

Pre-School Children's Experiences with Touchscreen Technologies: Early Findings from Survey Results

by Shannon Ludgate

Abstract

Touchscreen technologies are increasingly being used with young children in early years settings. Whilst some early years practitioners are willing to allow children this experience, others strongly oppose the view and regard touchscreen technology use as inappropriate for 2-4 year old children. Touchscreen devices are also used in a range of ways to the discretion of the setting, for both passive and interactive uses. This paper presents the initial findings from the first stage of my PhD study, which explores the ways in which 2-4 year old children use touchscreen technology in early years settings in the Midlands. Whilst the initial survey findings identify a range of ways in which young children use touchscreen technology, this stage also sought to identify early years settings willing to participate in PhD research on young children's experiences using touchscreen technologies.

Introduction

Touchscreen technologies are being introduced into a wide range of education and care settings, to children in preschool years and below (Flewitt et al, 2014). Once a feature of home-life, technologies have since developed and the educational potential has been identified for early childhood development. The availability of touchscreen technology within Early Years settings is increasing throughout the United Kingdom; just under a quarter of children aged between three and four years (22%) in 2014 had access to a tablet computer in educational settings (Formby, 2014). Technology is also becoming more present in the home environment; Ofcom's report in 2013 found over half of 3-4 year old children (51%) had access to a tablet computer in the UK at home (Ofcom, 2013). The development of touchscreens further increases the potential to impact on early years education, through a

range of apps designed to enhance development. Whilst there are many apps focussed on encouraging children to learn the alphabet and numbers, others support cognitive development through jigsaws, puzzles and more.

Literature Review

Touchscreen technologies have increasingly developed over the past decade; since the first touchscreen device was available a decade ago, touchscreen technologies have begun to form a presence in homes and the workplace. A range of companies have since developed their own touchscreen devices, and these are increasingly being targeted towards young children (58% of all educational iPad apps in 2011), an increase of 23 percent since 2009 (Schuler, 2012). Contributing towards the rise of touchscreen technology, researchers have since estimated the impact of technology on education, discussing the potential to 'revolutionise the education system' (Blackwell et al, 2014:1; Falloon, 2013).

Considering touchscreen technology has this acclaimed potential, research suggests a range of apps are targeted at children to support their development in the early years. Technology is seen as a medium for meaning making (Burnett 2010), whereby children can learn and understand through developing an awareness of skills and developing competencies. With a touch screen, the very youngest can interact and learn due to its non-complex accessibility. A perceived benefit of using touchscreen technologies with young children is a developing awareness of touch, as children can recognise the impact of touching the screen and the fast response that is given (Kucirkova et al, 2014, Crescenzi et al, 2014). Touch has been regarded as a valuable aspect to supporting children's early learning (Crescenzi et al, 2014) and can be enhanced through touchscreen technologies rather than traditional technologies, as children are able to complete tasks more competently with a touchscreen compared to using a mouse and keyboard (Lynch and Redpath, 2014).

It is believed that using touchscreen technologies supports sensory development (Flewitt et al, 2014). Romeo et al. (2003, p.330) explain that there is a "more direct relationship

between a user's hand movement and the on-screen effect when using a touchscreen, as compared with other input devices", supporting children's developing knowledge of consequences of actions, for example pressing an icon might open a programme, or touching the screen may create a mark (Dunst and Gorman, 2009). Through these actions it could be argued the response of touch encourages awe and wonder, further motivating the children to learn and to explore on these devices (Flewitt et al, 2014). Combining touchscreen technologies with physical toys can extend learning explains Yelland (2001), allowing opportunities for further exploration, documenting experiences and visual playback.

Whilst the perceived benefits to young children of using touchscreen technology in the early years should be noted, it must also be recognised that this is not agreed by all; some researchers and health and education professionals are opposed to young children's exposure to such media. A range of perceived health and social risks are reported, with concerns over children's ability to engage in social interactions and children's brain development, deriving from screen time exposure.

The amount of screen time exposure is commonly questioned when young children use technology. The American Academy of Pediatrics (AAP) (2011) advise how children under two should have no access to screens, and children over two should have just thirty minutes a week. It is argued children learn more effectively from tangible objects rather than two-dimensional images on a screen (AAP, 2011). Some professionals are concerned that screen time can have an effect on brain development, where concentration, motivation and attention spans are being questioned (Alper, 2013, O'Hara, 2013). Within the United Kingdom (UK), Formby (2014) found in her study how 7.2% of children in the study were using a tablet computer with an adult daily. Whilst Funk et al (2009) identified pre-school aged children were reported to have twelve hours of screen time a week. These studies and others (See Rideout, 2011) highlight the increasing amount of exposure young children have with screens, posing questions on the appropriateness of technology use and exposure to screens, regardless of their interactive capabilities.

Taking into account American recommendations for appropriate touchscreen use, it must be questioned how this guidance can effectively become reality for UK families, where technology is a large aspect of daily life. To recommend that parents and educators remove all screens from an environment which includes a child from birth to two years old is unrealistic in many settings and homes, especially where there are older siblings. Research shows in a study of birth to three year olds in the UK, how two thirds (66%) of children used a smartphone or a tablet 'daily' or 'sometimes' (O'Connor and Fotakopolou, 2015 forthcoming). This evidence portrays the reality for middle class citizens in England, which is quite a contradiction to the AAP guidelines (2011) on screen time exposure; parents are using digital devices for sustained periods of time in a day (for example see Wartella et al., 2013) and children are included in this. O'Connor and Fotakopolou's study demonstrates the range of ways in which children use touchscreens, for example to play games (92%), use educational apps (67%) to look at photographs (37%) and others, identifying both passive and interactive uses for touchscreen technologies with children of a young age.

Achieving a balance of touchscreen use versus non-touchscreen use in early years education is something which requires time, practice and development. Considering the only time limiting guidance to touchscreen use is a small scale American study, English early years educators may be unaware of this information and therefore are not aware of what is deemed appropriate. Considering this guidance is, in many ways unrealistic in a real life context, it is challenging to determine the effectiveness of such guidance. In conjunction to the heavily debated issue of young children's exposure to touchscreen technologies, there remains no formal guidance within England on what may be agreed as the effective use of such technology. Therefore, the remainder of this paper reports on the preliminary stage of my study on young children's exposure to touchscreen technology in educational settings which involved an on-line survey completed by child care workers in the Midlands.

Methodology

The survey aimed to identify early years settings who used touchscreen technologies with 2-4 year old children, and to begin to understand the ways in which young children use these devices. Initially, the survey was emailed to 150 early years settings in North Warwickshire, to obtain an understanding of touchscreen use in a relatively small geographical area. After difficulties in obtaining survey responses, the area was widened to include Warwickshire, Birmingham and finally the Midlands in general. Social media sites such as Twitter, LinkedIn and Facebook were also utilised to connect within networks, and as such attracted interest from early years practitioners across England, resulting in over 1300 interactions with the survey, and a total of 42 completed responses over a period of three months.

The survey questions were written in a way which sought to establish a framework to build upon in the final stage of the project, through gaining a sound knowledge of the ways in which touchscreen technologies are used in each early years setting. The survey sought to discover children's uses of touchscreens, alongside the time allocations for children's uses of touchscreens, and whether children were supervised when using the devices. Demographic information was also collected, in order to understand who completed the survey and their position in the setting. This information informed the location of each setting, and as a result, the settings selected for the final stage of the project were spread across the area.

Also important to discover was the reasoning behind the respondents who did not use touchscreen technologies with young children. This data has been used to support a discussion on the constraints prevalent within early years settings, when seeking to adopt the use of touchscreens within the early years, as discussed in the findings section below.

Since the survey identified early years settings who used touchscreen technology with 2-4 year old children, a stratified sampling technique was used to select five different types of early years settings who used touchscreens with young children. These settings were

selected for the final stage of the research, to further understand children's experiences using touchscreen technology in early years settings. As a result of using this technique, five settings were selected: a Child-minder, Day Nursery, Children's Centre Pre-School, Reception Class and a Nursery Unit of Independent School. A pilot setting was also selected at random, in order to trial the data collection methods before the final stage of research. However, this setting withdrew their participation in the project due to children leaving the setting, so it was therefore decided to pilot the techniques over the course of three days in the first setting selected for data collection. Once trialled, the data collection methods were revised and again piloted.

Findings

The survey identified that of the 42 completed responses, 57% used touchscreen devices with 2-4 year old children (24), and 43% did not (18). The age at which children were allowed to use touchscreen devices varied between settings, with some allowing children from birth (3) to use devices, whilst others restricted children's use to three (20) or four (21) years of age. In order to seek further clarification on those who did not use touchscreen devices with children, those respondents were asked whether they intended to do so in the future. Seven of the respondents explained they seek to use touchscreens with young children in the future (39%), whereas the remaining 11 participants (61%) did not.

Taking into consideration using touchscreen devices with 2-4 year old children, those who did not intend to explained touchscreen devices were, *'totally inappropriate for this age group'*, and that *'[I] don't think parents would approve'* of such decision. Furthermore, over half of respondents explained there was no or limited funding (55%), which was seen as a barrier for many, particularly Day Nurseries (81%). Other concerns over children using technology were identified:

'We want the children to learn about the real world' – Day Nursery

'Concerns that traditional 'early writing' will not be promoted as the fine motor skills which are used to hold a pen are replaced by a swiping motion – the click and drag generation!' – Day Nursery

'Children have plenty of experience at home' – Pre-School

The survey identified many strong opinions of young children using touchscreen technology, with their age range in particular seen as too young, and the devices inappropriate. These findings mirror findings by Formby (2014) who explained how some practitioners thought young children using touchscreens may damage development. There were concerns that traditional play and learning activities would not be fully utilised if technology was introduced. Some respondents expressed concerns over children learning to use pencils and scissors, and how conversations cannot be practised using a screen. This view was particularly enhanced with the explanation that some parents saw touchscreen devices as a *'single user activity'* (Parent Support Worker) and were primarily seen as a source of entertainment for young children.

Although it was important to establish those who did not use touchscreens with young children, it was equally important to understand the early years settings who did use touchscreens, and for what reasons the children used them. The most popular reason for young children to use touchscreen devices across 24 early years settings was to play games (19) and to watch educational content (19). This initially demonstrated a balance of use of passive and interactive uses, and also a balance of educational and potentially non-educational uses. Further exploration of this question could have identified what early years practitioners define as *'educational content'*, in order to determine the educational potential of children watching such videos using the touchscreen devices. Interestingly, no respondents allowed children to download content, however one respondent explained children used Skype, and two respondents allowed children to search the Internet. Internet or online content was identified to be the least popular choices when selecting uses for touchscreen technology, and further questioning could have identified reasoning behind not

using the Internet, and equally the reasoning behind early years settings encouraging Internet use.

The survey identified a range of uses of touchscreens that offered playback, for example to take pictures (15), make a video recording (9), and for children to record their own voice (11). Furthermore, children were commonly reported to share stories (15) and learn to read (11), alongside listen to music (10), learn numbers (18) and the alphabet (16). These interactions will be further explored through observations.

Of particular interest was children's supervision when using touchscreen devices, as a range of literature expresses concerns over children being left unsupervised, and the challenges this poses to an effective learning environment. The majority of settings identified in the survey that children were always supervised when using touchscreens (57%), whereas the remainder of settings most commonly pre-school settings, were flexible in their supervision, allowing at times for children to play unsupervised, whilst the remainder of time they were supervised (43%). This will be further explored in the next stage of data collection, to determine whether supervision has an impact on the learning environment and the uses in which children are interacting with touchscreen technologies.

As a result of collecting such data from the online survey, five respondents were then selected to participate in the second stage of data collection, through observations and interviews. A pilot study was conducted in the first data collection setting to finalise the data collection schedules. Children's experiences of using touchscreen technologies in early years settings will be further explored through a case study approach to data collection. Five case studies will seek to understand different perceptions of young children using technology and touchscreen technology's place in early education. Furthermore, the case studies will also record observations of children's uses of technology over a period of five days, to enhance data collected from the survey and interview. To triangulate data collected, a focus group interview will also be conducted with young children in each early years setting, in

order to determine their views on touchscreen use; this forms the final stage of data collection.

Conclusion

This paper has addressed the initial stage of data collection undertaken to understand young children's experiences using touchscreen technologies in early years settings through an online survey. With a focus on 2-4 year old children's experiences, a range of early years settings expressed their views on children of this age using technology, and their intentions to use technology with children in the future. Whilst some survey respondents strongly opposed to young children using touchscreen devices, other respondents encouraged its use, identifying different ways in which children interact with the devices. Children's experiences from a practitioner's view appear to vary, particularly with the age in which children are first exposed to touchscreen devices in early years settings. Furthermore, these experiences also differ in terms of supervision, where at times children are unsupervised, and at others they are supervised by practitioners. As a result of such information, this data will be further examined through a combination of different data collection methods in the second stage of the project, through five case studies of five different forms of early years provision within the Midlands.

From the online survey, the findings have identified that several areas require further examination and will be extended during the final stage of the project. Considering the majority of early years settings do not encourage the use of the internet or to watch online content, these findings raise questions on what is considered appropriate use of touchscreens and technology in general, and therefore will be investigated through interviews to understand such practice within early years settings. The findings appear to challenge misconceptions of children using touchscreen technology, and as a result have established a basis in which to build upon when in the five early years settings in the final stage of research.

References

Alper, M. (2013). "Developmentally Appropriate New Media Literacies: Supporting Cultural Competencies and Social Skills in Early Childhood Education." Journal of Early Childhood Literacy **13**(2): 175-196.

American Academy of Pediatrics (2011). Media Use by Children Younger than 2 Years [online] Available at <http://pediatrics.aappublications.org/content/128/5/1040.full> [Accessed March 2015]

Blackwell, CK., Lauricella, AR., and Wartella, E. (2014) Factors Influencing Digital Technology Use in Early Childhood Education, Computers and Education, **77**: 82-90

Crescenzi, L., Jewitt, C., and Price, S. (2014). The Role of Touch in Preschool Children's Learning using iPad Versus Paper Interaction, Australian Journal of Language and Literacy, **37**(2) pp. 86-95

Dunst, C., and Gorman, E. (2009). Research Informing the Development of Infant Finger Drawing. Centre for Early Learning Literacy Review, **2**(1) pp.1-6.

Falloon, G. (2013). "Young Students Using iPads." Computers and Education **68**: 505-521.

Flewitt, R., Messer, D., and Kucirkova, N. (2014). New Directions for Early Literacy in the Digital Age: The iPad, Journal of Early Childhood Literacy, pp.1-22

Formby, S. (2014). Practitioner Perspectives: Children's Use of Technology in the Early Years, London, National Literacy Trust

Funk, J., Brouwer, J., Curtiss, K., and McBroom, E. (2009) Parents of Preschoolers: Expert Media Recommendations and Ratings Knowledge, Media-Effects Beliefs, and Monitoring Practices. Pediatrics, **123**(3): 981-988

- Kucirkova, N., Messer, D., Sheehy, K and Fernandez Panadero, C. (2014) Children's Engagement with Educational iPad Apps: Insights from a Spanish Classroom, Computers and Education, 71: 175-184
- Lynch, J., and Redpath, T. (2014). 'Smart' Technologies in Early Years Literacy Education: A Meta-narrative of Paradigmatic Tensions in iPad use in an Australian Preparatory Classroom. Journal of Early Childhood Literacy 14(2)
- O'Connor, J. and Fotakopolou, O. (in press). A Threat to Early Childhood Innocence or the Future of Learning? Parents' Perspectives on the use of Touchscreen Technology by 0-3 Year Olds in the UK.
- Ofcom (2013). Children and Parents: Media Use and Attitudes Report. London, Ofcom.
- O'Hara, M. (2011). "Young Children's ICT Experiences in the Home: Some Parental Perspectives." Journal of Early Childhood Research 9(3): 220-231.
- Rideout, V. (2011). Zero to eight: Children's media use in America. San Francisco: Common Sense Media.
- Romeo, G., Edwards, S., McNamara, S., Walker, I., and Ziguras, C. (2003). Touching the Screen: Issues Related to the Use of Touchscreen Technology in Early Childhood Education, British Journal of Education Technology, 34(3) pp.329-339
- Shuler, C. (2012). iLearnII: An analysis of the education category on Apple's app store. New York: The Joan Ganz Cooney Center at Sesame Workshop.
- Wartella, E., Rideout, V., Lauricella, A.R., and Connell, S.L. (2013) Parenting in the Age of Digital Technology: A National Survey, Report of the Center on Media and Human Development, School of Communication, Northwestern University
- Yelland, N. (2011). Reconceptualising play and learning in the lives of young children. Australasian Journal of Early Childhood, 36(2), 4-12