *How can one support learning during the transition from pre-school to primary school?* and 3) *How can we support learning during the transition from pre-school to primary school in the future?*

The research method was an e-questionnaire. The questionnaire was sent to kindergarten teachers and primary school teachers in the area of Helsinki. 27 pre-school or primary school teachers answered the questionnaire. Also, 47 pre-school or primary school pre-service teachers answered the questionnaire. There were a total of 71 respondents in this study.

The research method used was an e-questionnaire. Firstly, there were background questions on, for example, age and education. Secondly, there were 19 questions relating to the first research problem about how children learn to read and write by computer. Thirdly, 43 questions related to the second problem in this study about how a teacher can support a child when he/she goes from pre-school to school. Lastly, 18 questions related to the third research problem about what may happen in the future.

This study used quantitative methods. The variables were measured on an ordinal (Likert) scale that offered five options. The data was analysed using SPSS (Tabachnick & Fidell, 2001), revealing frequencies and percent of interest. For each of three research problems there was an open question, providing qualitative data.

Results

How a Child Learns to Read and Write by Computer

Nearly all the teachers (n = 71) thought that it was easy for children to use the keyboard of a computer (fully agree or quite agree).

Table 1
How a Child Learns to Read and Write by Writing on Computer

	Disagree	Partly disagree	I can't say	Partly agree	Fully agree
(1) It is easy for children to acquaint themselves with the keyboard of a computer		4,2	9,9	69.0	16.9
(2) Writing on computer, children learn to see connections between the letters which they make and which they know	1.4	8.5	22.5	46.5	21.1
(3) Easiness to make letters stimulates children to try out more letters		4.2	5.6	43.7	46.5
(4) Children enjoy writing on computer			11.4	34.3	54.3
(5) Easiness to make signals stimulates children to find the correct letters little by little		2.8	21.1	49.3	28.8
(6) When children write on computer, they have a feeling that they can write		4.3	21.4	52.9	21.4
(7) Pre-school children should be able to use a computer every day	25.7	48.6	8.6	12.9	4.3
(8) In the early years of school, children must have a chance to work with a computer daily	11.3	42.3	12.7	23.9	9.9

All research questions included an open question. In this case the question was: *What is the best and what is the worst when a little child learns to read and write by writing on computer?* No less than 22 respondents said that it was very easy to correct mistakes. Some thought that it takes less time to write on computer (n = 10). Eight teachers thought that it was good for children to learn to use computers. Computers are today's technology. Five respondents said that writing on a computer motivates children to write more, and that it is also fun to use computers.

At the same time, the respondents said that children's handwriting suffers (n = 23). Six people were scared that children might become too dependent on computers. Some teachers thought that working with computers causes tiredness, headaches and other physical symptoms

How a Teacher can Support a Child's Learning during the Transition from Pre-School to Primary School

The respondents answered a question about how teachers can support learning during the transition from pre-school to primary school (Table 2)

As far as the open question is concerned, the respondents were asked whether it is essential or not that pre-school children learn to write by writing on computer. 36 in-service and pre-service teachers believed that was not necessary. No less than 14 out of 58 thought that a child should have time in primary school classes to learn to use com-

puters. Some respondents also said that a child of pre-school age was too little to use computers. 31 in-service and pre-service teachers said that computers were a part of present-day life. Many respondents were afraid that children's handwriting would suffer. What if children fail to learn to write by hand?

Table 2
How Teachers can Support Learning in the Transition from Pre-School to School

	Disagree %	Partly disagree %	I can't say %	Partly agree %	Fully agree %
1) When children are already used to writing by computer in pre-school, it is easy for them to go school, where learning by computer is a daily event		1.4	8.5	50.7	39.4
2) In pre-school, children can create by computer more demanding stories as they could make by hands	4.2	16.9	36.6	38.0	4.2
3) It is easy to expose children to language games on the Internet	1.4		5.6	43.7	49.3
4) When pre-school children learn to read by writing on computer, it helps in other areas concerning their mother language		5.6	38.0	42.3	14.1
5) In pre-school, children must learn to write by hand and only then – on computer	4.2	15.5	28.2	32.4	19.7
6) In pre-school, children can use and develop both their handwriting and computer writing		5.6	7.0	50.7	36.6

The third problem in the study was how to support children's learning during the transition from pre-school to primary school (Table 3).

Table 3
How Teachers can Support Children's Learning during the Transition from Pre-School to Primary School

	Disagree	Partly disagree	I can't say	Quite agree	Fully agree	N
1) There will be no need for books in pre-schools and schools in the future, and computers will take the place of books	57.7	28.2	8.5	4.2	1.4	71
2) Both books and laptops will be used in pre-schools and schools in the future	2.8	12.7	16.9	53.5	14.1	71
3) In the future, critical literacy will be important		1.4	19.7	36.6	42.3	71
4) It is also fun to learn to read and write by computer			21.4	52.9	25.7	71

21 in-service teacher and 32 pre-service teachers stressed the importance of social and interaction skills (n = 53). Quite a few teachers were concerned that children's handwriting would suffer (n = 12). The respondents said that, in the future, these would

be situations where we would not be able to write using a computer. Many people thought that computers were dangerous for children's health. They might result in children's addiction to computers.

The third the open question was: *What is important to remember when computers are commonplaces in the future and children learn to write by computer?* Once more the respondents said how important it is for children to be able to develop their hand-writing skills. Also, many stressed the importance of communication between children, adults and teachers. Somebody noted that a child must still be a child. Computers shorten childhood.

Conclusions

About 80% of the teachers thought that it is easy for children to come across computers in the daily life. Children are born to a multimedia world. Whereas the teachers do not understand that children really enjoy writing. They imagine that they can write. And when children enjoy writing, then it becomes easier for them. If a child finds that writing is easy and sees that his/her knowledge of writing or writing skills is improving then this will also help the child to correct his/her own writing. When a child writes for a time, he or she is usually pleased with his/her work. In this way, learning becomes self-remedial. Teachers don't need to correct mistakes.

Most respondents thought that the best way for children to learn is to write and practise both by hand and with a computer. Most respondents said that then it is easier for children to begin school that operates with computers. But, in Finland, it is very seldom that children, especially in pre-school, work with computers daily. If there is a computer in the class, it is usually in the corner of the room. Laptops are uncommon. We have games in Finland on the Internet that make it easy to support early literacy, and they are free f charge. Clearly, the respondents perceived games as entertainment, not as tools that support language learning. Following Whitehead (2011), several technologies for writing should be available: rubber pads, ink stamps, computers and printers with word-processing software and concept keyboards for the younger children. Information and communication technology can extend children's knowledge of the alphabet and their awareness of marks of spacing and typefaces.

The respondents thought this was very out of date. Respondents answered that paper books aren't missed. Computers cannot take the place of books. At the same time, the respondents thought that one of the most important tasks in the future will be to teach children to be critical learners that is the way one practises writing and reads what someone has written. We still need handwriting, but it is easier for many children to practise writing on computer. Exercises by something else as by pen is not a new matter. In 1968, Hainstock (1968), in her book on Montessori pedagogy, argues that it is important that a child has mastery of the pencil before learning letters, and she includes some set inset geometric exercises. This also enables the child to perfect his/her eye-hand coordination and control, without which good writing is not possible. When he/she becomes adept at working with these insets and has good pencil control, he/she is then able to begin actual letters and, soon after, words. Hainstock stresses Montessori's famous idea: reading and writing go hand in hand. The child learns as his hand is written. Most children handle letters and become familiar with them before either reading and writing is possible.

In this study, many respondents thought that children in pre-school need learn to write and read. Nevertheless, Vygotsky (1978) said that, if younger children are capable of discovering the symbolic function of writing, as Hetzer's experiments have shown, then the teaching of writing should begin in pre-school. Vygotsky also underlines that writing is neither a motor skill nor a complex cultural activity. Writing must be relevant to life. Moreover, according to Nurmilaakso (2009), we must always remember the culture in which we live when we speak of the future (see also Reunamo & Nurmilaakso, 2007). Pedagogical views are deeply rooted in the functions of our basic understanding of early childhood learning. These roles also call for a new interpretation of children's use and learning of language. Language is not just a means for communicating or understanding; it also an important ingredient in cultural production. Learning and teaching are interwoven and they cannot be considered separately. In the future, the teacher's task will be to understand the link between different types of learning and different pedagogies and to choose the most appropriate for any given situation.

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Correspondence concerning this paper should be addressed to Marja Nurmilaakso, PhD, Opettajankoulutuslaitos, Department of Teacher Education, P.O. Box 9 (Siltavuorenpenger 7), FIN – 00014, the University of Helsinki, Finland. Email: marja.nurmilaakso@helsinki.fi