Influence of ICT on Young Nigerian Children's Development

Katrina A. Korb

Department of Educational Foundations

University of Jos

Contact Information

Email: Katrina.korb@gmail.com

GSM: 0703 959 6286

Korb, K. A. (2018, March). *Influence of ICT on Young Nigerian Children's Development.* Paper presented at the Department of Arts Education International Conference 2018 Globalisation, Arts Education and Sustainable Development, Jos, Nigeria.

Influence of ICT on Young Nigerian Children's Development

Abstract

Usage of Information and Communication Technology (ICT) has rapidly expanded in Nigeria, including among young children. The purpose of this paper is to review the research that describes the benefits and risks of ICT usage amongst young children. Research has found that high-quality educational programing can have a positive influence on the academic performance of young children three years and older. However, non-educational programing, including cartoons, can have a negative impact on academic performance. Furthermore, over-use of ICT and viewing inappropriate content can lead to poor physical, social, and cognitive development. Based on these findings, the Canadian Paediatric Society (2017) recommends a 3M model to apply to young children's ICT usage: Minimize, Mitigate, and Model.

Introduction

Usage of Information and Communication Technology (ICT) has exploded throughout the world (UNICEF, 2015), including in Nigeria. ICT incorporates a range of devices including television, smartphones, and computers (Fasai & Alabi, 2015) as well as accessing information and communicating through the internet. Many Nigerian children have access to ICT devices, both inside and outside of school. Televisions are also beginning to feature as a prominent learning material in many early childhood education programs. At home, young children have access to televisions, computers, tablets, and smartphones of their family members, and some children even have their own media devices. In light of the increasing usage of ICT devices among young children, both in the home and in school, research on the influence of ICT usage on young children's development needs to be considered.

Influence of ICT on Children's Development

Use of ICT has both positive and negative influences on young children. On the one hand, ICT allows children to learn, communicate, and access information that is important for them and their communities (UNICEF, 2015). On the other hand, ICT poses a significant threat to children's safety. It is important for teachers and parents to fully understand both the benefits and risks of young children's use of ICT, including television programs, games, and computer applications.

Well-designed educational television programs, such as *Sesame Square* (or *Sesame Street*), can improve learning outcomes for children from ages 3 to 5 (American Academy of Pediatrics, 2016). Research has found that young children who watch *Sesame Street* have better number skills, emergent literacy skills, and school readiness (Fisch & Truglio, 2011). Additionally, young children who view educational programs in nursery school were found to have higher grades in secondary school (Anderson, Huston, Schmitt, Linebarger, Wright, & Larson, 2001).

Importantly, the finding that television programing can have a positive impact on academic performance only applies to high-quality educational programs. However, most television programs and computer applications, even those described as "Educational," have not been designed by child development experts or educational experts (Vaala, Ly, & Levine, 2015) and therefore do not qualify as high-quality educational programs. There is no research evidence that non-educational or poorly designed educational programs improve learning or academic performance (American Academy of Pediatrics, 2016). In fact, exposure to some types of television programs are harmful for young children's learning. For example, young children who watch violent programs on television have lower grades in secondary school (Anderson et al., 2001).

It is oftentimes believed that exposure to television fosters young children's language development, specifically that young children will learn English by watching television programs. The research evidence on the impact of watching television on language development is mixed. Some research has found that young children do learn new vocabulary words from watching educational programing (Linebarger, Kosanic, Greenwood, & Doku, 2004). Other research has found that viewing television does not improve young children's vocabulary (Alloway, Williams, Jones, & Cochrane, 2014). Wright and colleagues (2001) found that young children who view educational television programing have higher scores on vocabulary tests, whereas children who view non-educational cartoons and adult programs have lower vocabularies. Again, this research underscores the importance of the content of television programs: exposure to high-quality educational television can lead to higher vocabularies, but exposure to low-quality programs can hinder young children's vocabulary development.

Furthermore, whereas high-quality educational television can improve vocabulary development, a review of research has found that children's grammar does not improve by exposure to television (Naigles & Mayeux, 2001). The age of the child is also important when considering the impact of watching television on language development. Zimmerman, Christakis, and Meltzoff (2007) found that children below the age of two who are exposed to a considerable amount of television have delays in language development.

To summarize the findings of television on language development, it can be concluded that exposure to high-quality educational programming influences vocabulary development for children over the age of two years. However, non-educational television, including cartoons, can hinder language development for all children, and any type of television can also hinder language development for children under two years of age. To explain these findings, Naigles and Mayeux (2001) concluded that children learn language

best by interactive conversations. In contrast, television viewing is typically one-sided, leaving children as passive nonparticipants of language. This passive viewing of television is a poor teacher of language.

Research has identified many negative side effects of children's exposure to television and other media devices on physical, social, and cognitive development. First, considerable use of media during the early childhood years, including television, computers, tablets, and other electronic devices, is associated with negative health outcomes. Children who watch more television have higher rates of obesity (Cox, Skouteris, Rutherford, Fuller-Tyszkiewicz, Dell'Aquilla, & Hardy, 2012). It is important to note that obesity is rapidly increasing within Africa, including Nigeria (Agyemang, Boatemaa, Frempong, & Aikins, 2015), so the finding that television viewing is associated with higher rates of obesity should be taken seriously. Likewise, children who use more ICT sleep less (Cespedes, Gillman, Kleinman, Rifas-Shiman, Redline, & Taveras, 2014). Lin, Cherng, Chen, Chen, and Yang (2015) found that young children who watch a considerable amount of television tend to have more delays in their gross and fine motor development than children who do not watch much television.

There are also negative impacts of media usage on young children's social development. Research has found that young children who view inappropriate television programs, including programs with violence, sexual content, and vulgar language, have lower social skills (Conners-Burrow, McKelvey, & Fussell, 2011). Exposure to violence on television increases aggressive behavior and anger in children, as well as decreases prosocial behavior and empathy (Anderson et al., 2017). To further support the link between violent programs and children's social behavior, researchers trained parents to switch the violent television programs that their young children viewed to well-designed educational programs (Christakis et al., 2013). Reducing exposure to violent television improved young children's behavior.

Finally, research has found that young children who watch a considerable amount of television tend to have more delays in cognitive development (Lin, Cherng, Chen, Chen, & Yang, 2015). Watching too much television can harm a child's ability to plan, regulate, and control their behavior, an important cognitive skill called executive functioning (Nathanson, Aladé, Sharp, Rasmussen, & Christy, 2014). Research has also found that the more television a child watches, the lower their academic performance (Pagani, Fitzpatrick, Barnett, & Dubow, 2010).

3 M's of Young Children's ICT Usage

Based on the research findings about the influence of ICT usage on young children's development, the Canadian Paediatric Society (2017) recommends 3 M's that parents, caregivers, and teachers should consider regarding young children's ICT usage: Minimize, Mitigate, and Model. The first M, Minimize, means that ICT usage should be minimized for young children (Canadian Paediatric Society, 2017). Research has found mostly harmful effects of media usage on development for children below the age of two years. Therefore, the Canadian Paediatric Society recommends that children below two years of age should never be exposed to ICT. The only exception would be a program like Skype used to communicate with distant friends and family. The Canadian Paediatric Society recommends that children between 2 to 5 years of age should spend less than one hour per day using ICT. By minimizing use of ICT, young children have more time to spend in social interactions with siblings, parents, and other caregivers, which is how young children learn best.

The second M, Mitigate, means reducing the risks associated with ICT. This can be done by an adult or older responsible child co-using ICT together with the young child (Canadian Paediatric Society, 2017). There are two benefits co-using ICT with a younger child. First, a parent or caregiver should pay attention to the type of programs that a child is viewing on the television or using on a computer, tablet, or smartphone to ensure that the

child is only using high-quality educational programing. Furthermore, the parent or older sibling can explain what is happening in the program to the child, which will help the child to understand whether what they are viewing on television is right or wrong.

The third M, Model, means that adults should model healthy use of ICT (Canadian Paediatric Society, 2017). Young children learn by observing their seniors, so children will most likely adopt the media habits of their parents, caregivers, and older siblings. To model positive ICT usage, adults should turn off screens when they are not being actively used. (Research has found that exposure to background television, which means that the television is on although nobody is really paying attention to it, is related to lower cognitive abilities, e.g., Armstrong & Greenberg, 1990). Adults can also model positive media usage by scheduling ICT-free family time, and choosing other positive activities such as reading or visiting friends.

Recommendations

Based on the recommendation by the Canadian Paediatric Society (2017) that young children's exposure to media be minimized, it is recommended that early childhood classrooms do not have televisions. Instead, the financial resources that would otherwise go towards a television would be more wisely invested in books. There is incontrovertible evidence that exposure to books from infancy has many benefits for young children's oral language development, literacy development, and social development (Fisher, Flood, & Lapp, 2003). Unlike exposure to ICT, there is virtually no evidence of risks of exposure to books for young children.

Because of widespread ignorance about the potential disadvantages of exposure to ICT, educational specialists should embark on an awareness campaigns to educate parents and early childhood educators about the benefits and risks of young children using ICT devices.

Practically all of the research on the risks and benefits of ICT usage has been conducted in Western countries. Therefore, educational and developmental researchers should conduct research on the current usage of ICT among young Nigerian children, as well as the advantages and disadvantages of ICT usage amongst Nigerian children. Research should also be conducted on parent and educators' beliefs of ICT usage amongst young children.

Conclusion

In conclusion, young children's ICT usage needs to be more thoughtfully considered, both in the home and in early childhood education programs. Research has found that high-quality educational programing can have a positive influence on the academic performance of young children three years and older. However, non-educational programing, including cartoons, can have a negative impact on academic performance. Furthermore, over-use of ICT and viewing inappropriate content can lead to poor physical, social, and cognitive development. Therefore, parents and teachers should apply the 3 M's when considering young children's ICT usage: Minimize, Mitigate, and Model. Specifically, young children below the age of two should not be allowed to use ICT. Children three years and older should spend no more than one hour on ICT. Parents or older siblings should mitigate the risks by co-viewing together with the child and limiting the types of programs that the child watches. Finally, parents and older siblings should model healthy use of ICT.

References

Agyemang, C., Boatemaa, S., Frempong, G. A., & Aikins, A. G. (2015). Obesity in sub-Saharan Africa. In. R. S. Ahima (Ed)., *Metabolic syndrome: A comprehensive textbook* (pp. 41-53). New York: Springer.

Alloway, T. P., Williams, S., Jones, B., & Cochrane, F. (2014). Exploring the impact of television watching on vocabulary skills in toddlers. *Early Childhood Education Journal, 42,* 343-349.

American Academy of Pediatrics. (2016). Media and young minds: Council on communications and media. *Pediatrics, 138.* Retrieved from http://pediatrics.aappublications.org/content/pediatrics/138/5/e20162591.full.pdf

Anderson, D. R., Huston, A. C., Schmitt, K. L., Linebarger, D. L., Wright, J. C., & Larson, R. (2001). Early television viewing and adolescent behavior: The recontact study. *Monographs of the Society for Research in Child Development, 66,* 1-154.

Armstrong, G. B., & Greenberg, B. S. (1990). Background television as an inhibitor of cognitive processing. *Human Communication Research, 16,* 355-386. doi: 10.1111/j.1468-2958.1990.tb00215.x

Canadian Paediatric Society. (2017). Screen time and young children: Promoting health and development in a digital world. *Paediatrics & Child Health, 22,* 461-468. doi: 10.1093/pch/pxx123

Cespedes, E. M., Gillman, M. W., Kleinman, K., Rifas-Shiman, S. L., Redline, S., & Taveras, E. M. (2014). Television viewing, bedroom television, and sleep duration from infancy to mid-childhood. *Pediatrics, 133,* e1163-e1171. doi: 10.1542/peds.2013-3998

Christakis, D. A., Garrison, M. M., Herrenkohl, T., Haggerty, K., Rivara, F. P., Zhou, C., & Liekweg, K. (2013). Modifying media content for preschool children: A randomized controlled trial. *Pediatrics, 131,* doi: 10.1542/peds.2012-1493

Conners-Burrow, N. A., McKelvey, L. M., & Fussell, J. J. (2011). Social outcomes associated with media viewing habits of low-income preschool children. *Early Education and Development, 22,* 256-273. doi: 10.1080/10409289.2011.550844

Cox, R., Skouteris, H., Rutherford, L., Fuller-Tyszkiewicz, M., Dell'Aquilla, D., & Hardy, L. L. (2012). Television viewing, television content, food intake, physical activity and body mass index: A cross-sectional study of preschool children aged 2-6 years. *Health Promotion Journal of Australia, 23,* 58-62.

Fasasi, Y. A., & Alabi, S. A. (2015). Information and communication technology: A tool for enhancing supervisory effectiveness in Nigerian educational institutions. *Journal of Educational Foundations, 5,* 103-110.

Fisch, S. M., & Truglio, R. T. (2011). Why children learn from *Sesame Street*. In S. M. Fisch & R. T. Truglio, (Eds.), *"G" is for growing: Thirty years of research on children and Sesame Street* (pp. 233-247). New York: Routeledge.

Fisher, D., Flood, J., & Lapp, D. (2003). *Material matters: Using children's literature to charm readers (or why Harry Potter and the Princess Diaries matter).* In L. M. Morrow, L. B. Gambrell, & M. Pressley (Eds.), *Best practices in literacy instruction* (2nd ed., pp. 167-186). New York: The Guilford Press.

Lin, L.-Y., Cherng, R.-J., Chen, Y.-J., Chen, Y.-J., & Yang, H.-M. (2015). Effects of television exposure on developmental skills among young children. *Infant behavior and development, 38,* 20-26. doi: 10.1016/j.infbeh.2014.12.005

Linebarger, D. L., Kosanic, A. Z., Greenwood, C. R., & Doku, N. S. (2004). Effects of viewing the television program *Between the Lions* on the emergent literacy skills of young children. *Journal of Educational Psychology, 96,* 297-308. doi: 10.1037/0022-0663.96.2.297

Naigles, L. R., & Mayeux, L. (2011). Television as incidental language teacher. In D. G. Singer & J. L. Singer (Eds.), *Handbook of children and the media* (pp. 135-152). Thousand Oaks, CA: Sage Publications.

Nathanson, A. I., Aladé, F., Sharp, M. L., Rasmussen, E. E., & Christy, K. (2014). The relation between television exposure and executive function among preschoolers. *Developmental Psychology, 50,* 1497-1506.

Pagani, L. S., Fitzpatrick, C., Barnett, T. A., & Dubow, E. (2010). Prospective associations between early childhood television exposure and academic, psychosocial, and physical well-being by middle childhood. *Archives of Pediatric Adolescent Medicine, 164,* 425-431. doi: 10.1001/archpediatrics.2010.50

UNICEF. (2015). *Guidelines for industry on child online protection.* Retrieved from https://www.unicef.org/csr/css/COP_Guidelines_English.pdf

Vaala, S., Ly, A., & Levine, M. H. (2015). *Getting a read on the app stores: A market scan and analysis of children's literacy apps.* The Joan Ganz Cooney Center at Sesame Workshop. Retrieved from http://www.joanganzcooneycenter.org/wp-content/uploads/2015/12/jgcc_gettingaread.pdf

Wright, J. C., Huston, A. C., Murphy, K. C., St. Peters, M., Piñon, M., Scantlin, R., & Kotler, J. (2011). The relations of early television viewing to school readiness and vocabulary of children from low-income families: The early window project. *Child Development, 72,* 1347-1366.

Zimmerman, F. J., Christakis, D. A., & Meltzoff, A. N. (2007). Associations between media viewing and language development in children under age 2 years. *The Journal of Pediatrics, 151,* 364-368. doi: 10.1016/j.jpeds.2007.04.071