Digital access to knowledge in the preschool classroom: Reports from Australia

Karen Thorpe [a,*], Julie Hansen [a], Susan Danby [b], Filzah Mohamed Zaki [b], Sandra Grant [b], Sandra Houen [b], Christina Davidson [c], Lisa M. Given [d]

[a] Queensland University of Technology, School of Psychology and Counselling, Victoria Park Road, Kelvin Grove, QLD 4059, Australia
[b] Queensland University of Technology, School of Early Childhood, Victoria Park Road, Kelvin Grove, QLD 4059, Australia
[c] Charles Sturt University, School of Education & Research Institute for Professional Practice, Learning and Education, Australia
[d] Charles Sturt University, School of Information Studies & Research Institute for Professional Practice, Learning and Education, Australia

A B S T R A C T

Australian preschool teachers' use of Web-searching in their classroom practice was examined ($N = 131$). Availability of Internet-enabled digital technology and the contribution of teacher demographic characteristics, comfort with digital technologies and beliefs about their use were assessed. Internet-enabled technologies were available in 53% ($n = 69$) of classrooms. Within these classrooms, teacher age and beliefs predicted Web-searching practice. Although comfortable with digital access of knowledge in their everyday life, teachers reported less comfort with Web-searching in the context of their classroom practice. The findings identify the provision of Internet-enabled technologies and professional development as actions to support effective and confident inclusion of Web-searching in classrooms. Such actions are necessary to align with national policy documents that define acquisition of digital literacies as a goal and assert digital access to knowledge as an issue of equity.

© 2015 Elsevier Inc. All rights reserved.

Introduction

In 1996, and again in 2012, the National Association for the Education of Young Children (NAEYC) identified access to computer technology as an issue of equitable access to knowledge in early childhood education settings (NAEYC, 1996; NAEYC & the Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College, 2012). Across that time, Internet-enabled digital technologies have become more mobile and, arguably, even more significant as a gateway to fast and current knowledge. In Australia in 2012, 96% of homes with children aged 0–14 years had Internet access, and in these homes, 81% accessed the Internet at home every day (Australian Bureau of Statistics, 2012). In the USA in the same year, 75% of families accessed the Internet at home (United States Census Bureau, 2014). Yet internationally, studies of children's Internet use have focused predominantly on school-aged children (K-12) and access to digital technologies in the home (Danby et al., 2013; Marsh, 2004; Marsh et al., 2005; Yelland, 2008). This study asks how the pervasiveness of Internet access evident in the everyday life of young children transfers into the early education setting. A key issue, given the significance of the Internet in providing access to knowledge, is the inclusion of digital information searching into pedagogical practice. While most young children can acquire digital literacies and access current knowledge through the Internet in their homes, the minority of children who do not have access at home are dependent on public education and Internet access in their prior-to-school years. Aligning with the current literature on digital equity (Judge, Puckett, & Cabuk, 2004; Pegler, Kollewyn, & Crichton, 2010; Yelland, 2008; Yelland & Neal, 2013), the research questions investigated in the current study reflect three levels of gatekeeping for digital access to knowledge and support of digital literacy acquisition in early childhood classrooms:

1. Resource: What is the availability of access to Internet connection in early childhood classrooms?
2. Teacher knowledge and expertise: What is the relationship between teacher characteristics such as age, training, experience and comfort with digital access of knowledge and the inclusion of digital knowledge searching in the classroom?
3. Pedagogical beliefs: How do teachers' beliefs about young children's learning and use of digital technologies affect their reported digital access to knowledge in the classroom?

* Corresponding author. Tel.: +61 7 31384707.
  E-mail address: k.thorpe@qut.edu.au (K. Thorpe).

Resources: availability of digital technologies, access to the internet and early childhood education

Internet-enabled digital technologies serve as sources of knowledge, social interaction and, jointly, learning. As these technologies become increasingly smaller and more mobile they offer increasing possibilities for use in early childhood education settings because they are a dynamic, social, visual, and tactile medium that facilitates flexible, immediate and responsive interactions with current knowledge among classroom members. Yet the uptake of digital technologies in early childhood settings and the effectiveness of their use in early education is only an emergent focus. Existing evidence suggests that children's use of digital technologies is less prevalent inside the early childhood classroom than in everyday life outside this context (Arrow & Finch, 2013; Marsh et al., 2005; Wohlwend, 2010) and less well integrated into the daily programmes in early childhood classrooms than those in the later school years (Plowman & Stephen, 2003a, 2003b; Plowman, Stephen, & McPake, 2010). The reasons are not fully understood but may relate to educational discourses centred on the young child that relate to the assessed value of digital forms of learning against other curriculum and pedagogical demands (e.g. the belief that there are more valuable sources of learning that should be prioritised in early childhood) (Lentz, Seo, & Gruner, 2014; Plowman & McPake, 2013) and social discourses relating to safety (e.g., the belief that young children should not be exposed to the 'dangers' of the Internet or exposure to digital technology is not "healthy") (Lentz et al., 2014; Livingstone, 2003; Livingstone, Haddon, Görzig, & Ólafsson, 2010; Plowman & McPake, 2013), child competence (e.g., a presumption that as emergent readers, young children cannot access information from the Internet) (Livingstone et al., 2010) and economic priority (e.g. the belief that older children are more likely to need and benefit from access to digital technologies) (Beale, 2014). Increasingly, these discourses are being challenged by the demands for equitable access to current knowledge (Australian Government, 2008; Livingstone & Helsper, 2007; NAEYC, 1996; Pegler et al., 2010; Yelland & Neal, 2013), the everyday visibility and the documentation of the digital competence of the very young (Davidson, 2009, 2011; Houen, 2012; Spink, Danby, Mallan, & Butler, 2010) and the growing economic and equity imperatives to direct educational investment to the very young (Heckman, Grunewald, & Reynolds, 2006; OECD, 2006; Thorpe, Cloney, & Tayler, 2010). Inclusion of digital access to knowledge into early childhood pedagogy is an imperative evident in international educational policy and curriculum specifications (Department of Education, Employment and Workplace Relations, Australia (DEEWR), 2009a; Souter, 2010; UNESCO, 2014). Evidence suggests that children and teachers are increasingly exposed to digital technologies, and specifically the Internet, in their lives outside the classroom (Australian Bureau of Statistics, 2009, 2011, 2012; Gutnick, Robb, Takuchi, & Kotler, 2010; Livingstone & Bober, 2005; NetRatings Australia Pty Ltd & Australian Broadcasting Authority, 2005). However, little is known about the Internet access experiences of teachers and children within the early childhood classroom.

Digital technologies provide fast access to current knowledge. For this reason, acquisition of digital literacies are now specified as learning goals in curriculum documents such as the Early Years Learning Framework for Australia (DEEWR, 2009a) and have been argued as an educational right and issue of social equity (Judge et al., 2004; Livingstone & Helsper, 2007; Pegler et al., 2010; Yelland & Neal, 2013). The argument for digital access as an educational and social right has advanced beyond academe to educational policy (DEEWR, 2009b) and philanthropic activity including Dell Youth Learning (2014) and the Smith Family's Tech Pack Project (Neal, Yelland, Dakich, & Jones, 2010). In Australia, for example, the availability of laptops for school-aged children emerged as a focus between 2009 and 2013 (DEEWR, 2009b). The most prominent policy concern in this regard is the provision of resources to students in secondary education and includes philanthropic partnerships to provide laptops to those living in circumstances of disadvantage and Internet access to those living in remote areas. The aspirations identified by the Australian Government and other OECD governments include ensuring child access to Internet-enabled devices for school-aged children and provision of high-speed broadband connectivity (Australian Government, 2008; European Commission, 2010; New Zealand Ministry for Economic Development, 2010; OECD, 2008; Swedish Ministry of Enterprise Energy and Communications, 2009).

In early childhood education, access to digital technologies and acquisition of digital literacies has also been documented as an education right and issue of social equity. This position is manifest in a range of documents (Australian Government, 2008) and position statements (NAEYC & the Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College, 2012; Souter, 2010) UNESCO's initiative *Education for All* prioritises inclusion and quality of digital technologies in education (UNESCO, 2014). Yet, internationally, public data on availability of Internet-enabled digital technology in educational settings is scarce. In the early education space, there is a mismatch between curriculum documents that identify digital literacy as an educational aim and other policy documents where there is a notable absence of comment regarding the provision of Internet access in classrooms. In the non-compulsory early childhood sector, where there are often multiple providers that function both for-profit and not-for-profit, the absence of an explicit policy implies digital access is primarily the responsibility of individual providers and not a public responsibility. The first question addressed in the current study, therefore, directs attention to documentation of the range of available digital technologies and Internet-enabled access in preschool classrooms.

Knowledge and expertise: digital knowledge and comfort as factors affecting practice in early childhood classrooms

Availability of digital devices and Internet-connectivity are necessary, but not sufficient, conditions for equitable knowledge access and learning. Beyond the restraints of availability and Internet-enabled access, the characteristics of the teacher, particularly their knowledge, skill and comfort, have been identified as factors that affect integration of digital technologies into classroom practice. Evidence from the schooling sector suggests teachers' use of digital technologies to access knowledge is best described as being on a continuum (Mueller, Wood, Willoughby, Ross, & Specht, 2008). While some teachers do not use the Internet-enabled technologies available in their classrooms, others integrate these technologies into their everyday teaching interactions with children (Mueller et al., 2008). There is currently little evidence from early childhood classrooms that such integration happens daily. The available research indicates that digital access to knowledge in early childhood classrooms remains minimal with practices showing preference for print literacy formats (Arrow & Finch, 2013; Blackwell, Lauricella, Wartella, Robb, & Schomburg, 2013).

Research approaches have been guided by two perspectives pertaining to the role of teacher characteristics in the uptake of digital technologies in the classroom. The first perspective suggests a divide centred on age and gender. The proposal of generational differences is an adaptation of Prensky's conceptualisation of digital learners that asserts a dichotomy between "digital natives" and "digital immigrants" (Prensky, 2001). This conception would imply that younger teachers who have grown up with digital technologies in their everyday life are more receptive and intuitive in introducing digital technologies in their classrooms than older teachers for