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# Adequate Use of Technology and Effects on Young Children

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Adequate use of Technology and Effects on Young Children

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### Abstract

This paper reviews literature about technology use in young children and the positive effects it may have, along with consequences and recommendations. Young children are able to access technology easily and use it for many reasons. Using technology responsibly and for educational purposes will help maintain young children's health and safety. Supervision and interaction is key when young children use technology. Young children spend a lot of time on technology which can have adverse effects such as physical health issues, mental health issues and social interaction problems. When children use it for educational purposes the work should be monitored and the programs adequately researched. Young children can improve literacy skills, mathematics skills, writing skills and also social interaction skills. Students in special education have also benefited from the advancements in technology. Spending too much time using technology and using it for inappropriate reasons can harm young children. Adults are responsible for teaching young children the appropriate uses of technology and monitoring use to make sure the children become responsible technology users.

### Adequate use of Technology and Effects on Young Children

Technology use in the early childhood classroom is becoming more and more of a requirement instead of an option. The use of technology allows children to be more engaged, learn materials in a different way and catch up on skills where there may be a deficit. Using technology in the classroom has also become part of the Common Core standards. There are expectations for children to use technology, and be efficient in technology use by the time they graduate from school. This is changing the way teachers teach, and the way students learn in the classroom.

There has been a lot of research done with early childhood education and the use of technology. Young children spend time on technology almost every day of their lives. There is a fine line between appropriate amount of technology and too much technology. The Academy of Pediatrics and White House Task Force on Childhood Obesity recommend no technology use for children under the age of two (Technology and Interactive Media, 2012). Other recommendations by the two groups, are that children two years of age and older, are only allowed one to two hours of screen time (Technology and Interactive Media, 2012). There is a wide variety of technology out there and all of these need to be considered part of the usage time for young children. Items such as iPads or tablets, video games, television, computers, smartphones, etc. are all considered part of technology and are all easily accessible to most children. Young children are not excluded from these devices. Most people may not realize how often children spend on these devices because of the popularity of these devices.

With all the research and opinions out there, there are conflicting reports about technology use in early childhood education. Not all technology is bad or hurtful to children. It is not the type of technology being used in the classroom that is important, it is the content within the programs being used with that technology, that make it beneficial, or detrimental to a young

child (Technology and Interactive Media, 2012). Using technology in the classroom can benefit kids in many ways including improvement with reading, math, writing and social skills. When technology is used for inappropriate reasons in education including, free time or play time, it does not benefit children in ways it should.

Adults involved in children's lives need to be aware of what the young children are doing with technology and need to make educational decisions when using technology. When teachers consider using technology in their rooms, they need to use the same decision making rules they would use when deciding if the textbooks or other materials used in the classroom are appropriate and educational (Technology and Interactive Media, 2012). Some similar guidelines can be addressed with parents when deciding what type, how much and how technology is used with their children (Technology and Interactive Media, 2012). There should be open communication between all users of technology to make sure technology is useful and appropriate. Children also need to be monitored when using technology in any setting. Technology can benefit children of all abilities, expand knowledge and interaction between children and also keep children engaged. Early childhood educators are still responsible for observing children and making sure they are learning from the technology and also keeping up to date on the research of the best practices and programs available (Technology and Interactive Media, 2012).

The question remains how much time is appropriate for children in early childhood education to use technology and when is too much? Reviewing literature on the topic may give teachers, parents and kids a better understanding of this question. Could it be the content that the kids are exposed to that helps create these standards? Many benefits can be seen with the use of technology, but these benefits have to outweigh the risks for technology to be a valuable asset to

early childhood education. It may not just be the time spent on technology, but the content that is being presented that can determine the “right” amount of time.

### **Review of the Literature**

Using technology both at home and school is becoming more and more common for young children. There have been many articles written about the use of technology and the effects it can have on kids. There have also been some studies done to see both benefits, and negative consequences of technology on young children. The question of if children use technology is no longer. The question now is how much children use technology and what is the appropriate amount of time for them to use it. According to the research by Lentz, Seo, and Gruner (2014), 70% of children aged zero to two use technology in their daily lives. Using technology is becoming more and more a fixture rather than a luxury. There are standards that require the use of technology and integrating it into the classroom (Daugherty, Dossani, Johnson & Wright, 2014).

### **Emergent Literacy**

Research shows that emergent literacy has had a positive effect of technology. Through a study that was done using computer-assisted instruction, it showed improvements in a child’s reading ability for students that were struggling. This study took place in Finland and focused on the areas of reading comprehension, fluency, and spelling. The goal of the study was to have the struggling readers to catch up with their peers by the third grade. The struggling student only had to use a computer-assisted program for about 15 minutes a day to accomplish these goals. When using that technology, the children improve in the areas of comprehension, fluency, and spelling (Lentz, Seo, & Gruner, 2014). Along with struggling readers, there are also different programs

and materials out there for other children. E-books are a big part of online reading and use of technology (Lentz et al., 2014).

Using iPads with students can also improve their phonemic awareness skills, especially students with Autism or other disabilities, and English language learners (ELLs). One app that proved beneficial for students for phonemic awareness is Touch Sound (Chai, 2017). Touch Sound is an app that has a constant time delay so children are able to identify initial phonemes (Chai, 2017). This app has been proven to improve phonemic awareness skills in children with developmental delays. Along with improving the skills in these kids, the kids maintained their skills after the instruction was finished (Chai, 2017). Phonemic awareness is an important part of reading for young children. Children need early intervention to catch up to peers, maintain their skills and also generalize those skills in all contents in school.

SMART Boards are also valuable tools when teaching emergent literacy skills. SMART Boards have been used to teach sight words, letter identification and other areas of literacy. A comparison of using a SMART Board to teach sight words and also regular flashcards was conducted. It was shown that young children responded to and improved their sight word skills better when using a SMART Board (Shepley, Lane & Gast, 2016). Not only did the students improve their sight words skills, the students and teachers both preferred to use the SMART Board instead of flashcards (Shepley et al., 2016). A SMART Board can also be used to teach children to read survival skills words. The same system was used when teaching the sight words.

Many applications and computer programs are readily available for early childhood education teachers to use in their classrooms. VoiceThread is a program that supports emergent literacy in receptive, expressive and comprehension areas of literacy (Gillis, Luthin, Parette & Blum, 2012). VoiceThread is a program that allows children to make, see other children's

creations and comment on each other's work (Gillis et al., 2012). Having children creating their own work, allows them to take ownership of the work and make quality work. VoiceThread can improve receptive language because children would be able to see what other children are doing with more understanding. One use would be following two-step directions (Gillis et al., 2012). Children can practice it, and check their work when watching other children follow the same directions (Gillis et al., 2012). Using visuals with children gives them specific learning goals and allows them to know exactly what the teacher wants. Expressive language can be encouraged through VoiceThread by having children put on plays (Gillis et al., 2012). Children can pick roles, use their creativity and then share their experiences (Gillis et al., 2012). VoiceThread also allows children to practice their comprehension. Comprehension can be practiced by sequencing events, inferencing, predicting, and also different story structures (Gillis et al., 2012). Using technology can engage children in reading and enhance their learning.

Many people agree that reading a book or using e-books, benefit the same. Children still learn to use the e-book the same way as if they were holding an actual book. Children can flip the pages on the e-book, hold it in their hands and read it (Neuman & Neuman, 2014). Along with the similarities, there are benefits to using e-books. Children are able to listen to the book, look up words they do not know, magnify the book if needed, and also use interactive features such as questions about the text and so on (Neuman & Neuman, 2014). Using e-books may help young children become interested in reading, or become more independent when reading.

### **Writing**

Young children can also benefit from writing technology included with integrating technology. There are many programs out there that support writing or the development of writing. Lentz et al (2014), identifies PictoPal as a supportive writing technology. This program

enables students to use pictures and words to create their stories. The young children are able to use their own imagination to write stories through the use of words and pictures. The young children are starting to build their own abilities. It is also suggested that after creating the story the students use these in the dramatic play are of the early childhood room (Lentz et al., 2014).

Another example of how technology can support writing in a way, is using it with journaling. An early childhood special education teacher at the Harmony Early Childhood Center in Olathe, Kansas, assigns a journalist and their job is to take pictures on a tablet during center time. The teacher then has the child pick a picture and they discuss it at circle time (Donohue & Schomburg, 2017). There are many expansions that could be done with this. Children that are able to can write some words about the picture, or they can even draw their own picture.

One example the article by Lentz et al. (2014), mentioned was about language development and podcasts. Students found them interesting when listening to them, and wanted to create their own. They went through the process of writing, recording and sharing their own podcast (Lentz et al., 2014). This allowed the children to use their language skills and share their information in a different platform while meeting the expectations of writing standards.

Computers and internet browsing could be a skill building activity for young children in the early childhood classroom. A study was completed in Australia about web searching in the early childhood classroom. The students were asked to do a Google search on the computer (Spink, Danby, Mallan & Butler, 2010). While attempting to search for endangered animals, students misspelled it, but the search engine was able to accurately detect what they were trying to spell (Spink et al., 2010). The children were able to get the spelling close enough using their own knowledge and then having the computer assist them, with teacher guidance (Spink et al., 2010). The students were able to practice their spelling skills and find out more information

using the computers. This may be something for them to practice in the early childhood classroom, but it may not be a necessary skill to teach. This allows children to become more independent, but it can also leave them vulnerable to other dangers on the web.

### **Math and Technology**

Another area in education the by Lentz et al. (2014), say technology is helpful is math. One program mentioned in the article is Building Blocks (Lentz et al., 2014). Building Blocks is a program that was designed to use everyday activities children do and incorporate math in them (Clements & Saranma, 2011). Building Blocks works on two areas of math, number concepts and spatial and geometric concepts (Clements, & Saranma, 2011). Some children use manipulatives to calculate math problems. The study also showed the manipulatives online were just as effective as other manipulatives that might be used in the classroom (Lentz et al., 2014). Using these programs and other programs alike on computers, interactive whiteboards, and other technology devices can increase a student's understanding dramatically. All math programs should be considered carefully and tailored to the students' needs.

Mathematics in early childhood education is becoming more and more important. Some research has mentioned if students struggle with math concepts in early childhood, it could lead to long-term issues in their education (Papadakis, Kalogiannakis & Zaranis, 2018). It has also been mentioned that math struggles can also lead to the achievement levels in reading (Papadakis et al., 2018). The use of touchscreens in education has increased tremendously. These touchscreen devices has been known to increase mathematic skills in young children. Some research has shown that children can improve their numeracy skills when using iPad apps for a short period of time (Papadakis et al., 2018). Not only did it increase numeracy skills in a small amount of time when using iPad apps, it can also have long term effects for young children

(Papadakis et al., 2018). These long term effects while using a touch screen device were positive effects on young children in the mathematic content area.

Using computers in the early childhood classroom for math instruction is appropriate as long as it fits the development of the children (Papadakis et al., 2018). The computer provides an opportunity for children to learn new math concepts and understand previous taught concepts better (Papadakis et al., 2018). Young children may even learn better when using computer technology. Some more difficult concepts can be taught at a younger age when using computer technology with students (Papadakis et al., 2018). More advanced students can also take advantage of using computers in the classroom. The more advanced students can use the programs to continue on a different learning path to meet their needs. Students tend to understand or learn the concepts in different ways and are able to grasp them more quickly (Papadakis et al., 2018). Using computers to teach math also allows children to be more engaged when learning concepts that may not always be as interesting as others (Papadakis et al., 2018).

### **Skills Building with Technology**

Not only is technology useful with academics, but in the article by Lentz et al. (2014), it states that video games or virtual worlds allow children to engage in fantasy play or socio-dramatic play. These can allow children to take on issues like identity. Children were allowed to “play” like they would in the real world, but have the use of technology. It was thought that children played the same way online as they would in the real world with other peers (Lentz et al., 2014). The studies on this type of effect on children are scarce and more information would be needed to promote the use of technology in this area (Lentz et al., 2014).

There are other skills students can learn when using technology. Some children may see things on television like kids sharing, or helping out. These skills can then be transferred to real-

life. When skills like these are learned they benefit kids in learning how to function in their daily lives. This all can be done by watching some television and have the children copy the behavior (Ernest, Causey, Newton, Sharkins, & Summerlin, 2014). Special education teachers were also in support of the use of technology such as Nintendo Wii in their classrooms. Not only did it benefit the students physically but also with social skills. The students had to learn to take turns, wait their turn, work together and also problem solve (Ernest et al., 2014).

Computers can also be an extraordinary asset to an early childhood education classroom. Computers can have programs on them that benefit the children's academic abilities, but it can also do more for the children. There is research being conducted on how children interact in the computer area of a classroom. Some research has shown that children are more sociable in the computer area (Lim, 2012). When there are multiple children in the computer area of a classroom, children are also more cooperative and spend more time talking to each other than if they were doing other group work in the classroom (Lim, 2012). Children that are reluctant to talk in other situations, or have disabilities tend to benefit from this socialization while using computers (Lim, 2012). Computers can also promote critical thinking skills and problem solving skills (Lim, 2012). Children learn to work together, make decisions, and also learn to accommodate each other when necessary. All of these situations can build the social interactions between children. Creativity and language skills can also benefit children when using the computers (Lim, 2012). When children have interactions in the computer area, the interactions allow children to learn to express their thoughts and feelings (Lim, 2012). When children learn to express themselves appropriately this gives them a lifelong skill they need. When children are engaged with each other and technology is used appropriately, there are many skills children can gain. The key to benefiting social for children in early childhood, is that they use technology

together, and not by themselves (Daugherty et al., 2014). Children are also more likely to ask each other for help, instead of an adult, when they are allowed to learn together. Sometimes adults can interfere with the interactions of children and it can inhibit their learning (Lim, 2012).

Children can also interact together when using tablets. The tablets are portable and allow children to move around and interact with each other while they are using them. When multiple children are using tablets in the classroom for many reasons, they need to be allowed to interact with each other. Children are able to move with tablets, interact with other students, collaborate with other students and be more engaged with the work presented to them (Papadakis et al., 2018). Allowing children to do move around and interact, helps them focus more on the task at hand, along with allowing them to problem-solve with each other and use critical thinking skills (Papadakis et al., 2018). Tablets are also beneficial for students when they can be provided with a real-world situation and be able to use the tablet to complete the task (Papadakis et al., 2018).

### **Advancements in Technology**

Technology back in the early 1900's technology consisted of movies and radios and that is what young children spent a lot of their time doing (Barone, 2012). Later in the 1900's television was added into the mix and eventually cable (Barone, 2012). Since then we have the internet, computers, tablets, smartphones and other complex gaming systems. Technology is an ever changing field and can be useful in many different ways. It is also easier for younger children to have access to these devices. Rapid advancements are made in technology to meet the demands of the people or companies' needs.

The advancements in the technology field have led up to devices like touchscreens. Before when children were allowed to use the computer, the mouse and keyboard could have been a barrier for some children. Now with the touchscreens younger children are able to use

technology for educational purposes (Neuman & Neuman, 2013). The article also mentioned children were able to use a stylus to create drawings. (Neuman & Neuman, 2013).

Enhancing education through the use of technology is a skill teachers should have. There are many ways teachers can use access to technology that allow children to experience events they may not normally experience (Donohue & Schomburg, 2017). In Texas, a teacher was teaching her students about fall. Part of fall includes the migration of butterflies down to Mexico. The students had seen some butterflies migrating on their way from recess. The teacher decided to help them see the full effect of this. Not only did they discuss the butterflies they saw, but they talked about where they were going. The teacher then looked online to find pictures of these butterflies in Mexico where they stay while it gets cold in the United States. Children may not have known where the butterflies were going or why they were going there without the enhancement of online access and facilitation by the teacher (Donohue & Schomburg, 2017).

Different types of technology are included in everyday living and education. Research has been done for the advantages and disadvantages. Some of the newest technology involved in education are touch screen tablets. In an article written by Neumann and Neumann (2013), over half of zero to eight year olds in the United States have access to some type of touch screen device. Along with access to it, a small percentage of the children use those touch screen devices over 40 minutes a day (Neumann & Neumann, 2013).

Tablets can benefit students in many ways. One of those ways is through literacy. Using tablets can improve emergent literacy skills including: letter naming, sound knowledge, early writing, print concepts and phonological awareness (Neumann & Neuman, 2013). Because touch screen tablets can be more interactive than computers and can run apps that allow children to engage with text, children can still develop the print concepts needed for future skills. Computers

do not allow children to “flip” pages with their hands or even allow children to hold the materials in their hands. Touch screen tablets are also easier for children to access making it more accessible for children and easier to learn to use. Tablets are more versatile allowing children to be able to read, write and do many other activities to boost literacy skills awareness (Neumann & Neumann, 2013).

Even though touch screen tablets are widely accessible to many children, making sure they are using appropriate apps to ensure learning is vital to the success of children. Neumann and Neumann (2013), discusses that there are only a few high quality apps out there that are designed to increase literacy skills. Children need to use these high quality apps for success with these skills. If children do not use apps that are appropriate for them, they will not gain the necessary skills and using the technology would be useless (Neumann & Neumann, 2013). Time at school is essential for students. This time cannot be wasted and technology that will not help them improve their education.

**Special Education.** Students with special needs may benefit from the use of technology in instruction. Use of technology such as Microsoft PowerPoint may have a greater impact on students with disabilities and teaching literacy skills (Parette, Hourcade, & Blum, 2011). Microsoft PowerPoint is program usually readily available for teachers to use (Parette et al., 2011). Simple things like using the pictures, sounds or animations in PowerPoint can engage early childhood special education students and help develop their emergent literacy skills (Parette et al., 2011). Microsoft PowerPoint presentations have also benefited young children with autism follow schedules and other classroom routines (Parette et al., 2011).

Other programs such as Photo Story 3 may also benefit special needs students in early childhood (Parette et al., 2011). This program allows teachers or other adults make lessons with

special effects to engage children in learning (Parette et al., 2011). Students with special needs need more engaging activities in school to keep them focused. Often times students with disabilities need more encouragement to learn, engaging them may make it more encouraging and they may be more willing to learn. Book Builder is another program schools or teachers may want to look into. This program allows children to make and read digital books according to their interests (Parette et al., 2011). There are many programs out there for children with special needs to use, but the technology itself has also enhanced the learning of special needs kids. The invention of technology such as iPads and other computer software has allowed children with special needs to communicate and read better (Ernest et al., 2014).

Special education students may have a disadvantage if technology is supposed to be used, especially in the early childhood setting. Students with special needs often require technology to communicate effectively, follow schedules, or learn new skills. Children need access to these devices immediately to effectively learn these skills (Judge, 2006). Often times the necessary technology for these kids are not available when they need them (Judge, 2006). Many times it can take months for these children to obtain the necessary technology, and by then it may be too late for them because they have learned the skill, fallen further behind, or need other technology that is now more appropriate (Judge, 2006). There is a law that requires special education teams to provide technology to these students. Since this is a law, there has been a suggestions to keep a toolkit of assistive technology available in early childhood classrooms (Judge, 2006). To make sure the toolkit would be useful in each classrooms setting, it would be important to evaluate the needs that have been in previous and current classrooms. This may be a start of creating a toolkit for special needs students.

### **Downfalls with Use of Technology**

Along with all the positive sides of technology, there are some downfalls. The article by Lentz et al (2014), mentions that overuse of technology some kids see today can be troublesome. Computer addictions is an issue that can arise from too much technology with young children. A study done in Korea, showed five year olds that used computers at school and at home that were not supervised appropriately, had a higher score on the Internet Addiction Scale for Young Children (Lentz et al., 2014). The use of the computers in the home environment had more adverse effects on young children than did the use of computers in the educational environment (Lentz et al., 2014).

There may be negative impacts on a child's brain from zero to three with the overuse of technology (Ernest et al., 2014). During the early childhood time frame, the child's brain grows faster than any other time in the child's life (Ernest et al., 2014). The impact of using technology in this time frame could have negative consequences for children. Children need to build relationships at this stage and technology could affect those relationships. The unknown harm to a child's brain during this age range results in a recommendation by the American Academy of Pediatrics that there is no screen time for these children (Ernest et al., 2014).

**Safety.** Internet safety is a growing concern among children today. Children are able to use the internet in a variety of ways and surprisingly at a young age. Children do not always know the dangers involved in using the internet and need to be supervised when doing so. In the article by Lentz et al., children stated they did not know misinformation and inappropriate pictures are something they needed to look out for on the internet (2014).

**Physical Health.** Health concerns is another area that needs to be addressed with young kids and the use of technology. The lack of movement when young children are using technology is a huge concern in today's world. Watching television, using a computer, tablet or other

technology has led to an increase in obese children. Reducing time on technology and increasing play is important for a child's development and to reduce the risk of other health conditions (Lentz et al., 2014). Technology can be incorporated into movement or active play to reduce the risk of obesity. One example of how to incorporate technology into activities is to use a tablet and explore outdoor. The tablet would be used for researching what is being seen, such as insects, plants, animals, or other nature the children may see (Daugherty et al., 2014). To go along with the other physical health concerns, sleep disturbances can also be an issue with kid's overuse of technology (Ernest et al., 2014).

**Mental Health.** Physical health concerns is an area of concern, but along with that, there are the social concerns. There are some students that advise against children's exposure to media, technology, and screen time (MeTS), (Sharkins, Newton, Albaiz & Ernst, 2016). These studies showed decreases in children's ability to attend to tasks, academic performance, creativeness in play time, and also the social interactions that they have with other children and adults (Sharkins et al., 2016). All of these issues can also lead up to violent behaviors, bullying and also the lack of feelings towards other people or these behaviors. Students can get desensitized to the feelings of other people, making it hard to control their behavior and can lead to them hurting other people (Sharkins et al., 2016).

Young children need to be able to develop appropriate communication skills when they are still young. There are many opportunities for children to build these skills if they are provided adequate sources. There may not always be specific guidelines for the correct amount of time for each child or age range, but there is usually a consensus children still need play time and interaction with adults and other children (Lentz et al., 2014). Play time needs to include

movement and time outside to interact with nature (Lentz et al., 2014). Along with play time, children need to interact with each other without technology (Lentz et al., 2014).

When children interact with each other they are able to develop skills needed to communicate their needs and wants. This is a skill children will use the rest of their lives. When given adequate opportunities in appropriate situations, children will benefit immensely. Interactions with adults are also important. Children will run into adults throughout their school day, out in public, with their parents and other caregivers. Children need quality time to learn how to build appropriate relationships. An adult needs to let the child know they have a place to go and have examples of how to grow and live (Lentz et al., 2014).

Children also need to use their senses, especially young children. Children should be allowed to play with different mediums like, sand, water, play dough, and paint. When children are young they have developing senses and need exposure to different materials. Technology cannot take the place of these opportunities. Technology can be included in with these activities, but it cannot be substituted for them. An example of including technology into sensory play would be using an underwater camera in the water table and letting the children take pictures. When the children are finished taking pictures, let them print them out (Lentz et al., 2014). Another way to expand on that is writing. See what the children can tell you about the pictures, what they can write or even draw a story about.

**Accessibility.** Other factors that may inhibit the use of technology is training on programs and costs of programs. When using programs new to the teacher, teachers have to have the time and skills to learn these programs (Parette et al., 2011). If teachers are not given time to learn the program and how they can use it in their classroom, the technology really does not do any good to them or the children that are supposed to learn it. Another downfall of technology is

the cost it may take to buy a program to use with students (Parette et al., 2011). There are a lot of great programs out there, but if people can't afford them, it doesn't allow people to have access to them. Administrators also need to consider saving money for teachers to obtain training on the programs and how they can assess the children when using these programs (Ntuli & Kyei-Blankson, 2012).

Most teachers coming out of college have had some sort of training or classes on technology use. However, the requirements for technology classes for the teaching profession may not be adequate for teachers wanting to use technology in the classroom. This leaves the teachers feeling unprepared when implementing technology in the classroom. Parette, Quesenberry and Blum (2010), mentions early childhood teachers struggle with implementing technology usage in their classrooms because they do not know what technology is appropriate. The teachers are required to make the judgments about the technology and they may not know the quality of the program if examples are not readily available. Teachers also need to keep in mind that using technology in the classroom should not be play time (Ntuli & Kyei-Blankson, 2012). The technology needs to be used to meet academic needs. Many early childhood educators have reported that they have had very little time to evaluate programs before using them in their classrooms (Daugherty, Dossani, Johnson & Wright, 2014).

Students from low-income families may also struggle to find access to technology. Children in low-income families do not always get the same opportunities to use technology in a productive way that more advantaged kids may. Using technology in the early childhood classroom may decrease the divide between the sets of incomes (Daugherty et al., 2014). When children from low-income families are given an opportunity to use technology in the classroom, it can increase their academic skills, social skills, and also motor skills (Daugherty et al., 2014).

Children from low-income families that are exposed to technology in a non-productive way may not learn how to use technology appropriately and not make the necessary gains associated with high quality instruction with technology. Children from low-income families need to be taught how to use the technology and be given ample opportunities to use this technology in a productive manner (Daugherty et al., 2014). When used in the appropriate ways, technology in the early childhood classroom can close the gap in reading, math, motivation and socializations skills some of them may need (Daugherty et al., 2014).

### **Adult Involvement**

Neumann and Neumann (2014), discusses the importance of adult interaction with the apps. With adult interaction, child learn even more with these apps and technology. Children can also learn how to use the tablets in appropriate manners that have to do with everyday living. Adults can guide children how to use the tablets in other appropriate manners (Neumann & Neumann, 2014). Children need to be guided and taught the correct way to use technology for it to be beneficial for them to use. They need to know the rights and wrongs so they do not get sucked into the inappropriate uses of technology.

Recommendations for technology use include the time spent for children using technology, but also the way the technology is being used. Both parents and teachers are responsible for making sure children get the most out of technology, but also are not exposed to the potential dangers. Many teachers in the early childhood education age range were reluctant to use technology in the education setting because it could inhibit the relationship they build with the kids (Parette et al., 2010). This is not necessarily true if the teachers use it in a meaningful way with the students. When technology is used appropriately for learning, it can be an asset to learning.

When teachers use technology in their classrooms, they need to be vigilant on keeping the students engaged. Kids can learn many skills when appropriately engaged with technology. While using technology in the classroom, get the children involved in a discussion about the skills they are learning or the programs they are using. Teachers need to use developmentally appropriate technology in their classrooms and use it for intentional learning (Sharkins et al., 2016). Teachers also need to keep the students engaged in learning with the technology or the benefits will cease to exist.

Along with teachers, parents also need to watch their children and the use of technology. When children are exposed to non-violent MeTS, it is usually okay regardless of the age. It is when children are exposed to violent MeTS that can harm young children (Sharkins et al., 2016). Teaching safety when using technology is vital for young children so they do not fall victim to the downsides of technology later on. As adults, being responsible and using developmentally appropriate technology with young children is the best way to keep them safe.

### **Teacher Views**

Teachers make important decisions throughout the school day when educating children. These decisions also include use of technology in their classrooms. Teachers have different views of how and if technology should be used in the early childhood classroom. Ntuli and Kyei-Blankson (2012), interviewed early childhood education teachers and their use of technology in the classroom. Of these teachers, the majority of them have had the children use some technology in the classroom. Most of the time the technology included use of a computer. The majority of the teachers using the technology did not monitor the use of the computer with the children and did not take any data to see if it helped. The teachers stated they did not know how

to keep data for it, or if the computer program kept data, they did not know how to interpret the data (Ntuli & Kyei-Blankson, 2012).

When teachers decided to use computers or other technology in the classroom, there should be a valid reason. Using technology should enhance the children's learning, not just be used as an "extra" to have in the classroom. Teachers that knew the programs being used in their room, and why they were using technology, kept some data to determine if the students learned something or not. The teachers did not just use the data from the actual programs but also used some observations or other forms of data tracking to determine if the students gained more knowledge (Ntuli & Kyei-Blankson, 2012). Tracking data is important to see if the use of technology is appropriate for the early childhood classroom.

An important consideration teachers also need to remember is that state standards incorporate technology use in the classroom. It is becoming more and more important for teachers to learn technology because of the inclusion of these requirements in state standards. Standards for using technology in the classroom for children include making them able to analyze the information with technology, learn from the technology and also explore with technology (Daugherty et al., 2014). These standards can start as young as kindergarten in some states (Daugherty et al., 2014).

### **Recommendations**

Donohue and Schomburg (2012) laid out some guidelines they thought appropriate for early childhood programs. Some of these guidelines include using technology with an intentional purpose and appropriately in the classroom. If this is done, technology can be very beneficial. Other guidelines include limiting the amounts of time children spend on it, teachers or other adults need to be involved and facilitating interactions with the media, paying attention to what

they children are doing on the technology is important and also researching what is the best practices and uses for technology in early childhood. Using these guidelines, technology can be great in the classroom. Young children, birth to age two, still need to be given great consideration on if technology is appropriate or not for their age (Donohue & Schomburg, 2017).

Parents need to make sure children are still getting developmentally appropriate experiences. These experiences cannot be replaced by technology and if they are, there could be serious deficits in the child's development (Donohue & Schomburg, 2017). Limits of technology use in the age ranges from birth to five years, and allowing children to play and develop age appropriate skills is something that cannot be forgotten about. Children need to learn to play together, build social skills, learn to communicate with each other, and bond. Children also need to spend some quality time with their parents and siblings. While working on these skills both with other kids and family, it should be a technology free time (Donohue & Schomburg, 2017).

Other recommendations identify that adults need to keep in mind is the type of technology being used, and why it is being used. Choosing the correct type of technology is key in determining the skills being gained from the use. A tablet may be appropriate for children if they are using it to explore areas outside, on a field trip, or somewhere where the device needs to be portable. A computer or other device may be more appropriate if the children is learning literacy skills, math, or using it for other academic areas (Daugherty et al., 2014).

### **Analysis**

Technology in education is every changing and more accessible to children today than it was in the past. More and more programs are available to teachers and also for parents to use at home. Technology comes in all sorts of formats. These formats are also changing and expanding

often. Young children are able to use these almost independently most of the time, and are able to incorporate them in their everyday lives.

Access to technology can be really beneficial to all students. Using technology in an appropriate manner is the only way to ensure students benefits, instead of downfalls. Using computers, tablets, Smartboards and other technology can help students increase reading ability, understand concepts which were more difficult before, increase math skills, and also can help children work on or build their social skills. There are many reading programs out there that can really support and improve reading skills in young children. When choosing a program to use in the classroom, teachers need to make sure to research them and make sure it is appropriate for their students. There are also a lot of math programs available to use in many different formats. These, once again need to be researched and made sure they are appropriate for the students. The key component for technology to be beneficial with young children is having adult interaction while using it. Students need to know exactly what to do and how to use the program to build their academic skills and make advancements. Letting students problem solve with each other while using different types of technology can help students use critical thinking skills and social skills.

Technology has brought a lot of new ideas to education, especially in the special education field. The technological advancements have help special education students from helping them understand materials better, to helping some communicate. The advancements of tablets along with other accessibility tools for technology allows some young special education students participate with their peers and communicate more effectively. Additional instruction using technology for some young children that may be behind their peers in certain areas, has helped children catch up to their peers faster. More and more teachers are also able to use

interactive whiteboards in their room. Using these may help students with special needs participate, understand the information being presented, and keep young children engaged in the lesson.

There are some guidelines available through some sources that mention the amount of time children should spend on technology. A lot of these were based on times where young children did not have as much access to technology as they do now. Since it is more accessible some guidelines may need to be changed, however, there may not be a simple answer to what the guidelines should be. The way the young children use the technology may be more important to their success than the exact amount of time spent on the technology. Both teachers and parents should work together and communicate about technology use and expectations. If either the parents or teachers see concerns, these concerns need to be discussed. Teachers need to make sure they are picking programs that are research and recommended for use with young children. Parents need to monitor their children and check the content of the programs the children use to make sure they are suitable for the children.

Another key factor in the use or concerns about use of technology with young children is the side effects or faults about the technology. Research has been conducted about the use of technology with young children and there have been some concerning results. Some of these concerns are obesity in young children, emotional well-being, violence, addiction to technology and other safety concerns regarding the use of technology with young children. These are serious and valid concerns some people have with too much technology use. Fixing or finding solutions to these problems is the issue some people run in to. None of these are strictly blamed on uses of technology in any certain situations, but the amount of time children spend on them need to be closely monitored. Some of the concerns come from what the children are doing on the

technology, not how long they have been on it. Monitoring children on technology and choosing appropriate programs for young children is important.

### **Application**

Doing research on this topic has given me a better understanding of the approaches I need to take in my classroom, and also share the information with other staff in my district. It is almost impossible to not include technology in education, so knowing how to correctly implement it, programs to use, and concerns to watch out for will help me better educate young children. Early childhood education is an important time for children. This is when they soak in a lot of information and make a lot of progress towards future education. The last thing these children need is more setbacks, and I do not want using technology to be one of them.

Since doing research on the use of technology in the classroom, I have monitored how much I see young children on it. I have looked at the amount of time I have my students use it, but I have also paid attention to other young children around me, and out in the public. There are not too many places you can go where you do not see young children engaged with some type or technology. This can be both good and bad, but it has really made me think about using it with young children. As a teacher I need to be careful on how much the children are using the technology, but more importantly, I need to make sure the children are using it for the right reasons. Technology is not made just to keep children busy or as a time filler. Technology has been made to teach children more effectively and open them up to more learning opportunities. When planning, I make sure when I schedule to use technology with the students, I make sure it is a reliable program and will actually improve the skills of the students. The students will also be closely monitored and I will create some documentation to check for improvement on skills.

If I do not see improvement with the skills I am looking for, reexamination of the program may be necessary.

One thing I have come to realize when using technology is that it is readily available to young children and most of them already know how to use it. As a teacher I need to be able to use these skills the children already have and make it beneficial in their schoolwork. Keeping children engaged in schoolwork is something some kids and teachers struggle with. Since the children already know how to use the technology, adding it to different parts of the day where I see less engagement or less focus on a task may be something I need to implement. Often times after lunch or afternoons seem to be a struggle for some young children. I plan on using a Smartboard more often during these times to keep the children engaged. There are many programs, websites, or other available tools to use on the Smartboard that will allow children to engage with the activity. Children will be allowed to come up to the Smartboard and participate in the activities to get some movement and to make sure they get something out of the information being presented. Making connections for students is something else I will implement using the Smartboard. If there is a subject we are studying where I can show video of it, communicate with other people using it, or something else along those lines, I will make sure the students are involved.

Learning about many programs available to young children and seeing the research behind it gives me a better understanding of how to choose a program appropriate to the children I am teaching. The programs should have enough research on them to prove if they work with young children or not. A lot of programs might say they are applicable to young children and say they work, but I need to do research. The program Touch Sound has been researched and been known to help children with reading skills, especially children with disabilities. Inclusion in the

classroom is important to young children. Some children need additional work in this area, so I plan to schedule times to have the students work on this program, or other programs depending on the needs of the children, to help them make significant gains so they can meet the same expectations as other peers. Other programs such as PictoPal and VoiceThread are considerations I have looked into to use with some of my students. I have also realized that using a Smartboard or Microsoft Powerpoint are simple, yet productive uses of technology I have access to currently. Relooking at my lessons and seeing how I can use these programs or tools to reach all, or more children each time, is a goal I have for myself next year.

If there is a child with a disability in the classroom, assistive technology may be necessary. There are many different programs and tools to use out there for special education students. I will use my resources to discuss some options and do some trials. Research is another component to look at when looking at assistive technology with special needs students. There is a lot out there about different programs, adaptive tools or communication devices that may allow a child better access to the curriculum. Specific instruction may also need to be done to ensure measurable gains for students with disabilities. If there is any technology that can make their learning easier and more accessible it should be discussed and tried.

As a teacher my job is also to keep kids safe. After reading about many concerns there are with young children using technology, I need to be vigilant on monitoring the students. Young children know how to access materials on technology, sometimes better than the teacher, so keeping them on the program they are assigned and closely studying the progress on each child is a must. Along with watching what they are doing, I need to be sure the programs they use are only educational and safe for them to use. There are many hidden dangers that are embedded in some programs children use. Researching and knowing all the ins and outs of the

programs are what will keep children safe. Keeping in contact with the parents about what we are doing in the classroom is just as important as actually teaching the students. If the parents are aware of the programs being used, they could possibly use those at home to extend the child's learning. Using technology to communicate with parents is a simple and effective way to keep them on the same page as the class. If there are concerns, I would hope the parents would let me know.

Reading about the viewpoints of other teachers was quite interesting to me. I am one that loves using technology and think the children benefit immensely from it in most cases. I like learning about new programs, examining the results after the students use them, and seeing the children enjoy learning. I do realize I still need to put more work into it, but I would encourage the teachers that do not like using technology to rethink their position. Working in many different positions throughout my career I have dealt with both types of teachers. I have seen the success some students have when technology is implemented with some students. I would look at discussing this with administration and seeing if there is some type of professional development that could be done or how I could assist some teachers if they would like to start using the technology. Often times I do not think they understand the engagement children have with technology and as long as it is used appropriately, it could benefit students.

Overall the knowledge I have gained from doing this research will better assist me as a teacher. I am looking forward to using technology, doing more research about programs available and also helping struggling students. I plan on setting up different progress monitoring for students next year after implementing certain programs. If the programs keep them on track and also help catch them up to their peers, it is worth it. Giving children more experiences is a

goal I have for myself. If we talk about certain places, science work, and so on, I hope to be able to connect that to something I can show using technology.

### **Conclusion**

Using technology in the classroom can be a scary thing knowing how often children might spend on it at home. Children seem to always have access to it and sometimes need time to put the technology down and participate in other things. However, technology can also be a strength for some students, and students should be allowed to use their strengths. Teachers should research about best practices and then decide what may be best for their class. Young children need to be taught how to use technology to be productive.

There are many uses for technology out there. Using them in school is just one way kids can use computers and other technology to better themselves. As teachers it is important to use technology to improve education. When using it to improve education, children can be more successful. The keys to being successful when using technology as a teacher it to make sure the program is reliable and well researched, monitor the students when using it, and let the students work with each other to build social skills and relationships. Technology alone cannot fix deficits a student may have, but support with technology can.

Working together with parents and other adults can help keep children safe when using technology. They are often knowledgeable about the technology, so having discussions with them and parents, can help open up communication lines. Communication is what can keep the students safe. When children spend time using technology, adults should be interactive with them and knowledgeable about what they do. Communication between adults is important, but communication between adults and the young children is just as important.

Overall it is okay for children to spend time with technology if they are being monitored, using it for productive reasons and still maintaining other activities. There are valid concerns about too much technology use, but that all comes from being knowledgeable about how the children are using the technology. Involvement with the young children is important for them to learn to become productive and successful students. When taught the appropriate uses of technology, the exact amount of time they spend on it may be less important. There probably will never be a lack of technology for the children to use, so have them use it wisely.

## References

- Chai, Z. (2017). Improving early reading skills in young children through an iPad app: Small-group instruction and observational learning. *Rural Special Education Quarterly* 36(2), 101-111. Doi: 10.1177/8756870517712491
- Clements, D. H., & Sarama, J. (2011). Early childhood mathematics intervention. *Science*, 333, 968-970. Retrieved from <http://science.sciencemag.org/content/sci/333/6045/968.full.pdf>
- Daugherty, L., Dossani, R., Johnson, E., & Wright, C. (2014). Families, powered on: Improving family engagement in early childhood education through technology. In *Families, Powered On: Improving Family Engagement in Early Childhood Education Through Technology* (pp. 1-8). RAND Corporation. Retrieved from <http://www.jstor.org/stable/10.7249/j.ctt14bs2fx.1>
- Daugherty, L., Dossani, R., Johnson, E., & Wright, C. (2014). Getting on the same page identifying goals for technology use in early childhood education. *Getting on the Same Page* (pp. 1-8). RAND Corporation. Retrieved from <http://www.jstor.org/stable/10.7249/j.ctt14bs3t3>
- Donohue, C., & Schomburg, R. (2017). Technology and interactive media in early childhood programs. *YC Young Children; Washington*, 72(4), 72-78. Retrieved from <http://ezproxy.nwciowa.edu/login?url=https://search-proquest-com.ezproxy.nwciowa.edu/docview/1942230066?accountid=28306>
- Ernest, J. M., Causey, C., Newton, A. B., Sharkins, K. & Summerlin, J. (2014). Extending the global dialogue about media, technology, screen time, and young children. *Childhood Education; Olney* 90(3), 182-191. Retrieved from

<http://ezproxy.nwciowa.edu/login?url=https://search-proquest-com.ezproxy.nwciowa.edu/docview/1528862094?accountid=28306>

Gillis, A., Luthin, K., Parrette, H. P. & Blum, C. (2012). Using Voicethread to create meaningful receptive and expressive learning activities for young children. *Early Childhood Education Journal* 40(4) 203-211. Doi: 10.1007/s10643-012-0521-1

Judge, S. (2006). Constructing an assistive technology toolkit for young children: Views from the field. *Journal of Special Education Technology*, 21(4), 17-24. Doi: 10.1177/016264340602100403

Lentz, C. L., Seo, K. K., & Gruner, B. (2014). Revisiting the early use of technology: A critical shift from “how young is too young?” to “how much is ‘just right?’”. *Dimensions of Early Childhood*, 42(1), 15-23. Retrieved from

<http://ezproxy.nwciowa.edu/login?url=https://search-proquest-com.ezproxy.nwciowa.edu/docview/1651840826?accountid=28306>

Lim, E. M., (2012). Patterns of kindergarten children’s social interaction with peers in the computer area. *Computer-Supported Collaborative Learning* 7, 399-421. Doi: 10.1007/s11412-012-9152-1

NAEYC. (2012). Technology and interactive media in early childhood programs: What we’ve learned from five years of research, policy, and practice | NAEYC. Retrieved November 1, 2018, from

<https://www.naeyc.org/resources/pubs/yc/sep2017/technology-and-interactive-media>

Neumann, M., & Neumann, D. (2014). Touch screen tablets and emergent literacy. *Early Childhood Education Journal* 42(4), 231-239. Doi: 10.1007/s10643-013-0608-3

- Ntuli, E., & Kyei-Blankson, L. (2012). Teacher assessment of young children learning with technology in early childhood education. *International Journal of Information and Communication Technology Education*, 8(4), 1-10. Doi: 10.4018/jicte.2012100101
- Papadakis, S., Kalogiannakis, M. & Zaranis, N. (2018). The effectiveness of computer and tablet assisted intervention in early childhood students' understanding of numbers. An empirical study conducted in Greece. *Educ Inf Technol* 23 1849-1871. Doi: 10.1007/s10639-018-9693-7
- Parette, H. P., Hourcade, J., & Blum, C. (2011). Using animation in Microsoft PowerPoint to enhance engagement and learning in young learners with development delay. *TEACHING Exceptional Children*, 43(4), 58-67. Doi: 10.1177/004005991104300406
- Parette, H.P., Quesenberry, H. C., & Blum, C. (2010). Missing the boat with technology use in early childhood settings: A 21<sup>st</sup> century view of developmentally appropriate practice. *Early Childhood Education Journal* 37, 335-343. Doi: 10.1007/s10643-009-0352-x
- Sharkins, K. A., Newton, A. B., Albaiz, N. E., & Ernest, J. M. (2016). Preschool children's exposure to media, technology, and screen time: Perspectives of caregivers from three early childcare settings. *Early Childhood Education Journal* 44(5), 437-444. Doi: 10.1007/s10643-015-0732-3
- Shepley, C., Lane, J. D., Gast, D. L. (2016). Using SMART Board technology to teach young students with disabilities and limited group learning experience to read environmental text. *Education and Training in Autism and Developmental Disabilities* 51(4), 404-420. Retrieved from: <http://ezproxy.nwciowa.edu/login?url=https://search-proquest-com.ezproxy.nwciowa.edu/docview/1843276156?accountid=28306>

Spink, A., Danby, S., Mallan, K., & Butler, C. (2010). Exploring young children's web searching and technoliteracy. *Journal of Documentation*, 66(2), 191-206.

doi:<http://dx.doi.org.ezproxy.nwciowa.edu/10.1108/00220411011023616>