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Keywords

Teacher beliefs; ICT; Technology; Children; Parents; Early childhood education

Abstract

In this study, written assignments from preservice early childhood teachers were examined to find answers to the following research questions: [1] What beliefs do preservice teachers have about children and technology at home? [2] How are parents represented in preservice teachers’ beliefs about children and technology? [3] What are the relationships between these beliefs and preservice teachers’ views about the role of technology in early childhood education? Preservice teachers in this study had idolized beliefs about children and discriminating beliefs about parents. Children were believed to be born-competent technology users. Parents were believed to lack the skills or will needed to regulate their children’s technology use. It was expressed to be the responsibility of early childhood education to ensure that play and social interaction are still included in young children’s lives. These findings propose that students’ beliefs about children and parents need to be afforded attention in educational technology courses.

1. INTRODUCTION

Currently, all the fields of institutional education are expected to integrate information and communication technology¹ (ICT) in their curricula and pedagogical practices. This is also the case for early childhood education,² and ICT has gradually found its way into early years’ curricula in several countries (Edwards, 2013). One of the main arguments for equipping preschools with ICT has been that by doing so, the digital gap between children’s informal learning environment, namely the home, and formal learning environment, namely preschool, can be bridged (Edwards, Henderson, Gronn, Scott, & Mirkhil, 2016).

Interestingly, it seems that while children’s increasing ICT use is used as a reason for equipping preschools with technology, for teachers it can be a reason for not using technology with children. In a recent Finnish study early childhood teachers expressed concerns that due to children’s excessive playing of digital games at home, preschool should be a technology-free space (Lehtikangas & Mulari, 2016). However, there were no

¹ In this paper, the terms ‘information and communication technology’, ‘technology’, and ‘digital media’ are treated as synonyms. These terms are used when referring to digital devices, including computers and mobile devices, and digital software and applications, such as digital games.

² The term follows Finnish discourse and refers to institutional education for children from 0 to 6 years old. The term preschool is used when discussing the premises where early childhood education is provided.

actual facts behind these presumptions – they were simply interpretations made from the themes of children’s role play. It should be borne in mind that these beliefs are about the youngest children, whose actions and routines are to a large extent determined by their parents. Thus, beliefs about children’s ICT use in the home are intertwined with beliefs about parents and home rearing. Put another way, early childhood teachers’ concerns about children’s ICT use means that they assume that parents allow their children to use too much and/or the wrong kinds of technology and media (see also Palaiologou, 2016; Ylönen, 2012).

One suggested reason for in-service teachers’ concerns about ICT integration is that computers, let alone modern touch screen devices, were not part of their lives during their own childhood, youth, and initial training (e.g., Mertala, 2017; Hernwall, 2016). According to Byron (2008), this can leave many educators ‘disempowered and anxious about the use of such technologies’ (p. 23). It is assumed that younger ‘digital-native preservice teachers’ (Szeto, Cheng, & Hong, 2016),³ in turn, are free of such hesitation, as they view ‘computers as just another part of their world and everyday life’ (Zaranis, Oikonomidis, & Linardakis, 2016, p. 204), and therefore their attitudes toward children’s technology use can be assumed to be more positive. It is true that unlike their older in-service colleagues⁴, digital technologies, including personal computers and mobile phones, have been part of preservice teachers’ lives since their own childhood. However, this viewpoint pays no attention to the fact that preservice teachers also have deeply-held beliefs about teacherhood, children, and childhood, and these beliefs have a substantial role whether they adopt or reject new information and practices during their initial teacher education (e.g. Funkhouser & Mouza, 2013; Isikoglu, 2008). In this paper, beliefs are understood as ‘psychologically-held understandings, premises or proportions about the world that are felt to be true’ (Richardson, 2003 p. 2).

There are a few studies which suggest that preservice teachers’ beliefs about children’s technology use at home are shaped by observations made during field practicums (Friedrichs-Liesenkötter, 2015; Lindahl & Folkesson, 2012). For instance, the preservice teachers in the study by Friedrichs-Liesenkötter (2015) felt that children are more restless on Mondays than on other weekdays because they believed that ‘many of the children would spend the weekends in front of the television and would not do other activities requiring physical effort’ (p. 24). However, it is not known whether preservice teachers already had such beliefs when they entered into the practicum. The value of such information lies in the fact that people, in general, are found to assimilate new information based on their existing beliefs, which again can be formed by chance and anecdotal observations, and are rarely put under critical evaluation (Nespor, 1987). In fact, Friedrichs-Liesenkötter (2015) writes that the phenomena her students described is commonly known as ‘Monday syndrome’ in Germany. Thus, it is possible that the preservice teachers in her study already had this presumption in their minds. This notion is supported by Baum and McMurray-Swartch (2004), as they argue that preservice teachers, in general, often have negative presumptions about the quality of children’s home rearing (see also Meehan & Meehan, 2017),

³ In this paper, the term ‘preservice teacher’ refers to one who is undergoing initial teacher training. The term ‘student’ is used as synonym for preservice teacher.

⁴ The mean age of the personnel in Finnish preschools is 44 years, and one-third are 50 or older (municipal employers, 2014).

and that these presumptions color the interpretations they make about parents during their teaching practicums. Children, in turn, are often believed to be innocent and carefree (Avigitidou, Pnevmatikos, & Likomitrou, 2013).

1.1. Research questions

The broad research interest behind this study was to investigate preservice teachers' beliefs about children and technology at home. This objective was formulated in the following three research questions:

1. What beliefs do preservice teachers have about children and technology at home?
2. How are parents represented in preservice teachers' beliefs about children and technology?
3. What are the relationships between these beliefs and preservice teachers' views about the role of technology in early childhood education?

2. REPRESENTATIONS OF CHILDREN, PARENTS, AND TECHNOLOGY

As argued by David Buckingham (2000), 'the figure of the child has always been the focus of adults' fears, desires, and fantasies' (p. 3). All of these aspects are also apparent in discussions about children and technology, and technology use is simultaneously presented as being beneficial and threatening for young children (e.g. Byron, 2008; Lindahl & Folkesson, 2012). This polarization of hopes and fears is well captured in Neil Selwyn's (2003) study of how children and technology are represented in the media and political discourse. As a result, Selwyn introduced six representations: (1) The natural child computer user; (2) the successful child computer user; (3) the adult child computer user; (4) the dangerous child computer user; (5) the victimized child computer user; and (6) the needy child computer user.

Whereas in Selwyn's (2003) paper the term 'child' referred to children aged between 6 and 17 years, many of the aforementioned representations exist in the discourses about young children and technology. The only exception appears to be the 'dangerous' child who is represented as a 'deviant child actively seeking out violent and sexual experiences via their computer screens away from the regulation of adults' (p. 362). Young children's internet use appears to be well monitored by parents (Ofcom, 2015), and while children may be accidentally exposed to pornographic material at a young age, they often begin to deliberately search for internet porn around 13 years of age (see the review in Horvath, Alys, Massey, Pina, Scally, & Adler, 2013, pp. 22–23).

However, examples of the other representations can be found from previous research literature. Young children are often portrayed as naturally competent technology users who easily and independently learn how to use new devices: Parents in the study by Plowman, McPake, and Stephen (2008) tended to consider that their children are mainly self-taught and underestimated their own role in supporting learning and the extent to which learning with and about technology is culturally transmitted in the family. Similar views have been expressed by teachers as well (Ingleby, 2015; Lindahl & Folkesson, 2012). Examples in which technology is

thought to help children to excel in their learning also exist: One group of teachers in the study by Hernwall (2016) stated that with ICT ‘everyone becomes a creator’⁵ (p. 14) – their choice of words being very similar to the ‘all kids are inventors’ slogan by computer manufacturer Hewlett-Packard, which was used as an example of the ‘successful child’ discourse by Selwyn (2003, p. 357). In addition, the main motivator for parents downloading apps for children appears to be to support their children’s learning (Marsh, et al., 2015), which suggests that technology is believed to have educational potential. Similarly, the ‘needy child’ is present in the discourses about young children and technology. Parents (Aubrey & Dahl, 2014) and teachers (Mertala, 2017; Ingleby, 2015) have suggested that children need to learn technology skills at a young age because of the demands of their future schooling and work life.

Besides these positive standpoints, young children are also often portrayed as victims of technology. Children are not only worried about being exposed to unsuitable content, but technology use is also believed to hinder children’s social skills, physical activity, cognitive development, and imagination (Lindahl & Folkesson, 2012; Palaiologou, 2016). One illustrative example of such discourse can be found from *Tech Tonic: Towards a New Literacy of Technology* publication by the Alliance of Childhood (2004).

[T]he damage being done by immersing children in electronic technologies is becoming clearer. Increasing numbers of them spend hours each day sitting in front of screens instead of playing outdoors, reading, and getting much-needed physical exercise and face-to-face social interaction — all of which, it turns out, also provide essential stimulation to the growing mind and intellect. (p. 1)

As I argued in section 1, beliefs about young children and technology are intertwined with beliefs about their parents and children’s home rearing. Such beliefs can also be traced in the quotation above. What I mean by this is that when one states children spend ‘hours each day sitting in front of screens’ instead of doing things that would provide more ‘essential stimulation to the growing mind and intellect’, s/he at the same time makes claims about the quality of children’s home rearing. In this case parents are (implicitly) represented either as uninformed, incapable, or unwilling to regulate their children’s screen time, which causes them to jeopardize their children’s well-being (see also Ylönen, 2012).

3. METHOD

3.1. Research context, participants, and data collection

As the broad research interest behind this study was to explore the beliefs preservice teachers have when they enter into their initial education, it was decided that the data should be collected from first-year students from a Finnish university-based early childhood teacher training program. A total of 38 students participated in this study. Thirty-five of them were female and three were male. The youngest participant was 18 years old, the oldest 37 years old, and the mean age was 23. All gave written consent to allow the use of the assignments as

⁵ By everyone they were referring to children

research data. As the sample was dominated by female participants, and matters of gender will not be addressed in this paper, all of the participants are referred to with a feminine pronoun to protect the anonymity of the participants. The data comprises 72 pages.

The data collection took place in the middle of the respondents' first semester in November 2014. The participants were attending an educational technology course, and as a pre-course assignment the students were asked to write a free-form essay in which they discuss their views, beliefs, and attitudes regarding young children and technology. In the instructions, the students were asked to write down what kind of experiences they believe children have with technology, and what the role of technology should be in early childhood education. Besides the provision of research data, this assignment was thought to orientate the students to the course by having them reflect on what they know, feel, and believe about the subject. Second, it gave me – as the teacher of the course – an opportunity to gain an overview of students' beliefs and attitudes beforehand, and thus be able to take them into consideration in my teaching.

3.2. Analysis

An abductive approach was used as the means of data analysis. The abductive approach discards the idea that the researcher's observations and interpretations could be purely inductive, and acknowledges that there is always a guiding theoretical thread included in the analysis process (Grönfors, 2011). In this paper, the main theoretical thread is the representations of 'child computer user' (Selwyn, 2003). The second theoretical thread is the (mainly negative) representations of parenthood identified from the existing literature (e.g., Alliance of Childhood, 2004; Baum & McMurray-Schwartz, 2004; Meehan & Meehan, 2017). However, unlike in deductive analysis, the following of a theoretical thread does not mean that the theory is taken as given or that the role of the analysis process is simply to test the theory. In abductive analysis the researcher moves between inductive and deductive reasoning while practicing the constant comparative method (Suddaby, 2006), which in the case of the present study refers to a practice in which interpretations and categorizations done at one stage of analysis are put under critical observation in later stages (Corbin & Strauss, 1990).

The analysis process consisted of three phases, which were built around the three research questions. The first phase concentrated on beliefs about children, the second on beliefs about parents, and the third on the relationship between these beliefs and participants' views of how ICT should or should not be used in early childhood education. The three phases were conjoined rather than being entirely separate: As in this paper beliefs about children are understood to be intertwined with beliefs about parents and vice versa, the categories of children constructed during phase one were not understood to be necessary the final ones, but a subject to evolve when these representations would be compared with those about the parents (see Corbin & Strauss, 1990).

Initially, I went through all the data and sought references to beliefs about children's experiences with technology at home. All these extracts were collected into a separate file. In the next phase, I began to categorize the extracts using the six representations of 'child the computer user' (Selwyn, 2003) as an analytical framework.⁶ This stage is summarized in Table 1.

Table 1. Examples from analysis phase 1.

Representations of the child the technology user	Data example
The natural child technology user	I have noticed that, if given a chance, children will learn to be fluent technology users at home (Student#8)
The adult child technology user	There sure are many small children (at least among the pre-primary aged ones) who guide their parents with some computer/tablet things (Student#7)
The victimized child technology user	Children can obtain a frightening picture of the world from the media. There's always a war or a catastrophe somewhere in the world featured in the media. With ICT, children become aware of things that take away the opportunity to enjoy the carelessness of childhood. (Student#3)
The needy child technology user	It needs to be remembered that some of the children come from poor backgrounds and they haven't had that great access to technology. It is important that these children are taught how to use technology in preschool, so that they, at an early stage, learn how to use these devices which will probably be part of humanity for their entire lives. (Student#36)
The successful child technology user	No data which discussed children's technology use in the context of home
The dangerous child technology user	No data

As can be seen from Table 1, examples of the dangerous" child computer user were absent from the whole data. As argued earlier, this is most probably due to the fact that the representation was originally constructed based on data considering older children (see section 2). In addition, all of the examples of the successful child discourses were written from the perspective of institutional education, namely how the use of technology (i.e., digital learning games) can help children to excel with their learning in preschool. As they had no connection with beliefs about children's use of ICT at home, these extracts were excluded from further analysis. Moreover, as only one example of the adult child technology user was found from the data, I chose to combine the 'natural' child technology user and the 'adult' child technology user categories into one single category, which I named as 'the naturally competent child technology user'. In the extract it was stated that '*there sure are many small children (at least among the pre-primary aged ones) who guide their parents with some computer/tablet things*' (Student#7), which refers to the fact that the child's competence is not something that is taught to him/her by the parents, and the situation where the child acts as an adult computer user is caused by his or her innate capabilities. Thus, following the first phase I had three preliminary categories of representations of children: [1] The naturally competent child technology user; [2] the victimized child technology user, and [3] the needy child technology user.

In the second phase I began to examine what kinds of representations of parents and parenting were connected to the representations of children. For example, one student who wrote about her concerns about children using too much technology wrote that the reason for children's excessive technology use is that parents do not want

⁶ As the technologies discussed in the essays included not only computers but also tablets, smartphones, gaming consoles, and televisions, I have replaced the term 'computer' with the term "technology", which better captures the diversity of technologies represented in the essays.

to regulate it to make things easier for themselves. In her own words: *‘Unfortunately, parents can often think that when children play with a computer or with a smartphone they are “not under their feet”’* (Student#28). During this read-through, I also noticed how several students wrote how parents’ own technology use can be harmful for children. This theme is well illustrated in the following extract from one participant who wrote how *‘parents use their smartphones at every occasion, so their genuine presence in the lives of their children can decrease’* (Student#26). As in these cases children were represented as victims but not as technology users, I omitted the words *‘technology user’* from the representation categories of children. In conclusion, three categories of child-parent representations were identified through the first two analysis phases: [1] The naturally competent children of invisible parents, [2] the victimized children of victimizing parents, and [3] the needy children of disadvantaged parents.

In the third phase, I again went through all the data to examine the relationships between preservice teachers’ beliefs about children, parents, and technology, and their views about the role of technology in early childhood education. To give an example, the following extract is understood to have an explicit link between beliefs and views about practice: The student here expresses that not all children have similar access to technology and therefore there should be technology in preschool to provide all children with equal opportunities.

In preschool, all the children have equal opportunities to express themselves, even though not all of them have similar technological devices in their homes. (Student#2)

4. RESULTS

The findings of this study are presented in three sections. Each section begins with representations of children and the types of parenthoods connected to these representations. The relationships between these beliefs and preservice teachers’ views about the role of technology in early childhood education are discussed at the end of the sections, excluding section 4.1 – The naturally competent children of invisible parents – as no such views were connected to it.⁷

4.1. The naturally competent children of invisible parents

Technology was believed to have a significant role in young children’s everyday lives. One student wrote how *‘children today are born in the midst of smartphones, tablets, and computers’* (Student#19), while another commented that *‘children are accustomed to technology and they are interested technology users by nature’* (Student#37). These discourses have much in common with Mark Prensky’s (2001) description of *‘digital natives’*, who are *‘surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age’* and thus are *‘native speakers’* of the digital language of computers, video games and the internet’ (p. 2). While it is given that children born after 2010 have lived their lives with a broad range of digital technologies,⁸ there was a kind of magical and mythical aura included

⁷ Whilst the data offers no comprehensive account for this, it seems that as children were believed to be savvy technology users, there wasn’t that much that early childhood teachers could teach them.

⁸ In Western societies

in several descriptions of children's presumed ICT competencies. Children were referred to as *'the wonder children of the future technology'* (Student#7), and the participants expressed that they are astounded *'how quickly they learn how to use new devices'* (Student#33). In addition, several participants made statements such as *'preschool-aged children master technology better than adults'* (Student#14).

The most prominent example was from one participant who described herself as a member of Generation Y, but went on to state that *'the children of today are the real digital natives'* (Student#15). Her choice of words implies that she understood herself to belong to the *'older digital natives'* (Zevenbergen, 2007), which refer to those born between the early 1980s and the late 1990s. With the term *'real digital natives'* she is referring to the age group Robyn Zevenbergen (2007) has named as *'preschool digital natives'* (p. 22), born after the turn of the century. Her understanding of the distinction was based on personal experiences, as in her assignment she recalled how:

A couple of years ago I, in amazement, observed how my 4 year-old niece first turned on the computer and in the very next moment she was playing the games on Pikku Kakkonen's⁹ website! She only needed help when "Pikku Kakkonen" was needed to be typed into Google, and I told her the letters she needed and she typed them. They have a shortcut icon to the website on their home computer and she can just click it when she wants to play. (Student#15)

This extract has notable resemblances with the findings of Plowman et al. (2008), as in their case studies parents used phrases like *'just picking it up'* (p. 303) to describe their children's learning with technology, even though there was a wide range of unintentional tutoring, including modeling ICT use for their children, and making suggestions about what to do when children were using technology. Put another way, both the parents in the study by Plowman, et al. (2008) and the student referenced above *'faded'* themselves (as tutors and enablers) from the picture when it came to discussing children's abilities with technologies. Based on the extract, the child in question had the necessary operational competence to turn on the computer. Also, as there was a shortcut icon to the website on the computer she was using, she was able to access the website independently, but when using a computer with no shortcut, she needed help to access the website. It seems that the participant here fails to recognize her crucial role in launching the game, as she wrote how after turning on the computer the girl was playing the game *'in the very next moment'*. In addition, as the shortcut icon was most likely created by her niece's parents, she also fails to recognize that the child's independence in computer use is largely due to the preparations made by her parents.

4.2. The victimized children of victimizing parents

In Selwyn's (2003) original description, the *'victimized child'* was portrayed as being the innocent user of technology who may be inadvertently exposed to undesirable violent or sexual material. This theme was also

⁹ A daily children's TV program aired by the Finnish National Broadcasting Company

visible in the essays, as students were worried that children may be exposed to harmful contents. One student, for instance, wrote that

Children can obtain a frightening picture of the world from the media. There's always a war or a catastrophe somewhere in the world featured in the media. With ICT, children become aware of things that take the opportunity to enjoy the carelessness of childhood away from him/her.
(Student#3)

However, exposure to injurious content was not the only concern the students had. A common view was that most of the children use technology on a regular basis, if not excessively. *'Children spend many hours a day using technology at home'* (Student#9) and *'children use so much ICT in their homes'* (Student#14) were common expressions in the essays. Children's technology use was believed to mostly be playing digital games and watching children's programs and movies on different screens.

Several students expressed their concerns about technology use stealing time from other activities, i.e., play and social interaction, which they considered more valuable. Replacing those activities with technology use was thought to have several downsides. Students believed that technology use hinders children's social skills, as children were believed to play games and watch movies and children's programs alone. In addition, students expressed their concern that technology use can be harmful for children's physical health. Being overweight, eye fatigue, hyperactivity, and attention deficit disorder were some of the concrete examples used by them. As participants were writing about the youngest children, they emphasized that it is the parents' responsibility to ensure that children are not exposed to harmful content or the use technology for prolonged periods. In the essays they stated that all the aforementioned disadvantages could be avoided if parents were aware of them, that they supervised and regulated their children's technology use, and that they made sure their children's on- and off-screen activities were appropriately balanced. The following two extracts are representative examples of such reasoning.

It is important that parents supervise their children's ICT use and guide them in terms of how it should be used. By doing so, unpleasant surprises like exposure to R18 content could be avoided. (Student#9)

Extensive technology use can cause dependency. If children spend a lot of time with technology, they may not be able to develop other skills. Parents should also ensure that a child's day also includes other activities than playing indoors with a tablet. For example, on forest trips the kid can practice gross motor skills and learn about animals and plants. (Student#1)

However, this was something parents were believed to have trouble with, and students often referred to children's high technology use as being a consequence of incompetent parenting: Parents were thought to lack the skills or the will needed to regulate their children's technology use. A consistent theme was that parents do not want to regulate children's technology use because by letting children play games or watch programs for

prolonged periods, parents can make things easier for themselves. This attitude is clearly visible in the following extracts:

Unfortunately, parents often think that when children play with a computer or with a smartphone they are “not under their feet” (Student#28).

I know a one-year-old who sits in front of the TV the whole day while his/her mother is on Facebook. The child doesn't get out to play, move about, and see the world. (Student#5)

Also, as suggested in the extract from Student#5, it is believed that parents' own technology use takes time away from children, and in several essays parents were portrayed as being unable to control their own technology use. In these representations, technology, especially smartphones, were represented as 'gluey media devices' (Mantere & Raudaskoski, 2015), which refers to a situation in which a child tries to gain attention from a parent who is immersed in smartphone use. One student wrote how 'parents use their smartphones at every occasion, so their genuine presence in the lives of their children can decrease' (Student#26), while another commented how 'parents, siblings, and other people close to the child use devices and applications at every turn' (Student#21). Parents' antisocial technology use was also believed to teach children similar behavioral models:

In some families the parents use their smartphones or surf the internet all the time. Because of this their child assimilates these routines and becomes interested in them [the devices]. A child of that age absorbs knowledge from his/her parents like a sponge, and repeats everything they say and do. (Student#5)

As children's technology use was believed to be excessive, many students expressed the belief that early childhood education should offer children an alternative and technology-free environment. They wrote that preschool should be a place where children have opportunities to engage in imaginative roleplay and social interaction, which were not believed to be regular aspects in children's home lives.

Early childhood educators must ensure that children's activities include “traditional” activities, which are not necessary part of the children's leisure time (Student#1).

Unlike at home, in preschool children have a lot of friends. Thus children should play together and use their imagination, not play different kinds of computer or console games, because most of them do that more than enough in home. (Student#25)

As discussed earlier, parents were thought to struggle with or simply neglect the regulation of children's technology use. This is apparent in the extract above, as the preservice teacher referred to appears to believe that children play digital games 'more than enough' at home. In other words, early childhood education's task was understood to be taking care of the things parents were believed to fail to deliver. Another prominent theme was that teachers in early childhood education should teach not only children but also their parents about

how to use technology in a manner that does not jeopardize children's well-being. This is well illustrated in the following extract, which explicitly portrays preschool practitioners as educational authorities over parents:

Preschool practitioners, as professionals, should show families and children how different devices and programs can be used in a safe manner and without causing damage to children's development (Student#30).

This notion does not only support Ylönen's (2012) argument that teachers often assume parents allow their children to use too much and the wrong kind of technology, but they also mirror the culture of Finnish early childhood teachers acting as educational experts who give advice to parents in parent-teacher meetings (Alasuutari, 2010; Hujala, Turja, Gaspar, Veisson, & Waniganayake, 2009).

4.3. The needy children of disadvantaged parents

Selwyn (2003) described the 'needy child' discourse as being built on a view of children as future adults, who need to gain sufficient ICT skills to be prepared for the life ahead of them. The needy child discourse was prominent in the essays, as several students underlined how important it is for children's future schooling and work life to learn to use ICT.

ICT skills learned as a child serve them through life. Children's communication skills improve when children learn communication technology skills. ICT skills are also necessary for the development of thinking and logical reasoning. The future world of work requires a wide range of expertise, and ICT competence is one part of them. Hardly anyone can avoid using email or the internet in the future. That's the way the world is going. (Student#20)

As discussed in section 4.1, simple access to technology was thought to be enough for children to learn how to master them, and the majority of children were believed to live in technology-rich homes. However, the families were not portrayed as a totally homogenous group in terms of the ownership of devices. The participants acknowledged that families' financial situations can cause differences regarding the availability of digital resources, and thus discriminate against children that come from less fortunate socio-economic backgrounds. Indeed, the "needy children" discourse was often produced from the perspective of a child born to disadvantaged parents. One participant, for example, wrote how poorer families have to prioritize their purchases and thus they may have to choose between buying their child a warm winter uniform and buying their child a smartphone. By placing a warm winter uniform (which, in the Finnish climate, is essential) and smartphone in the same category suggests that access to modern technology was understood as being crucial to a child's future life and schooling. Furthermore, it also suggests that if the family's financial situation would be better, they would buy their children the same technology the children from more fortunate families were believed to have access to. However, more explicit statements were also expressed.

It needs to be remembered that some of the children come from poor backgrounds and they haven't had that great access to technology. It is important that these children are taught how

to use technology in preschool, so that they, from an early stage, learn how to these devices which will probably be part of humanity for their entire lives. (Student#36)

As pointed out in the extract, early childhood education was understood to play an important affirmative role for children coming from less fortunate families. Bridging the “digital gap” between children from different socio-economic backgrounds is indeed highlighted by the proponents of technology integration (Edwards et al., 2016), yet due to the proliferation of affordable technologies, the ‘digital gap’, in terms of access to technology, should not be understood as a static condition of absolute inequalities between two distinct groups (vanDijk, 2006), as it was portrayed in the essays. For example, in a recent British report (Marsh, et al., 2015) there were no family income-based differences in terms of whether children could access tablet computers. The only difference was that children from higher-income families had access to more expensive tablets (e.g. iPads) and those from lower-income families to less expensive ones (e.g., Samsung Galaxy).

5. DISCUSSION

In this study, written pre-course assignments from 38 preservice early childhood teachers were examined to find answers to the following three research questions: [1] What beliefs do preservice teachers have about children and technology at home? [2] How are parents represented in preservice teachers’ beliefs about children and technology? [3] What are the relationships between these beliefs and preservice teachers’ views about the role of ICT in early childhood education? Using the framework of representations of “child the computer user” (Selwyn, 2003) as the main theoretical thread, three kinds of belief representations of children and parents were identified: [1] the naturally competent children of invisible parents, [2] the victimized children of victimizing parents, and [3] the needy children of disadvantaged parents.

The first category, ‘naturally competent children’, refers to beliefs where children are seen as innately competent technology users (see also Ingleby, 2015; Lindahl & Folkesson, 2012). Access to technologies was all that was thought to be needed for children to become savvy technology users, even though both – the examples used by the participants and the findings of former (see also Chaudron, 2015; Plowman et al., 2008) – imply that children’s main sources of learning about technology is the direct or in-direct tutoring of their family members.

In the ‘victimized children’ discourse, it was argued that children’s technology use was excessive, that it stole time from play, social, and physical activities, and caused health troubles (see also Lindahl & Folkesson, 2012a; Paliologou, 2016). As the preservice teachers in this study were writing about the youngest of children, they underlined parents’ responsibilities in monitoring and regulating their technology use. This was a task many parents were believed to have trouble with. In fact, children’s presumed high technology use was reasoned to be a consequence of incompetent parenting, as parents were believed to lack either the skills or the will to regulate and control children’s technology use (see also Ylönen, 2012). It was thought to be up to early childhood education to ensure that children get their share of traditional activities and social interaction, but also to teach parents how to use technology with their children in a safe manner.

‘The needy children’ category, in turn, refers to beliefs that learning how to use technology is crucial for children’s later schooling and future work life (Mertala, 2017; Ingleby, 2015). The majority of the children were believed to have access to technology in their homes, which, when referring to the naturally competent children discourse, was all that was thought to be needed for children to become fluent technology users. Nonetheless, students also stated that there are disadvantaged parents who, due to their poor economic situation, cannot offer their children similar opportunities for learning about technology as the more fortunate parents. Early childhood education’s task was understood to be to offer all children equal opportunities to become savvy technology users.

To sum up, it is important to note that parents were given visible and active representation only as ‘victimizing parents’. Children were not believed to need their parents’ help in becoming skillful technology users. Instead, it was described rather as a naturally occurring process. On the other hand, when it came to the negative aspects of technology use, parents were given a highly visible role. The most prominent case is that while the participants were not able to see the connection between children’s ICT skills and parents’ intentional or unintentional modeling and tutoring (see section 4.1), parents’ antisocial technology use was believed to lead children to use technologies in a similar manner (see section 4.2). Pointedly, the preservice teachers in this study appeared to believe that good things come naturally and bad things are taught by parents (see also Avigitidou, et al., 2013; Meehan & Meehan, 2017). While it is understandable (and even desirable) that the ones applying for teacher education think the best about the children, having uncritical and idolized views about children and discriminating views about parents is another thing. Thus, in the following section I will present a few notions about what the findings of the present study mean for preservice teacher education.

5.2. Implications for preservice teacher education

Beliefs are difficult to change and thus working with them must be given special attention in teacher education (Brownlee, Purdie & Boulton-Lewis, 2001; Iskoglu, 2008). It appears that educational technology courses in early childhood teacher education concentrate mainly on the introduction of appropriate resources and methods (e.g., Campbell & Scotallero, 2009; Tokmak, 2013). The findings of this study challenge the adequacy of such course design and suggest that the frameworks of such courses need to be broadened to include critical reflection of preservice teachers’ preconceptions and beliefs about children and technology. As discussed in section 1, there are a few studies which suggest that experiences of teaching practices shape preservice teachers’ beliefs about children and technology. These experiences can be negative (as in the ‘Monday syndrome’ case in Friedrichs-Liesenkötter, 2015) or positive. A good example of the latter can be found from the study by Lindahl and Folkesson (2012). In their paper they wrote about one student who had observed during a practicum period how a particular child was highly interested and motivated in writing with a computer because he had seen his father doing so. This was a positive experience for the student as the child’s observation of his father’s computer use had inspired the child to use the computer as an informal learning tool.

However, this interpretation is not the only possible outcome of such an observation: In the present study, there were preservice teachers who believed that parents' own technology use hinders interactions between children and parents (see section 4.2), and thus it is possible that some preservice teachers could have come up with different conclusions: To them, observing a child writing with a computer alone might have reflected on the parent's antisocial technology use. Indeed, preservice teachers in this study tended to think the worst about things that could be considered 'everyday scenarios' in families with young children. An illustrative example is their strong disapproval of parents having their children watch programs or play games while they are doing something else even though research suggests that the time is usually used for household tasks or working (Chaudron, 2015). However, many of the participants believed such routines to be regular, and that parents just want to take it easy and let their children play games or watch TV for prolonged periods. In order to provide preservice teachers with a better understanding of the multidimensionality of parenthood and to help students develop empathy and understanding, Baum and McMurray-Swartch (2004) have suggested that preservice teachers should have opportunities to talk to parents, i.e., by conducting parent interviews and attending parent-oriented meetings. Again, tools for critical self-reflection are needed here in order to avoid a situation where preservice students simply seek affirmation for their (negative) preconceptions.

5.3. Limitations, and implications for future research

While this study has provided new and useful information on preservice early childhood teachers' beliefs considering the nature of digital childhoods, it is not without its limitations. Unlike in research interviews, the use of written assignments does not allow the researcher to ask immediate follow-up questions from the participants. This limitation is most evident in the fact that the data stated only a little about the foundations for the beliefs. Thus, additional research is needed to gain a more comprehensive understanding of the factors that shape both preservice and in-service teachers' beliefs about children and childhood, as well as parents and parenting with regards to technology use. As the computer game example from section 4.1 and the Facebook example from section 4.2 suggest, these beliefs can be based on rather anecdotal observations and experiences. Furthermore, as the participants were first-year students, and the data was collected in the middle of their first semester, this study only refers to what kinds of beliefs students have when they enter teacher training. While such information is novel and valuable, further studies are required to find out if (and how) these beliefs change during teacher education, and what is needed in order to change them.

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