

Evolution of toys and its effect on child development

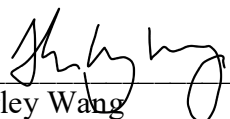
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On my honor as a University Student, I have neither given nor received
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Introduction

The purpose of this study is to analyze the advancement of technology and how it is affecting children. Children's development is closely linked to the toys and devices they interact with (Cohen, 2011). Since the widespread growth of mobile devices and internet in households, children are becoming more familiar with these devices, replacing their old play patterns with new methods of entertainment (Bergen, 2015). Since childhood is such a crucial time for developing important social, emotional, and mental skills, this analysis intends to determine the positive or negative impacts of this new technology. Since touchscreen, internet-connected devices like tablets are portable and easily used by children, we will be focusing on such devices while still mentioning other technological developments for the sake of analysis (Neumann, 2014). Ultimately, we will analyze the viewpoint of relevant stakeholders and how this technology is accepted in society.

Background

Growth of Technology

According to a 2013 Huffington Post, by 2022, the average household with two teenage children will own 50 Internet-connected devices (By 2020). We are certainly not far from this reality with new smart devices being marketed every moment, whether its smart phones, smart TVs, smart assistants, or smart dishwashers. This expansion of devices in the household results in children being exposed to these devices more and more. The presence of a computer or television in a child's bedroom has increased, and there is an increasing trend of younger children and infants using mobile devices (Kabali, 2015). Tablets, in contrast to computers have an easier interface for young children to interact with (McManis, 2012). They are light-weight,

portable, and children have shown a remarkable learning curve in learning how to use these touch-screen devices.

A study done by the Michael Cohen Group and USDOE found that children as young as 2 were able to do simple tasks such as matching and counting on a tablet. And children of different age groups of up to 8 years old demonstrated exploration of the touch interactions through trial and error, learning to press, drag, swipe, etc. (2011). One study illustrated how two children of 3 and 5 years played a virtual tea party game while playing with a physical toy tea set (O'Mara, 2011). Several studies show that devices are easily adaptable and changing the landscape of children's play time, which we will further investigate in the next section.

Technology and Child Development

Along with the change in technology came the change in children's play. A study surveyed young adults and college students on their most memorable childhood play times at three different time periods to compare the differences and show the incorporation of technology into children's play. The reports show a general trend of activities like dolls and action figures as well as sports and games outdoors in the younger, elementary age. Then, in high school more of the activities involved technology like video games and watching TV. There were still reports of non-technology related activities being played at older ages, but the percentage of reported technology-augmented play is greater at higher age levels (Bergen, 2015). This means that children now have access to these technologies at earlier ages, which might affect their play trends. We would now see younger and younger students engaged in video games instead of playing outdoors.

Play has a significant effect on brain development from infancy in a child. As an infant, the sensorimotor system develops by observing patterns and colors. At the toddler age, language

becomes defined and pretend play is usually developed which signifies simple symbolic thought. Early childhood is where motor and sensory skills are refined, then memory and problem-solving abilities, and thus games with rules begin to be played (Cohen, 2011). Technology-augmented play can have a role in every stage of development, from toys that produce songs and alphabet letters to virtual media to computer games connecting friends online. Therefore, a thorough analysis of two main aspects follows: 1) the relationship between technology and child development and 2) society's role and acceptance of this relationship.

STS Framework

The framework used for this analysis will be the social construction of technology (SCOT). SCOT is a theory that claims the advancement of technology is due to various social groups and their interpretation and acceptance of new technologies. The three core concepts of SCOT are: interpretive flexibility, relevant social groups, and stabilization. Interpretive flexibility is the idea that different stakeholders may have different understanding of the problem as well as the solution. In some ways the same technology can be the solution to many different stakeholders' various problems. Relevant social groups are groups of stakeholders who have similar purposes or meaning of the technology. Stabilization is the prevailing of one social group in the midst of competing groups.

Many stakeholders are involved in this issue including children, parents, teachers, and technology producers, but the main two stakeholders we will focus on are parents and teachers. In the discussion of this analysis, children will more likely be the subject of discussion, therefore we will focus on the perspective of parents and teachers since they tend to offer differing, not necessarily opposing, views on the issue of child development. The framework will be used to

identify each of the stakeholders' interpretation of the problem – what is beneficial for a child's development – and how the technology might propose a solution.

Parents

The first stakeholder we examine are parents. As the authority figure over the child and the household, the parent has control over the devices a child interacts with. A child's interaction with flat-screen devices is only possible if such a device is accessible to him/her. Furthermore, children learn from watching other digitally-able users, such as parents or siblings, use technological devices. Many studies indicate that if the parent is familiar with utilizing a technology, they will be more willing to allow their children to use them, and even encourage them to use these devices (An examination, 2014). In the study by Michael Cohen Group and the USDOE, it was reported that caregivers who owned touch screen devices readily introduced their children to technology, but those who didn't were anxious about their children using tablets (2011).

The concern over the use of internet-connected devices is understandable. A study focused on adolescent media exposure outlined a few concerns over children's use of personal mobile devices (Media, 2013). The amount of time young people spend with media has become more than the amount of time spent in school. More than 60% of teenagers report texting after "lights out" and report increased levels of tiredness including at school (Van den Bulck, 2007). Other studies find that children are viewing inappropriate material over the media accessed by their mobile devices (American Academy of Pediatrics, 2010). Even with these concerns, two thirds of children and teens in a different study reported that their parents have "no rules" about spending time on the Internet or on their personal devices (Rideout, 2010). Even though this data is mainly referring to adolescents and older children, the concern can be readily applied to

younger children as well. Another study on media exposure to young children ages 6 months to 4 years old indicates that most had their own device before the age of 4 (Dinleyici, 2016).

A study in Turkey with 333 participants revealed the nature of the parents' role. One method of ensuring a child's safety during device use is monitoring, but there are several methods of monitoring as well. 35% of parents prefer coviewing, 13.5% of parents use family filter, and 33.1% prefer checking Web history (Dinleyici, 2016). These are ways parents might be responding to the concern mentioned above. However, some parents take another approach to these devices.

Of parents who give their children permission to use the tablet in the household, 22.5% note that their children use the device during meals. And 57.9% of these children were under 5 years of age (Dinleyici, 2016). For even younger children, studies show that parents give children devices when they are doing chores, to keep them calm, and/or at bedtime (Kabali, 2015). For these parents, the flat-screen device is used to entertain the child for a temporary time, not for its educational potential.

One study gathered parent's views on tablets where 61% of families owned one or more touch screen tablets. 69% of parents thought it was either easy or very easy for their children to operate a touch screen tablet and 70% agreed or strongly agreed that touch screen tablets would help their children's literacy development. However, 48% were undecided about whether children should have tablets at home, but 53% believed children should have access to tablets at pre-school (An examination, 2014). Here we see parent's being confident of their children's abilities to operate these devices even at young ages and also their positivity on the benefits it could bring to their development. What is interesting is that though parents believe in the benefits, more parents think the devices should be interacted with at school than at home. With

the study from Turkey, 89.2% of parents emphasized that the Internet was essential for their child's education.

Teachers

School teachers are the other big influencers on children especially at young ages and while they are developing. If there is potential for these devices to have educational benefits as suggested by parents, teachers must also play a role in this issue. "Play" can be viewed as the opposite of "education". For a time, we slowly saw the shrinking of children's play time during school with less recess time and more standardized testing in an attempt to focus more on education during school hours. However, studies began to show that recess actually improves student's attention during academic learning. Thus, educators must value this time.

Another important aspect of this is to recognize the balance in guided vs. unguided play. Recess would be considered unguided play while guided play might involve academic curriculum. Both are beneficial for a child's development This is where teachers can play a role is facilitating guided play by incorporating it into the curriculum. However, teachers are finding it difficult to find appropriate and effective methods to do so (Cohen, 2011).

A study conducted in 2011 observed children's engagement with an ebook on a tablet device in a small teacher-led setting (Roskos). The children were given tasks to finger-track the print, flip pages, and point to words with the intent of improving the students' engagement and understanding of the words. However, some teachers reported that asking children to engage with the touch screen was disruptive and diverted their attention from the story line.

Methods

Teaching and Learning

According to the Early Years Framework, there are three characteristics of effective teaching and learning. First is playing and exploring, where the children investigate and experience things. Second is active learning, where children focus and continue trying if they encounter obstacles and enjoy their achievement. Third is creating and thinking critically, where children develop their own ideas and strategies for doing things (Young children).

Furthermore, three types of tablet apps have been identified for young children: gaming apps, drawing or building, and ebooks (Michael Cohen Group, 2011). Gaming apps are typically goal-oriented and easy to learn. The second type, drawing or building, appeals to children's creativity ability to construct something. Finally, ebooks provide an interactive and animated experience that helps with early literacy.

Looking back at the Early Years Framework, we can see that these three types of tablet apps cover the essential characteristics needed to engage a child in effective learning. Gaming apps are an effective method of playing and exploring for children, where they are immersed in an environment and experience something. In these goal-oriented tasks, they also engage in active learning through encountering obstacles and focus to overcome them. Especially in constructive apps, children are challenged to formulate their own ideas and bring them to life. By engaging with all three types of apps, the child is not missing out on any area of development. Of course, that is dependent on the choice of apps they choose to engage with, but the options are available.

The Method of Scaffolding

An Australian study concluded that gaming apps, like Fruit Ninja and Angry Birds, were the most commonly used apps by young children for its less educational aspects. Ebooks, on the other hand, show a more promising benefit of helping improve a child's emerging literacy through vocabulary, comprehension, phonological awareness, etc. (Neumann, 2014). So, we will look into a method of scaffolding that helps facilitate more meaningful interaction between children and tablets. We have learned that children have the capability to interact with these devices themselves, but scaffolding by a parent or teacher is another option. There are three methods of scaffolding according to Yelland and Masters: cognitive, affective, and technical (2007). Cognitive scaffolding aid in conceptual understanding through questioning and modeling. For example, when a parent reads an ebook with the child and asks questions to bring attention to main aspects of the reading. Affective scaffolding provides positive feedback and encouragement to the child to bring about higher thinking. For example, a teacher encourages the student to sound out letters on the page while tracing the letters on a tablet. Finally, technical scaffolding is how the features on the device provide feedback to help the child solve problems. For example, the screen might blink in specific areas to indicate clicking or dragging to a specific spot. Once the child begins to learn and understand more on their own, scaffolding methods can be removed.

Discussion

In the previous section, we were able to see how tablet devices are versatile in application as well as beneficial in the development of young children. In the household, they can entertain and keep a child occupied throughout play time, but in the classroom they have the ability to enhance the curriculum and supplement a lesson. The key benefit in these devices is its ability to

supplement the current infrastructure. In the example of the children playing with virtual tea, they were also simultaneously playing with a physical set. This is great example of how these tablet devices don't have to replace the current technology, but simply supplement current processes. The same could be applied to the classroom, where tablet use can be used as a supplement for growth in vocabulary and word recognition, but not have to replace flipping real pages in physical books.

Furthermore, the method of scaffolding allowed both parents and teachers to aid in the learning process. The human-device interaction does not have to remain between child and tablet, but can be guided by instruction from an adult figure. This way, both parent and teachers can be sure effective attention is focused on the device and not on inappropriate content. In the same way parents and teachers can guide a young child through an educational application instead of a student navigating it haphazardly on their own.

Conclusion

Technology has made many advancements of its own and has found its way into the household and onto the children's lap. The versatile applications on flat-screen tablets have proven to be effective aids in child development and don't have to necessarily replace any current working methods but instead supplement educational as well as play environments. Tablets and other flat-screen devices also have a large potential in aiding early literacy and mental growth in young children, which can be realized through parent or teacher scaffolding. These benefits are recognized by parents, who are able to control the use of these devices in the household if needed. Therefore, the advancement of tablets as a technology is being accepted in to the household and expected to aid in children's education in some ways. This acceptance

moves technology to further advance in this industry and further motivate society's continual use of such technology.

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