Computers in Human Behavior 28 (2012) 1728–1737

Contents lists available at SciVerse ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Can we let computers change practice? Educators' interpretations of preschool tradition

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ARTICLE INFO

Article history:
Available online 19 May 2012

Keywords:
Attitude
Computer
Knowledge claim
Preschool
Tradition
Values

ABSTRACT

The introduction of ICT into preschool practice is generally lagging. However, there is a variation regarding use of new technology. Hence, the aim of this study is to analyze which are the possibilities and difficulties to embed computers into preschool practice.

Data consists of naturalistic texts from 31 preschool teacher students revealing their experiences from trying to embed computers into practice. Analysis of data was guided by a framework adapted from Giddens' structuration theory, focussing on students' drawing on tradition and on knowledge claims when justifying their stances. Results show ambivalence to computer use. However, two groups of students emerged. One group embraced the new technology, whereas the other group conceived new technology as a threat to tradition. Depending on how activities are interpreted to fit into preschool tradition, using computers can or cannot be justified. Understanding tradition, as partially values and partially routines, provides possibilities to modify preschool practice to include computer activities. Knowledge claims, for example pertaining to developmental stimulation, can also be used as justifications for embedding computers into preschool practice. If, however, values appear to be threatened, tradition as well as knowledge claims can be used to justify protection against using computers in preschool practice.

1. Introduction

During the last few decades children's use of computers in their homes has seen a marked increase. According to a recent report from Swedish Ministry of Culture (Medierådet, 2010), 25% of Swedish children 2–5 years of age use computers several times every week. During the same period the educational use of computers has increased in compulsory school, but the use of Information and Communication Technology (ICT) is still scarce in preschool (Hill, 2010; McCarrick & Li, 2007; Plowman & Stephen, 2003). In addition, research is also scarce on the possible reasons for understanding why the introduction of computers in preschool is lagging. Hence, in this study the focus is on finding explanations as to why the educators hesitate to include computers in their practice.

1.1. Controversies concerning ICT and children's development and learning

New technology, such as ICT, is expected to have impact on practices in society and this induce fears of unwanted changes in society (Giddens, 1984, 1990; Orlikowski, 2000). As immanent societal changes threatens societal practice and thereby values nested in tradition, controversies are likely to occur whether current practice should be reproduced or transformed. Subsequently we are likely to find controversies concerning the introduction of ICT in preschool. Wartella and Jennings (2010) point out that the introduction of computers and other media technologies to children, recurrently for almost a century, have aroused debates about benefits and fears. The literature on preschool children's use of ICT shows numerous examples of fears concerning children's learning and developmental outcomes (Plowman & Stephen, 2003; Vernadakis, Avgerinos, Tsitskari, & Zachopoulou, 2005). Furthermore, fears of children loosing their childhood and becoming passive due to use of computer games are prevalent. Subsequently, suggestions to keep computers away from preschool children and instead reinforce traditional practice including play, reading and hands-on activities have been put forward. Over the years, results from scientific investigations can still not justify the fears concerning children's learning and developmental outcomes. Instead, computer use has been found to support both learning and development (McCarrick & Li, 2007; Plowman & Stephen, 2003; Vernadakis et al., 2005). The positive effects of computers are often, at least partially, explained as a motivating effect. This has been shown both in compulsory school (Alexandersson, Linderoth, & Lindö, 2000; Enochsson, 2004; Folkesson, 2004; Rosas et al., 2003; Swalander & Folkesson,

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http://dx.doi.org/10.1016/j.chb.2012.04.012

2010) and in formal preschool activities (Couse & Chen, 2010; Schmidt, Miodrag, & Di Francesco, 2008; Vernadakis et al., 2005). For example, a combination of play and work with computers motivated the children in their early reading and writing activities (Schmidt et al., 2008). For preschool children, 3–6 years of age, drawing on tablet computers was found to be more motivating than the use of paper and pencil (Couse & Chen, 2010). Moreover, in a number of studies on preschool children, learning with computers has been shown to result in better achievements in literacy, math and science, when compared to traditional learning activities (Vernadakis et al., 2005).

While knowledge on learning and development has accumulated, research on complexities in attitudes regarding the controversies about preschool children's use of ICT is still scarce (Plowman & Stephen, 2003). In their review Plowman and Stephen (Plowman & Stephen, 2003) draw the attention to the fact that in preschool, ICT is used in the same ways as corresponding analogue tools, i.e. ICT does not seem to change preschool practice. The attitudes towards the embedding of computers in preschool practice are of particular interest, as embedding can reduce fears when practices are subjected to change (Giddens, 1984, 1990). Just as any other educational practice, preschool practice is built on tradition. To develop and transform the educational practice, new activities such as the use of ICT can either change or be made part of an existing tradition. Hence, we find it of importance to examine what are the possibilities and difficulties with embedding computers in pre-school practice.

1.2. ICT in preschool practice

As mentioned above, the main motive for introducing ICT into preschool has been an expectation that it would improve learning and instruction. Research on the impact of ICT on preschool practice has been studied with this focus, as well as its relation to play, every-day activities and teachers' roles.

Play usually includes physical activities manipulating tangible objects and not digital ones. Play is considered as a collaborative and creative activity stimulating children's senses, but the use of ICT is not usually considered as play as it is not assumed to support sensory development. Instead, ICT is associated with instruction (Plowman & Stephen, 2003). However, it has also been found that preschool teachers do associate computers with play and opportunities for development (Mitchell & Dunbar, 2006; Sandberg & Pramling Samuelsson, 2003).

Using ICT can nowadays be considered an everyday activity. Many preschool children have access to a computer in their home, and parents tend to use children's learning and development as an argument when they buy a computer. According to parents, computer games have the potential to support children's learning (Sutherland, Facer, Furlong, & Furlong, 2000) and the use of computers at home has impact on preschool children already at the age of 3–4 years (Wolfe & Flewitt, 2010). The authors found that children showed a marked difference in computer competency related to computer access in their home. The described differences among the children were enhanced when using computers in preschool. There is a widespread belief that participating in a future society will require technological competencies. Therefore, in many countries, curricula express high expectations concerning the possibility to make children prepared to manage the increasingly complex and technological world in the future (cf. Plowman & Stephen, 2003).

The introduction of computers into preschool is expected to bring attention to demands on teachers' roles. Klein, Nir-Gal, and Darom (2000) found that preschool children better developed their cognitive skills by using computers when the educators took a mediating role as opposed to when educators had a passive role. When educators took a mediating role, using guided interaction, they could legitimize the use of computers in preschool activities and develop new approaches for ICT use in their practice (Plowman & Stephen, 2007). Guided interaction is consistent with child-centered pedagogy and informal learning activities. According to Klerfelt (2004), computers are more easily embedded in preschool practice if they are used for informal activities. That is, when the educator can take a non-instructing role and instead supports children to seek appropriate challenges. However, not all preschool teachers take the active role when children want to engage in computer activities. Ljung-Djärf, Åberg-Bengtsson, and Ottosson (2005) have categorized preschool learning environments into three different types that reflect the teachers' attitudes concerning the embedding of computers in preschool practice. In a "guiding environment" computer use was considered an essential activity. A "supporting environment" reflects a non-interacting attitude, where the computer was merely an available option. In the last category, "protecting environment", teachers were also non-interacting, but these teachers also considered the computer as a threat to preschool practice in their particular setting. These results are in concordance with other findings (Klein et al., 2000; Plowman & Stephen, 2007) showing that non-interacting educators result in children's passive behaviour vis-à-vis the computer, leading to a loss of interest in computer activities. Hence, to engage in computer activities, children need support from interacting educators.

1.3. Preschool practice traditions

In preschool practice, informal activities like play, everyday-life activities and care are the most obvious pedagogical means for learning. Learning through these activities are emphasized in curricula from several countries of different continents (Broström, 2006; Pramling, Sheridan, & Williams, 2006; Vallberg-Roth, 2006; Yang, 2002).

1.3.1. Play

Play can be described as informal when initiated by the children themselves, and as formal when organized by the teachers. Informal play is typically given a higher value in preschool curricula. One argument is that children should have the opportunity to learn on their own (Einarsdottir, 2002; Vallberg-Roth, 2006). Thus, it is important that children are trusted by the teachers overlooking their activities in the occasion they are needed (Einarsdottir, 2002).

The preschool tradition is rooted in theories of Rousseau and Fröbel, and influenced by the progressive pedagogical ideas of the 1920s. This is considered as an explanation to the strong tradition of play, child-centeredness and self-directed activities as well as a rich environment (Broström, 2006; Broström & Hansen, 2010; Herskind, 2010; Hägglund & Pramling Samuelsson, 2009; Hännikäinen & Rasku-Puttonen, 2010; Vallberg-Roth, 2006). The value of self-directed play has continued to be of importance, referring to constructivism as well as to Vygotskian theory (Broström, 2006). Subsequently, activities involving play, creativity and joyful learning are valued in Swedish preschools and it is stressed that learning in preschool should be different from learning in compulsory school (Pramling et al., 2006). In Swedish preschool curricula it is emphasized that children are responsible for their learning (Vallberg-Roth, 2006).

Formal play, also rooted in the Fröbel tradition, initially focused on using specially developed learning tools (Vallberg-Roth, 2006). However, since play theoretically is contrasted against formal activities teachers currently use informal play situations for instruction, for example literacy instruction, typically one-to-one (Perlman & Fletcher, 2008). Since literacy instruction often is perceived as a compulsory school activity, preschool teachers evade formal instruction by using an informal play context for literacy