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Online Responses towards Use of Hand-held Devices for Children under 12 Years Old

Gretchen GENG[a*] & Leigh DISNEY[b]
[a]*School of Education, Charles Darwin University, Australia*
[b]*School of Education, Charles Darwin University, Australia*
*gretchen.geng@cdu.edu.au

Abstract: This paper reviewed relevant literature of using hand-held devices in children and used responses from an online discussion forum to investigate people's opinions towards the use of mobile hand-held devices for children under 12 years old. Critical discourse analysis (CDA) was used as analysis methods in three-dimension framework via micro, meso and macro multi-level interpretations. Although all the 125 online responses emphasised that children should not overuse technologies, and children should be exposed to technologies as well as no technology time, they were divided into anti-technology responses and technology-favourite responses. The argument concerns around child development were discussed among the 125 online responses. Educators and parents, who are interested in the areas of whether or not young children should be exposed to and use hand-held devices, will find this paper interesting and useful.

Keywords: mobile hand-held devices, online responses, young children, child development, parents' involvement

1. Introduction

The use of hand-held devices in children has become a controversial topic and one that creates debate amongst those with stakes in education sectors (policy makers, early childhood directors and educators, as well as parents). For example, in the studies conducted by Disney, Barnes, McDowall and Geng (2013), it was found that use of an iPad can enhance young children's engagement in learning and playing. However, it was also researched by many studies that hand-held devices can cause negative impact on children's development. For instance, the Australian Medical Society has issued a policy statement asking for a ban of Wi-Fi in schools. Geng and Disney (2013) also reported that there was a deficit effect in young children under 2 years old learning with hand-held devices such as an iPad.

Palfrey and Gasser (2008) describe that currently we are undergoing the most rapid technological transformation in terms of information. Children are being born into a digital age where by how the gather and interpret information will be different to that of their parents and educators. In order to effectively educate the 'digital child' parents and educators need to address their own attitudes towards these media and how the technological advancements fit within their comprehension of children and the concept of early and middle childhood (Palfrey & Gasser, 2008).

The study of child development encompasses a holistic view of the changing child; however, for ease of discussion, development is often broken into categories, these being: social and emotional, physical and cognitive domains of development (Dodge, Colker & Heroman, 2002). Within the new digital age, parents and educators have access to and are allowing children to be exposed to a wider variety of media alternatives to enhance and build on children's experiences and develop their own pedagogical practices (Colker, 2011). There are a perceived number of benefits of educational media for children, but not all educators and parents are welcoming of the integration of educational media and the ensuing technologies into early and middle childhood settings. Furthermore, there is an undercurrent that educational media, particularly technological products are drastically altering the landscape of childhood to its detriment (Plowman, McPake & Stephen, 2010). Supporters for the use of educational media within early childhood settings, such as McCarrick and Li (2007), argued that the use involves children's strong motivation and engagement with the use of educational media. Software can be made more motivating and educationally effective by using animation and children's voices and

giving simple, clear feedback (Clements & Sarama, 2007); however, those people resistant to the use of digital play cite that much of the technology and associated software is a waste of time for children and they doubt young children's readiness to use technology in terms of both cognitive and physical development. Cognitively, educators are worried that it is too abstract and difficult to use the educational media and that learning objectives may get lost when children engage in complicated software not specifically tailored to their children's needs or learning styles (Plowman et al, 2010; Struppert, Guo & Waniganayake, 2010). Furthermore, in relation to children's well being, long term physical concerns such as repetitive stress injuries, eyestrain, obesity, and sedentary lifestyle diseases have been cautioned as potential side effects of over use of the technology associated with digital play (Finegan & Austin, 2002; Plowman & Stephen, 2003; Struppert et al, 2010).

Hand-held devices have been co-opted into teaching and learning for a period of time; and many studies have been conducted using them effectively in the educational environments so that their negative potential is averted and their positive potential is boosted within educational learning environments. This study therefore, is to analyse open online responses to reflect the current attitudes from parents, educators, students themselves and other people, such as medical practitioners and computer technicians.

2. Methods

The Internet is an "alternative medium for voice amplification by those often without access to or control of mainstream media" (Tamatea, 2010, p. 984). The online responses from the bulletin board or chat groups may not represent the general public opinions towards the use of hand-held devices in children's learning. However, the Internet-sourced data provides a map upon which various opinions and attitudes can be located and compared from different perspectives and concerns. There are a lot of research papers written based upon the analysis of online data, such as Tamatea (2008; 2010).

An author posted an article on an online discussion platform stating that the use of handheld devices should be banned for children under 12 years old. One hundred and twenty-five readers who had access to Internet and the online discussion contributed to the discussion of agreeing or disagreeing with the author's opinion and the possible background of their responses. The online data was entered by different people around the world from February to May, 2014 and highlighted the nature of the present discussion in relation to the children's use of hand-held devices that is available online.

Out of the 125 responses, two (1.6%) were from European countries; 12 (9.6%) were from North America; 4 responses (3.2%) were from Australia; 1 response (0.8%) was from an Asian country, and the rest 106 responses did not indicate their locations. In regards to the participants' self-stated professions, 13 responses (10.4%) were teachers or educators; 9 responses (7.2%) were medical practitioners; 3 responses (2.4%) were teenager students; and the rest 100 responses did not mention their occupations. Out of the 125 responses, 35 (28%) were parents of young children (such as 7 months old, 4 years old and 5 years old) or teenagers.

Using similar analysing methods – critical discourse analysis (CDA) in Tamatea (2008), this report analysed different online responses towards children's use of hand-held devices. CDA is based upon both linguistic theory and social theory. Linguist theory elaborated by Ainsworth and Hardy (2004), Fairclough (2001), Henderson (2005), and Wodak (2001) is supporting CDA through a three-dimensional framework – micro, meso and macro-level interpretations. Moreover, theorists such as Habermans (1990) already addressed that critical social theory helps CDA approach to examine ideologies and power relations involved in discourse. The micro level interpretation was around the topic of whether the hand-held devices should be banned for children under 12 years old. The meso level interpretation was mainly focused upon the benefits and harm from the use or overuse of the devices. The macro level interpretation of the online data however concentrated on the strategies which shall or should be used in children's use of the hand-held devices. Although the data reported what could be considered opinions of the people without much research or literature support or development, the data is the opinions of the people who speak for or on behalf of children's parents, educators or medical practitioners, and who care to contribute on the discussion platform.

3. Causation Versus Correlation: Do Hand-Held Devices Negatively Impact Children's Development?

The online responses were mainly focused upon whether then hand-held devices should be banned from children under 12 years old. The author of the online article raised 10 reasons that they should be banned. In arguing whether the hand-held devices such as iPads and tablets should be banned in children under 12 years old, 45 (36%) out of the 125 responses strongly agreed that the devices should be banned; 20 responses (16%) somewhat agreed; 21 responses (16.8%) somewhat disagreed; and 38 responses strongly disagreed with the author's opinion. There is only one response (0.8%) showed no opinion about the author's statement. The strongly agreement and somewhat agreement responses were categorised into anti-technology responses; while the strongly disagreement and somewhat disagreement responses were categorised into technology-favourite responses.

The following figure is to present examples of online responses towards children's use of hand-held devices.

An Example of strongly agreement:
"The guidelines and suggestions as presented within this article are useful for generating dialogue and assist with informed decision making".
An Example of somewhat agreement:
"Technology can be a great tool, but it is also addictive and damaging in the way our society has rolled it out untethered by thoughtful norms or boundaries. Research shows damage to the hippocampus. What more is necessary to understand. That alone should get us parents in an uproar and it is interesting that instead parents respond with attacks. Could it be that we too are addicted… and blind?"
An example of somewhat disagreement:
"Research studies aren't always done well. I think this article does come across as alarmist and that is the last thing most parents need… For me, when I read statements like that it does taint the validity of the article. Just because you site studies, does not necessarily support the claim. One has to look at the funding sources, control groups, validity of measures, can the study be duplicated, etc".
An example of strongly disagreement:
"Precisely my point. I mean no disrespect, but your research methodology is completely opaque and therefore just comes across as a smattering of citations which seem to have little in common, other than that they serve to help explain your hypothesis"…."How did you choose what you included in your fact sheet? What criteria drove your search? That description of your process would make it worthwhile; otherwise it just reads like a long blog post".

Figure 1. Examples of online responses towards children's use of hand-held devices.

By using the CDA analysing methods, it was found that there are mainly three argument concerns in the opinions from the responses, which include: a) whether hand-held devices negatively impact children's development; b) what are the parents' roles and engagement in assisting children's use of hand-held devices; and c) whether the arguments should be research based. The following sections are to address each concern with examples from the online responses.

In this study, causation refers to that hand-held devices cause or impact directly on children's development; while on the other hand, correlation refers to that hand-held devices is correlated or associated with children's development, however not the main cause of their development.

The first argument concern in this study is whether the hand-held devices can cause physical issues, such as delayed development, obesity, sleep deprivation and mental illness. The anti-technology responses were supporting the causation. For example, one response stated "*the problem lies in children who cannot make wise decisions due to the fact that their frontal lobes are not fully developed until age 25. Kids generally pick instant gratification over delayed gratification, e.g. eat entire bag of candy now rather than one piece over a week".* The technology-favourite responses argued "*half the problems that are listed from technology could easily be from genetic or parenting problems: like a divorce, spousal fights/arguments, parents could also be giving their children junk food causing obesity and not enrolling them into sports. The list goes on, and to say that technology is causing all of these problems is absolutely out of context*".

The main argument around this concern is whether children were ready to use technologies, such as hand-held devices. This concern involves an in-depth discussion about child development.

Child development involves looking at the holistic nature of developmental including primary domains of social and emotional, physical, cognitive development and language acquisition.

In the website, out of the 35 participating parents, three of them asked questions in relation to their children's physical development issues in the forum. For example, an online participant "Lindsay" stated her 4-year-old son had behavioural issues and been nonverbal; she was asking whether she should get him an iPad to help him with his speech as she was told to.

Children can enhance their cognitive, social, perceptual and neurological development through their language development (Berk, 2009); and language development allows children to represent objects and ideas and includes understanding words, both verbal and written; with verbal being more predominate in childhood (Dodge et al, 2002). By developing receptive and expressive language, children enhance their cognitive, social, perceptual and neurological development (Allen & Marotz, 2010). According to Mitchell and Ziegler (2007, p. 133), most four to five year olds are highly competent users of language. The online anti-technology responses supported the opinion that she should not use iPad in assisting her son's language development, because "*communication is an interactive social skill, which is being significantly eroded by technology overuse. As parents connect more and more to technology, they disconnect from children*". Suggestions were also made to "Lindsay". For example, "*the best way to help our children is to unplug ourselves from technology, and be available for them*".

The online technology-favourite responses are both similar to and different from the anti-technology response. They were concerned with the child's neurological development associated with language development. For example, *"certain games, in moderation, are quite beneficial to a child's development";* and "*the issue with nonverbal children and technology is much more complex than just "will it delay language or not". It is incredibly unlikely that technology is the reason a child does not use language at the age of 4. Nor will it probably have an impact on the trajectory of language learning/use as the child ages. Something else is going on*". They indicated that the child's problems are a social issue not a technical issue. "*Four years old is very late to be nonverbal, there might be any number of reasons this mother has been encouraged to use an iPad. She should be encouraged to a) see an SLP if she hasn't already, and b) bring up these concerns with an SLP to problem-solve how to go no-tech for her child*". Three teenager students (2.4%) presented their experiences of using hand-held devices and developed very well without the claimed physical developmental issues, such as obesity and mental illness. "*None of us suffer from any of the problems which have been listed, but it is a good group of around 5 of us. Does that make us all 'Outliers' in the Correlations which have been citated, or are the Correlations and their evidence simply not examples of repeatable 'experiments' (for lack of a better term)?"* Suggestions were also made to the parent. For instance, the parent was advised to take her son to a speech language pathologist and have an assessment before any decision was made about the use of hand-held devices. *"Introducing tech to help the child express himself, communicate effectively, reduce frustration, etc. is an excellent use of technology. Pairing tech use with real-world exploration with this child might be the best choice for that family".*

Children's developmental areas are associated together with each other. For example, child's cognitive development assists children in making judgements, and solving problems (Allen & Marotz, 2010). These skills can play an important role in their decision of whether they should stay inside playing technologies with no or very limited physical activities, which can cause obesity. Proper cognitive development can help students to maintain mentally healthy and understand the world (Dodge et al, 2002). One aspect of the motor development – perceptual development - is closely linked with mental process commonly associated with cognitive development (Parke & Gauvain, 2009). For young children, such as 4 year old, physical development involves gross motor skills and fine motors skills development (Harwood, Miller & Vasta, 2008); and children with higher refine motor skills lead to higher outcomes (Dodge et al, 2002). Owing to young children's development, it is very difficult to measure their comprehension accurately (Allen & Marotz, 2010); therefore whether they should be use technology or not cannot reflect the child's true understanding of the knowledge and skills (Allen & Martz, 2010).

Thus far the information has highlighted from a developmental perspective the growth and typical development of children in the early and middle childhood years. However, no child is alike and each child will follow a divergent path in order to achieve developmental outcomes. Variations in gender, temperament, interests, learning styles, life experiences, culture, and special needs provide the

individual differences that make each child unique and that make development difficult to predict (Dodge et al, 2002).

4. Summary and Conclusion

This paper compared 125 online anti-technology with technology-favourite responses towards the use of hand-held devices for children under 12 years old.

The argument concerns on hand-held devices on child's development were explored in the comparison. Anti-technology responses emphasised the negative impact of the use of hand-held devices in young children. For example, use of hand-held devices can cause children's obesity, lack of physical activities and mental issues. However, the technology-favourite responses emphasised that parents' engagement in their children's use of hand-held devices were more important than simply using the devices as a baby-siting tool.

Although public audience had different opinions toward the use of hand-held devices, they all agreed that child development could be influenced by the use. In addition, public audience recognised the roles of technologies in child development (Allen & Marotz, 2010; Berk, 2009; 2013; Parke & Gauvain, 2009). The development happens in their physical development, social and emotional development, cognitive and language development. Children should be encouraged to develop their skills not only by using technologies, but also by playing during no technology time. Parents and educators' involvement in children's education is very essential. Both parties of online responses agreed that poor parenting or education with use of technology could cause children developmental issues, such as poor social interaction skills, bad temper (tantrum) and possible obesity.

The data for this paper only represent some of public audience; and can be considered "opinions without extensive development", but the responses were from those who spoke for themselves and who cared to do so online. The paradox is that in the argument concern that people are also looking for solid research based information. An online response answered the question: "*Why are you telling people what to do? People's choices are their own, let them have them*".

Further studies will be conducted about the use of technologies, such as hand-held devices in young children's development, such as their language development, social and emotional development and physical development.

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