The Role of Parents in Guiding Pre-School Children's Use of Computers and the Internet: Analyzing Perceptions of Estonian Children and Parents

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Abstract

Focus group interviews with pre-school children (N=61) and parents (N=20) were carried out to study their perceptions of young children's computer use and parental mediation strategies. Our results indicate that young children make active use of computers mainly for entertainment and less so for educational reasons. However, rather than enhancing children's digital literacy development with active mediation, parents either delegate their role as mediators to older siblings or enforce restrictions. The findings may help parents and educators to critically assess their own mediation practices, choose appropriate activities for children and strive to integrate developmentally appropriate uses of computers and the Internet at home and in pre-school settings.

Keywords: *pre-school children, computer and Internet usage, the role of parents as guides, pre-school*

Introduction

Due to rapid changes in the technological environment, parents of the children in the digital generation (Tapscott, 1998) have been challenged to gain new knowledge about the opportunities and risks involved in the use of ICT. Although the knowledge gap between children and their parents is gradually decreasing (Livingstone & Haddon, 2009), research indicates (Valcke, Bonte, Wever, & Rots, 2010; Kirwil, Garmendia, Garitaonandia, & Martínez-Fernández 2009; Livingstone & Helsper, 2008) that adults still often struggle in their roles as supervisors and mediators of children's online activities.

Although parents in many countries are faced with the need to work out strategies to mediate their children's Internet use, empirical studies reveal that parental meditation strategies may vary greatly in different countries (Kalmus & Roosalu, 2011, p.4). These differences are not just based on individual-level

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variations, but orientations in terms of individualistic or collectivistic values (Kirwil et al., 2009), the types of welfare arrangements and the underlying gender regimes in different countries (Kalmus & Roosalu, 2011). All of these have impacts on the formation of the predominant parental approaches to mediating children's Internet use. In fact, as welfare regimes have been found to "foster the outsourcing of socializing tasks to public childcare", authors have highlighted the growing need to include media education in the curricula of pre-schools and primary-schools (Kalmus & Roosalu, 2011, p.13).

In the context of Estonia, it is important to note that, although the Estonian Pre-school Child Care Institutions Act (1999) declares that both the home and pre-school should share responsibility in supporting the growth and development of the child, presently the teacher education system does not support awareness-raising among teachers on the topic (Loit & Harro-Loit, 2010), and media education is not included as a subject in the National Curriculum for Pre-school Child Care Institutions (2008). At the same time, research suggests that Estonian pre-school teachers are reluctantly starting to acknowledge the need to mentor parents on this theme (Siibak & Vinter, 2010).

Considering the above, this paper proceeds from the assumption that, through the different nature of their social relationships with children, parents and teachers play distinct roles in guiding children's use of computers and the Internet, and by doing so have an impact on their digital literacy development. As young children's computer use has been met by polarized opinions – computers being detrimental to health and learning *vs.* computers being a tool which facilitates children's social and intellectual development (Plowman & Stephen, 2003) – we argue that it is crucial for practitioners to be aware of children's practices in the home environment so as to support the traditional aspects of education in the pre-school setting, as well as "to increase young children's familiarity with contemporary social practices" (McPake & Plowman, 2010).

We believe that by providing an overview of young children's computer and Internet use and parental mediation practices from the perspective of two related parties (i.e. children and parents), we are able to reveal important elements of young children's everyday lives which may be used to make an important contribution to the teaching practices.

Young Children's Computer Use

In recent years, the hype surrounding the new, technology-savvy generation has also led to discussions about the role of ICT in the lives of pre-school children (Plowman, Stevenson, McPake, Stephen & Adey, 2011; McKenny & Voogt, 2010; O'Hara, 2011; Dhingra, Sharma, & Kour, 2009; Zevenbergen & Logan, 2008). In fact, as present-day young children have access to a wide range of technologies, Plowman, McPake and Stephen (2010, p.72) declare that we are witnessing "a technologization of childhood".

Studies reveal that, although two- to five-year-olds usually use the Internet under the supervision of an adult (Findhal, 2009), a significant number of four- to six-year-olds are capable of using computers without any parental assistance (Rideout, Vandewater & Wartella, 2003). Furthermore, studies (Zevenbergen & Logan, 2008; Calvert, Rideout, Woolard, Barr, & Strouse, 2005; Rideout et al., 2003) indicate that pre-school children have developed a high number of skills through their use of computers (c.f. Plowman et al., 2011).

The Influence of Home and Parental Mediation Strategies on Children's Computer Use

By mediation strategies, we refer to the parental management of the relationship between children and computers and the Internet. Therefore, in many respects, the concept of mediation is closely connected to Vygotsky's (1978) pedagogical term "scaffolding", which marks a situation where a child accomplishes more through the assistance and encouragement of siblings or adults than by doing a task alone.

Livingstone, Haddon, Görzig and Ólafsson (2011) differentiate between four main parental mediation categories: monitoring, active, restrictive and technical mediation. Research suggests that restrictive mediation or setting rules that restrict Internet use (e.g. of particular applications or activities), is often practised through setting concrete time restrictions on a child's computer use (Dhingra et al., 2009; Rideout et al., 2003). Active mediation or encouraging or sharing and discussing a child's online activities and being present or nearby when a child is online, is also quite often practised when supervising the computer use of preschoolers (Findhal, 2009). By contrast, technical mediation, when a parent uses software or parental controls to filter, restrict and monitor a child's computer use, and monitoring, when a parent checks the available records of a child's Internet use, tend to be more actively practised by parents of tweens and teens (Rideout, 2007; Mitchell, Finkelhor & Wolak, 2005).

Another theoretical framework connected to mediation practices through an emphasis on the role of offering examples for children is Bandura's (1997) Social Cognitive Theory. Significant others not only act as mediators of young children's computer use but through observational learning (Bandura, 2001) can also be regarded as important role models. Researchers following the eco-cultural approach, which suggests that a child's learning cannot be separated from the environment it takes place in, argue that "learning at home is a co-constructed outcome of the activities and cultural practices children engage in with others and consists of the intergenerational, informal practices that suffuse family activities" (Plowman et al. 2011, p. 366). In other words, as "the family habitus (practices and culture)" has an impact on the child's engagement with ICT (Stephen, McPake, Plowman, & Berch-Heyman, 2008, p. 24), children's

technological competence and digital literacy skills may vary considerably when children enter pre-schools (McPake & Plowman, 2010).

In addition to parents, researchers have also noted the significant role of older siblings in acquainting younger ones with new technology and also helping them to overcome the difficulties and technological problems they may face in online settings (Plowman et al., 2011). Although older siblings have sometimes been known to introduce activities that are not favored by parents (Plowman, McPake, & Stephen, 2008), they have also been found to act as gate-keepers who restrict, ration and block younger children's access to technology (O'Hara, 2011).

Research design

In order to analyze young children's computer use and parental mediation practices, focus group interviews with preschoolers and parents were carried out. We were interested in finding out (1) how preschoolers make use of computers and the Internet in their everyday lives; and (2) what kind of parental mediation strategies they have noticed being undertaken by their parents. We were also interested in finding out (3) how parents perceive children's computer use and (4) what kinds of strategies they employ as mediators.

We decided to rely on the qualitative approach, and focus group interviews in particular, mainly for two reasons. First of all, as the topics under discussion were relatively new for both parties, direct contact with the respondents not only allowed us to ask specific questions, but also supported in-group content creation, thereby enriching the data. Secondly, we relied on the fact that pre-school children are familiar with discussing issues in groups from pre-school (Darbishire, MacDougall, & Schiller, 2005).

Participants

The data in these two studies were collected from a sample of 61 pre-school children and 20 parents. The participants were not related to each other, as our aim was not to analyze different perceptions of parental mediation practices within one family, but to get a more general understanding of the interpretations on this topic. When selecting pre-schools, we decided that they should be municipal and located in geographically different regions of Estonia (a large city, a small town and a rural area). Pre-schools were informed of the aims of the study and those willing to participate formed the basis of our sample.

Children

After receiving consent from the pre-schools, the leading author met with the parents of all the children in the sample to introduce the research aims and pro-

cedures, as well as to offer parents an opportunity to ask specific questions. All the parents attending the meeting also received a special consent form to allow their children to participate. The sample of children (N=61; 31 from the city, 18 from the town and 12 from rural areas) was comprised of only those children whose parents had signed consent forms.

In order to minimize possible peer pressure, the focus groups with children were comprised of preschoolers from two different groups. There were approximately equal numbers of boys (n=31) and girls (n=30) in the final sample. It is important to note that childcare institutions in Estonia are crèches – for children up to 3 years of age and pre-schools – for children up to 7 years of age. All of the children in our sample were pre-school children between the ages of 5.5 and 7.

This particular age group was selected as children at this age are quite capable of expressing themselves verbally (Darbishire et al., 2005), and could therefore purposefully reflect on their experiences. Furthermore, our choice was also influenced by the claims that research from an adult perspective tends to assess children through a filtering process, diminishing the weight of the children's own insights (Lansdown, 2004), and the fact that children have been considered to be "more reliable than adults in answering questions about the degree of parental mediation practised at home" because parents tend to over-report their mediation and typically face normative pressure (Lwin, Stanaland, & Miyazaki, 2008, p. 208).

Parents

Mailing lists from an additional three additional randomly selected pre-schools were used to find participants for the focus groups with parents. Parents were informed of the general aims, form, date and approximate duration of the focus groups via e-mails.

As participation in the study was voluntary, our final sample (N=20; seven from the city, seven from the town and six from the rural area) was comprised of parents whose children attended nine different pre-school groups. Over all, there were eight fathers and twelve mothers between the ages of 24–52. More than half (N=12) of the parents had at least two children and nine of them had children older than eight years of age in their family.

Method and procedure

Focus Groups with Children

The leading author of this paper, who is also a former pre-school teacher, conducted all 25 focus groups with the children, which took place from September to December 2010. The majority of the focus groups were mixed-gender, with

three to six members (usually five or six) in each because three pilot focus groups which were conducted to refine and improve the interview questions showed that children felt more at ease in bigger groups with an unknown adult moderator. Generally, two focus groups per day were carried out.

When conducting focus group interviews with children, we relied on the experiences of Darbishire et al. (2005). The focus groups included 30 predetermined open-ended questions in total (e.g. What do you like to do on the computer? With whom do you usually do things on the computer? Who usually helps you with the computer? What are your favorite activities? What do you want to know more about on the computer?) However, the exact wording of the questions was flexible and depended on the responses given by the respondents. The interview questions were listed in three themed blocks: children's favorites on the screen (nine focus groups, N=42); preferences and emotional responses to the screen (nine focus groups, N=44); and children's observations about media content and parental mediation (seven focus groups, N=35). Most children participated in two different themed focus groups, but not more. Despite our initial aim of covering just one topic per focus group, analysis of the data collected indicated that the children had described their observations about parental mediation in every focus group. Hence, material from all of the focus groups was used to compile this article.

Each focus group lasted approximately 15–30 minutes. All interviews were audio-recorded and transcribed. Themes were explicated and analyzed from the recorded interviews until data saturation began to emerge. For example, as no significant differences emerged in the answers given by the children, fewer focus groups were conducted on the one theme of children's observations (nine instead of seven).

Focus Groups with Parents

After studying the children's opinions, the leading author of the paper conducted three focus group interviews with parents of pre-school children (N=20), in January and February 2011. The groups consisted of parents from three or four different pre-school groups within one pre-school. All of the focus groups with parents were mixed-gender, with six or seven members in each.

Open interview questions from the children's interviews as well as questions from the pre-school teachers' focus groups (Siibak & Vinter, 2010) were used to prepare the predetermined interview questionnaire. The interview questions were pilot-tested in one focus group so as to clarify and reformulate questions before the main study.

During 45-minute to two-hour interviews, parents were asked to reflect upon their mediation practices, their children's overall media consumption habits and the possible influences of their practices. All of the interviews were recorded

and transcribed. The themes were explicated and analyzed from the recorded interviews until data saturation began to emerge.

Data Analysis

Analysis of the empirical data was performed in two phases. After transcribing the interviews, the researchers were ready for the formal process of analysis, and thus the verbatim transcripts were read to get an overall sense of the data.

In the first phase, two independent researchers analyzed the interviews from both of the studies separately. The format was organized around categories that emerged from the data and based on the research questions. The data interpretation was cyclical, starting with line-by-line coding, which was then established in an organized structure. In coding, we considered only those statements that concerned the computer and Internet usage of children, and the adults' roles as mediators. After open coding, we selected the categories that were most crucial to the research questions and searched for evidence from as many different text sections as possible, as well as structuring the relationships between categories.

The lead author of the article used the NVivo program to analyze the data, while the other author made use of the procedures of the grounded theory approach. This approach was selected for the analysis as it made it possible to move between data collection and analysis in terms of coding and creating models. However, relying on the analysis of Hutchinson, Johnston and Breckon (2010), who claim that NVivo data analysis software can be used to encourage good quality, grounded theoretical research by facilitating many of the iterative characteristics associated with this technique, we decided to combine these two different approaches to ensure reliability in interpretation, including triangulation across authors and approaches.

In the second phase of the analysis, coded categories were compared and consensus was reached in terms of the major categories, all of which were supported by specific examples from the interview transcripts. However, relying on the arguments by Udo Kelle (2005), who suggests that "empirically grounded theory building starts by making a careful choice among a variety of concepts with diverging theoretical backgrounds", we made use of our own previous theoretical knowledge to identify theoretically relevant phenomena in the data and to clarify the concepts used in our own analysis.

Results

Children's Understanding of the Need for and Use of Computers

Most of the children in our sample used computers. Only two of the 61 children interviewed said that they were not active computer users.

Our findings suggest that children usually associate computers with their parents' work. In fact, the children often talked about parental computer use as a negative factor, associated with the ability to spend less quality time with their parents.

> *Girl (five-year-old): I don't like it when my mum writes on the computer and doesn't come and play.*

Based on the children's observations of their parents' computer-related activities, the main opportunity our respondents associated with computers was the ability to search for information (buying a car, choosing an apartment, searching for a recipe, looking at weather forecasts and timetables, etc.), but the children were also familiar with the opportunities connected to entertainment, fun, games and communication. For example, the most common computer activities mentioned by the children had to do with playing computer games, visiting children's websites, listening to music and watching videos on YouTube or reruns of TV shows. Some children also appreciated the chance to socialize via Skype or e-mail. All of the above show that children acquire knowledge about different ways of using computers by observing their parents.

Our interviews indicate that the children associated computer use with four keywords: computer viruses, eye health, the existence of pay-to-play online games and technical knowledge (e.g. downloading programs, connecting the computer to the TV and developing an understanding that computers can replace other media). Still, although the children were aware of the health-related and material threats associated with computers, they were not able to perceive these threats from a social or cognitive point of view.

> *Girl (six-year-old): You'll have to get glasses or you'll get an eye infection if you use the computer too much!*

The results presented in this section represent all of the main themes related to computer use that the parents had emphasized and explained to their children.

Parental Observations of Children's Computer Use

Visiting educational children's websites (e.g. www.lastekas.ee) and playing informative computer games were considered the most positive things young children could do online. A discrepancy in parents' opinions and children's

experience lies in the fact that parents mostly described "edutainment" and adventure games and only rarely mentioned the games children considered most appealing (e.g. racing and action games). However parents did acknowledge children's interest in YouTube videos and photos.

> *Mother of a six-year-old girl: ... my daughter likes educational games. Her favorite is Leo the Lion, who helps children on the police website.*

> *Mother of a five-year-old boy: He usually asks to see accidents involving trains and planes on YouTube, and I don't like that at all.*

Advertisements on children's websites and frightening web content (e.g. accidents and deaths) were named as the key negative aspects related to children's computer use.

Parental Mediation Strategies: Children's Observations and Parents' Opinions

On the basis of the research material, it is possible to point out five different activities related to parental mediation practices: observing the child's use of computers, setting time restrictions, setting content restrictions, giving instructions/teaching a child and prohibiting the child's computer use as a punishment. In other words, our focus groups indicate that Estonian parents mainly use restrictive, active and technical mediation practices in order to guide and supervise their children's computer and Internet use. Monitoring practices were not mentioned by either the parents or the children participating in our study.

Restrictive Mediation

Our interviews with children suggest that parents quite often employ restrictive mediation. Although children mentioned time restrictions much less frequently than did parents, some children did mention having specific time limits when using the Internet.

> *Boy (seven-year-old): [unhappily] I'd like to play online more, but my mum and dad won't let me.*

The interviews with the parents, however, indicate that the time limits set differed greatly and were in fact rather vague. For instance, there were families where children were allowed to use the computer only every other day or a couple of days a week, whereas in other families children could spend around 15 minutes a day using the computer. The average time restriction was one hour.

> *Mother of a six-year-old boy: Yeah, I've told him more than once that he can't sit there all night – we've made a deal as to how much time he can spend on it: half an hour, say...*

Compared to the time restrictions, the interviewed children did not perceive that they had many restrictions regarding accessing specific web content. In fact, only one child mentioned that she was not allowed to look at "pictures for adults". The focus group with parents, on the other hand, highlighted a wider variety of content that parents tried to prevent their children from accessing. For instance, some had prohibited their children from playing action games or watching violent content.

Our interviews also revealed that access to computers was often also used as a means of discipline. On such occasions, the computer use was forbidden if a child misbehaved.

> *Mother of a six-year-old boy: ...sometimes I've warned him that if he acts up he won't be allowed to use the computer.*

The data obtained shows that the parents of boys tend to talk about restrictions more, and highlights that boys are more interested in computers than girls at an early age.

Active Mediation

Although the children in our study did not mention the practice, some of the parents revealed that they tried to be in the room when their children were using the Internet.

> *Mother of a five-year-old boy: I always sit at the desk next to him, reading or something.*

Furthermore, parents also talked about taking an active role in mediating their children's online safety. It appears that most of the parents had taken the time to initiate questions and discussion about what their children had seen online. By doing so, the parents had also tried to provide explanations about web content, for instance by helping their children distinguish between "real" and "virtual" life, and warning them about Internet-related dangers.

> *Mother of a six-year-old boy: I've told him that computer games and computer life aren't real life.*

All in all, we were able to distinguish three different kinds of warnings parents usually gave their children.

The first group of warnings was related to the physical wellbeing of children. Such warnings were most often concerned with potential health problems (e.g. eye problems) related to using the computer for too long.

> *Father of a seven-year-old boy: We've also said that you shouldn't be on the computer for too long as it's not good for your eyes to be too close to the screen.*

The second group of warnings relate to the technical aspects of computer use. Although children named computer viruses as the most common threat their parents had informed them about, parents also notified children about advertisements and pay-sites.

> *Father of a seven-year-old girl: We've helped her register for some sites. But we've talked about viruses and advertisements, too.*

The third group of warnings was concerned with risks related to unwanted online contact; parents had asked their children to be cautious when communicating with strangers.

> *Father of a six-year-old girl: My dad also said that you shouldn't talk to strangers on the Internet.*

Our study revealed three controversial aspects worth further research. Parents in our sample said that they tried to help and teach their children how to do things online (e.g. how to play games, how to register as a user on websites etc.), and actively mediated their children's computer use. However, the children in our study did not describe their computer activities as joint activities involving their parents. In addition, our findings indicate that siblings, especially older brothers and sisters, play a major role in guiding and supervising young children's Internet and computer use. In fact, both interviews with parents and children highlight the fact that rather than engaging in active mediation of their children's online activities themselves, they relied on older siblings to take up this task.

> *Mother of a six-year-old boy: We don't monitor his computer use – his brother's right next to him most of the time.*

Furthermore, the parents fully trusted their older children to make the right choices in terms of both selecting the web content accessed by their younger children and teaching them the necessary computer skills (e.g. in games).

Father of a six-year-old boy: He goes onto the Internet with his sister. Then he's allowed… he can play a game she picks for him.

Mother of a six-year-old girl: It's his older brother that gives him information about the computer and the Internet, not me or my husband.

Technical Mediation

Among the parents participating in our study, technical mediation was less frequently used – and only employed to limit their children's Internet use.

Mother of a five-year-old boy: Each of my kids has their own user name, and they're usually limited to 20 minutes – so they log in with their names, and after 20 minutes the computer shuts itself down and that's that.

None of the children participating in our study mentioned aspects related to any technical mediation practised by their parents. However, we acknowledge that the children may simply have been unaware of this.

Discussion

This study has provided insights into young children's computer and Internet use and parental mediation practices. Our study has three main findings.

Firstly, similar to the findings of others (e.g. Dhingra et al., 2009; Zevenbergen & Logan, 2008), children in our sample reported making active use of computers mostly for entertainment and fun, and less for self-expression and learning. Children's perceptions of adult computer usage was that it was mainly work-related. Therefore, on the basis of Bandura's (2001, 1997) theoretical framework, these findings provide an opportunity to motivate children to make use of additional activities. Moreover, as children often considered computer work to be the main reason why their parents had less quality time to spend with them, we encourage parents from time to time to engage in joint computer activities with their children. Active mediation by parents would enable children to not only expand their understanding of online opportunities but would also support their digital literacy skills.

Secondly, although parents participating in our study engaged in restrictive, active and technical mediation (Livingstone et al., 2011), their practices were mainly driven by setting time and content restrictions and giving warnings rather than active guidance and support. At the same time, our analysis suggests that rather than focusing on possible social and cognitive risks which, due to their abstract and mental nature, are hard for children in this age bracket to understand,

parents most frequently inform their children of possible health problems and the specific risks associated with computer use. As parental mediation is known to be dependent on the age and gender of a child (Livingstone & Helsper, 2008), and restrictions on computer use have been seen to be practised more by parents of younger children (Nikken & Jansz, 2011; Livingstone & Helsper, 2008), such an active focus on restrictions was expected. Nevertheless, since mediation at home seems to be rather restrictive, active mediation should be a part of pre-school teachers' pedagogical repertoire so as to better capture the inherent potential of the medium for their students' development.

Thirdly, similar to the findings of Plowman et al. (2008), parents in our study tended to delegate their roles as supervisors and guides of their children's computer use to older siblings. In a context where older children are often reported to teach adult family members how to use different applications and so on (Lenhart, Rainie, & Lewis, 2001), older siblings, as genuine representatives of the digital generation, can be regarded as a convenient source of help in the eyes of parents. At the same time, although siblings can be suitable tutors when explaining rules, suggesting websites and games or offering technical support as they have functional expertise in using the Internet, they often may lack critical literacy skills and the experience required to interpret, critique and manage that information (Buckingham et al., 2005). Therefore, we believe the trust that parents have in older siblings' ability to act as full mediators is questionable. Furthermore, by delegating their role to older siblings and not scaffolding (Vygotsky, 1978) children's computer use themselves, parents often fail to make their children's computer use more educational. In fact, computers have proven to have great potential in the context of intergenerational learning by encouraging the mutual exploration of knowledge and interactivity among adults and children (Kenner, Ruby, Gregory, Jessel, & Tahera, 2007). Therefore, we encourage parents to involve older siblings in active mediation through engaging them in joint activities, and offering instruction and support. Since Estonian pre-school teachers acknowledge the need for teachers to act as mentors for parents (Siibak & Vinter, 2010), pre-schools could be a good resource in supporting lifelong learning in the context of family life experiences by spreading know-how and supporting parents in child-rearing in a technology-saturated environment. However, in order to take up this role, teachers need to not only be aware of children's practices in the home environment but the didactics of media education need to be included in teacher training programs and in the national curriculum.

This research has three notable limitations. Firstly, our relatively small sample did not allow us to differentiate parents on the basis of socio-demographic background. As this might have an impact on the overall family habitus, future research should consider broadening the scope of participants in the study. Secondly, considering that all of the focus groups were comprised of parents

whose children attended the same pre-schools we acknowledge the risk of having received socially desirable answers from the parents. Finally, we also acknowledge that the self-reported perceptions of parents and children do not allow us to evaluate parents' actual practices.

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