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2020

## THE IMPACT OF MOBILE MEDIA ON THE FINE MOTOR DEVELOPMENT OF STUDENTS ENTERING INTO THE EDUCATIONAL SYSTEM

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THE IMPACT OF MOBILE MEDIA ON THE FINE MOTOR DEVELOPMENT OF  
STUDENTS ENTERING INTO THE EDUCATIONAL SYSTEM

Presented in Partial Fulfillment of the  
Requirements for the Degree of  
Doctor of Occupational Therapy

Eastern Kentucky University  
College of Health Sciences  
Department of Occupational Science and Occupational Therapy

Bernadette Needham  
2020

**EASTERN KENTUCKY UNIVERSITY  
COLLEGE OF HEALTH SCIENCES  
DEPARTMENT OF OCCUPATIONAL SCIENCE AND OCCUPATIONAL  
THERAPY**

This project, written by Bernadette Needham under the direction of Dr. Julie Duckart, Faculty Mentor, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF OCCUPATIONAL THERAPY

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**EASTERN KENTUCKY UNIVERSITY  
COLLEGE OF HEALTH SCIENCES  
DEPARTMENT OF OCCUPATIONAL SCIENCE AND  
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Certification

We hereby certify that this Capstone project, submitted by Bernadette Needham, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Occupational Therapy degree.

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Date

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## Executive Summary

**Background:** The prevalence of mobile technology has greatly increased in our society over the last ten years. As COVID-19 continues to impact our society, the long-term impact of mobile media continues to be a concern with the movement to remote learning.

**Purpose:** The purpose of this research is to examine the parent's perspective of increased mobile media usage at a young age on the development of fine motor skills needed for participation in kindergarten. The literature that was reviewed indicates that currently no definitive understanding of the impact of increased mobile media is known.

**Theoretical Framework:** The research was guided through decision making based on the supporting frames of reference of the Model of Human Occupation (MOHO) developed by Gary Kielhofner (1949-2010) and Person-Environment-Occupation-Performance (PEOP) model developed by Bass, Baum and Christianson (1991-2015).

**Methods:** The research was conducted through a 20-question survey distributed through Facebook.

**Results:** The results of the study indicate that further research is needed to gain an understanding of the impact of mobile media. The parent's reported a significant increase in mobile media use due to COVID-19, which in turn has shifted typical engagement in occupation.

**Conclusions:** The changes in technology and the increased use of mobile media impacts occupational therapy and the need for therapists to adapt treatment strategies and interventions.

## **Acknowledgements**

The completion of this capstone is the fulfillment of a dream that would not have been possible without the support of many individuals in my life.

I first would like to thank my professor and capstone chair, Dr. Julie Duckart, for her assistance and support throughout the process. She encouraged personal growth and resilience for increased flexibility during a time of instability personally and within our world.

I also want to acknowledge Dr. Shirley O'Brien, capstone committee member, for her assistance with completion of this capstone. Dr. O'Brien was instrumental to the author returning to complete her doctoral degree and supporting success not only through education but also during clinical experiences.

Finally, I want to acknowledge my family. They have supported me through this entire process. My parents have been a constant encouragement during the completion of my degree. They, along, with my three boys, made it possible for me to return to school. Brayden, Jeremiah and Bryston gave me the reason to succeed and fulfill this dream. I hope they will always learn to dream big and never stop reaching for those dreams.

**EASTERN KENTUCKY UNIVERSITY  
COLLEGE OF HEALTH SCIENCES  
DEPARTMENT OF OCCUPATIONAL SCIENCE AND OCCUPATIONAL  
THERAPY**

**CERTIFICATION OF AUTHORSHIP**

Submitted to: Dr. Julie Duckart

Student's Name: Bernadette Needham

Title of Submission: The Impact of Mobile Media on the Fine Motor Development of  
Students Entering into the Educational System

*Certification of Authorship: I hereby certify that I am the author of this document and that any assistance I received in its preparation is fully acknowledged and disclosed in the document. I have also cited all sources from which I obtained data, ideas, or words that are copied directly or paraphrased in the document. Sources are properly credited according to accepted standards for professional publications. I also certify that this paper was prepared by me for this purpose.*

Student's Signature: *Bernadette H. Needham*

Date of Submission: December 4, 2020



## Table of Contents

SECTION 1 .....	1
NATURE OF THE PROBLEM.....	1
INTRODUCTION.....	1
RESEARCH QUESTIONS.....	3
SECTION 2.....	5
LITERATURE REVIEW.....	5
SECTION 3.....	10
METHOD .....	10
SETTING .....	10
IDENTIFICATION OF PARTICIPANTS.....	11
DATA COLLECTION METHODS AND OUTCOME MEASURES .....	11
TIMELINE .....	12
RESOURCES .....	12
ANALYSIS OF DATA.....	12
ETHICAL CONSIDERATIONS .....	13
SECTION 4.....	14
RESULTS.....	14
<i>Figure 1 .....</i>	<i>15</i>
<i>Income versus Type of technology.....</i>	<i>15</i>
<i>Figure 2 .....</i>	<i>15</i>
<i>Income versus Frequency of Use.....</i>	<i>15</i>
<i>Figure 3 .....</i>	<i>17</i>
<i>Gender versus Preschool Attendance.....</i>	<i>17</i>
<i>Figure 4 .....</i>	<i>18</i>
<i>Gender versus Frequency of Use.....</i>	<i>18</i>
<i>Figure 5 .....</i>	<i>19</i>
<i>Frequency of Use versus Type of Technology.....</i>	<i>19</i>
<i>Figure 6 .....</i>	<i>20</i>
<i>Frequency of Use versus Fine Motor Skills.....</i>	<i>20</i>
<i>Table 1 .....</i>	<i>20</i>
<i>Results for ANOVA for hours per day .....</i>	<i>20</i>
<i>Table 2.....</i>	<i>21</i>
<i>Results for ANOVA frequency of use (days per week).....</i>	<i>21</i>
SECTION 5.....	22
DISCUSSION.....	22
LIMITATIONS .....	25

IMPLICATIONS FOR OCCUPATIONAL THERAPY .....	26
FUTURE RESEARCH .....	27
CONCLUSION .....	27
REFERENCES.....	29
APPENDIX A .....	35
APPENDIX B.....	46

List of Figures

<b>FIGURE 1</b> .....	15
<i>INCOME VERSUS TYPE OF TECHNOLOGY</i> .....	15
<b>FIGURE 2</b> .....	15
<i>INCOME VERSUS FREQUENCY OF USE</i> .....	15
<b>FIGURE 3</b> .....	17
<i>GENDER VERSUS PRESCHOOL ATTENDANCE</i> .....	17
<b>FIGURE 4</b> .....	18
<i>GENDER VERSUS FREQUENCY OF USE</i> .....	18
<b>FIGURE 5</b> .....	19
<i>FREQUENCY OF USE VERSUS TYPE OF TECHNOLOGY</i> .....	19
<b>FIGURE 6</b> .....	20
<i>FREQUENCY OF USE VERSUS FINE MOTOR SKILLS</i> .....	20

List of Tables

<b>TABLE 1</b> .....	20
<i>RESULTS FOR ANOVA FOR HOURS PER DAY</i> .....	20
<b>TABLE 2</b> .....	21
<i>RESULTS FOR ANOVA FREQUENCY OF USE (DAYS PER WEEK)</i> .....	21

## Section 1

### Nature of the Problem

#### Introduction

The prevalence of mobile technology has greatly increased in our society over the last ten years. It has been found that 77% of Americans have a smartphone and 50% of the population own a tablet computer (Smith, 2017). Children are being introduced to the use of mobile technology at younger ages and are utilizing it for extended periods of time. Research has found that children under the age of 8 are spending 2 hours and 19 minutes a day on screen activities with 48 minutes on mobile devices alone (Howard, 2017). “Modern technology may have enabled children to develop a whole new set of skills, but at what cost?” (Williams & Holley, 2013, p. 16). The use of mobile technology (e.g. iPad, tablets, and touch screen devices) has saturated society with 98% of families reporting a mobile device within the home. Increased mobile technology use has decreased reading and fine motor activities within the home as children under the age of 8 spend more than two hours daily engaged with screen devices (e. g. mobile technology, computers, and television) (Rideout, 2017). The development of fine motor skills before entering into the education environment is being impacted by the use of mobile technology (Guddemi, 2016).

These numbers have been greatly impacted by the SARS CoV-2 (COVID-19) pandemic. The increased daily reliance on technology has skyrocketed as individuals have been quarantined or deemed “Safer at Home” and had to rely on technology for social interaction, physical, emotional, spiritual, education, and work (Goldschmidt, 2020). Daily use of technology became essential as increased physical distance between

individuals became necessary for health and prevention of disease spread. Winther and Byrne (2020) stated that in April there were 3 billion people in lockdown (130 countries restricting movement) and 90% of students were no longer attending school. Fischer (2020) reported that in the United States, children between the ages of 6-12 used their screen devices twice as much as they did before the pandemic. This trend is seen through a 70% increase in kid's apps and digital services use and triple the amount of tablet use as reported by Fischer (2020). Parents have reported that screen time limits have not been utilized as frequently during the pandemic secondary to parents working from home with their children present (Fischer, 2020; Lang, 2020).

As COVID-19 continues to impact our society, the long-term impact of mobile media continues to be a concern. Mobile media for this research will be defined as a "personal, interactive, internet-enabled and user-controlled portable platform that provides for the exchange of and sharing of personal and non-personal information among users who are inter-connected" (Wei, 2013, p. 52). This includes e-readers, game consoles, mobile phones, and tablets. The research regarding the positive and/or negative effects of the touch-screen tablets on the development of children has had limited research since tablets were released in 2010 (Lin, et al., 2017). The research problem this study examined was the impact that mobile media has had on the fine motor development of students entering into the education system. This study examined the parent's perception of mobile media usage in the home and the development of the child's fine motor skills through a survey. The benefits of this study included identification of mobile media usage, analysis of fine motor skills, impact of preschool exposure and the influence that increased financial ability has on mobile media exposure.

The research was guided through the decision making based on the supporting frames of reference of the Model of Human Occupation (MOHO) developed by Gary Kielhofner (1949-2010) and Person-Environment-Occupation-Performance (PEOP) model developed by Bass, Baum and Christianson (1991-2015) (Cole & Tufano, 2020). These theories provide the support needed to clearly identify the role of occupational science (research and findings) and occupational therapy (clinical interventions) for the engagement of meaningful occupation (children's use of mobile media).

The purpose of this research is to examine the parent's perspective of increased mobile media usage at a young age on the development of fine motor skills needed for kindergarten. The literature that was reviewed indicates that currently no definitive understanding of the impact of increased mobile media is known.

### **Research Questions**

1. What was the average amount of time mobile media was utilized in a week by students before entering an educational environment versus other fine motor activities (e.g. crayons, markers, pencils, and scissors) at home and when waiting at doctors' offices and restaurants?
2. What fine motor skills are observed by the parents for students entering into an educational environment?
3. What relationships exist between frequency of mobile media usage, fine motor skills, preschool experience and economic factors according to parent perceptions?

Mobile media technology and its use continues to increase and be utilized more frequently. Children are being introduced at a very early age to mobile media technology as a way to occupy children in different situations. It is important that therapists, families, and all professionals working with children understand the impact mobile media has on a child's development. This information will help identify areas that would benefit from further study as the impact of fine motor skills directly effects the student's participation in the education environment and areas that occupational therapy can address and support for students entering into school. This research will also guide occupational therapists, physical therapists, and teachers in planning and supporting students entering the education system.

Popular literature has identified concerns regarding the use of mobile media on the development of fine motor skills in individuals. The research supporting this concern has just started to be conducted and the use of mobile media continues to increase. It is imperative that a clearer understanding regarding the impact of mobile media on fine motor development is gained so that programs and further education can be developed to address this impact.

## Section 2

### Literature Review

Justice, Jiang, Khan, and Dynia (2017) researched the kindergarten readiness of children in Appalachia. They found that children were impacted by their environment, especially the socio-economic status as their lower status allowed them to participate in a publicly funded preschool. Lower-socioeconomic families were found to have earlier exposure to mobile media devices (Kabali, et. al., 2015). Research also found a higher socioeconomic status and higher education of the mother correlating with increased fine motor skills in Comuk-Balci, et al., (2016) and Venetsanou, and Kambas (2010). Domoff, et. al. (2019) found that parallel media use was observed frequently among families consisting of the parents on a phone and children interacting with media on other devices. Mobile devices have been found as “digital pacifiers” (Kabali, et. al., 2015) for the entertainment and management of children in their study with a population of predominantly low-income minority children. Kilic, et al., (2019) also found a relationship between increased mobile media use to keep children occupied by increased higher economic status and lower educational levels.

Williams and Holley (2013) found that movement stimulates motor development and decreased movement will impair this development. They found that essential movements in infant and young children are diminishing as we become more technologically driven and safety conscious. Increased use of containers (car seats, playpens, etc), decreased outside opportunities (decreased playtime and decreased backyards) and increased screen time (computers, tablets, and smartphones) have decreased movement/learning opportunities. Skills such as self-regulation, empathy,



social skills and problem-solving are learned by children through a natural environment including interaction that cannot be simulated through media devices (Radesky, et al., 2015). Increased mobile media and decreased interaction within natural environments impact the development of sensorimotor skills that are essential for visual motor development. Crescenzi, et al. (2014) found that increased iPad use at younger ages reduces the touch experiences and connections formed through textural experiences. These connections are important for learning the range and quality of touch including pressure needed. However, Axford, et al. (2018) found that children engaged in specific motor skill iPad applications could demonstrate gains in functional tasks and motor coordination skills.

The *New Zealand Herald* (2018) reported that an hour a day of screen time in children can increase their risk for being anxious or depressed. They found that children under the age of 5 are twice as likely to lose their temper and have greater difficulty with calming down when excited if they are high frequency users of screen devices. These negative effects were also noted in Purdy (2017) which included sleep disturbances, behavior problems, delayed social skills, attention difficulties, and reduced academic performance. Andelic, et al. (2014) noted that intellectual, psychological and many other aspects of a child's development can be impacted and lead to deviant behavior if limits to access are not established for computer usage.

This delay in academic performance was noted in Guddemi (2016) as they noted many children are arriving at kindergarten lacking the basic fine motor skills that are needed to hold a pencil and to write. Guddemi (2016) attributed the decreased ability to use school tools and other manipulatives to the increased use of technology and

specifically touch screen technology. Children that are lacking in fine motor skills when they enter kindergarten lack the necessary skills need to develop other skills required in kindergarten. Increased interaction with real objects and people is necessary for children to develop the skills necessary for success in kindergarten. Sulzenbruck, et al.(2011) also supported this as they found specific differences in fine motor skills based on the amount of time spent typing. Preschool students in Lin, Cherng and Chen (2017) were found to have greater improvement in fine motor and manual dexterity skills over their 24-week study when they did not use mobile media versus the children that frequently utilized mobile media. Lin (2019) found that children with increased mobile media exposure had decreased visual perceptual skills and fine motor skills when compared with children who never used mobile media.

Coughlan (2018) expanded the negative effects of technology by indicating that surgical students are lacking skills such as cutting, and stitching. They lack the confidence and fine motor dexterity in these skills as craft skills have decreased and interaction with technology has increased. Coughlan (2018) felt that the lack of emphasis in the educational curriculum on the arts and creative subjects had also impacted fine motor dexterity. This was supported in a study by Dadson, et al. (2020) that found a negative association between screen-time and fine motor skills as the amount of time spent on screens decreases engagement in activities that develop hand function. The impact on fine motor skills carry over to other areas including self-care, play and productive occupations (Dadson,et al., 2020).

Moon, et al.(2018) found more advanced fine motor skills in children at age three who had increased mobile media use, but found that by age four and five this correlation

disappeared. A substantial increase in fine motor skills was also found by Souto, et al. (2020) as children between 24-42 months with increased mobile media experience were compared to peers without engagement with mobile media. Positive correlations between increased mobile media use and the development of fine motor skills was also seen by Bedford, et al. (2016). They found that infants and toddlers that utilized mobile media developed fine motor skills earlier and other developmental outcomes.

The positive impacts that mobile media can have has also be seen in the educational environment. Qahmash (2018) found that the increased use of mobile media in the educational environment facilitated learning, including the special education population. They found that educators were able to use apps that motivated the students for participation and learning engagement.

The literature does not indicate a definitive result of increased use of mobile media. Positive relationships to increased fine motor development were noted in children between the ages of two and four by Moon, et.al, (2018) and Souto, et.al. (2020). These positive impacts have also been seen during engagement in the education system by increased learning engagement (Qahmash, 2018). The literature also indicates that fine motor development can be impacted by participation and active engagement and that increased technology use can have a negative impact on other areas as well as fine motor skills. Coughlan (2018) and Guddemi (2016) both emphasized the importance of increased participation and decreased interaction with two dimensional/screen activities. This was also supported through Justice, et al. (2017) and Comuk-Balci, et al., (2016) also discussed the impact of socio-economic status on the development of fine motor skills and the benefits of participation in a preschool environment. The negative impacts

of technology could be seen in other areas also in Williams and Holley (2013) and the *New Zealand Herald* (2018).

### **Section 3**

#### **Method**

The purpose of this research is to test the effects of increased mobile media usage at a young age on the development of motor skills needed for kindergarten. A quantitative cross-sectional design was chosen to understand perceptions of the population studied (Creswell & Creswell, 2018). This research was conducted using a Likert type survey for parents. This approach allowed for the parent to report screen time use as well as the student's current fine motor skill development as they enter into the educational environment. This research is needed due to the increased prevalence of mobile technology in our society over the last ten years. It has been found that 77% of Americans have a smartphone and 50% of the population own a tablet computer (Smith, 2017). Children are being introduced to the use of mobile technology at younger ages and are utilizing it for extended periods of time, however the impact of this increased use has not been identified.

#### **Setting**

This research was conducted using Qualtrics through Eastern Kentucky University and shared through Facebook, a social media platform, and handing out advertisements with kindergarten paperwork in a local school district in Tennessee. The survey was completed online through a 20-question survey.

## **Identification of Participants**

The survey was directed toward parents of children entering/registering to start kindergarten at home, on-line or in person. School closures due to COVID-19 resulted in many counties utilizing online registration for kindergarten students. As a result, this study required participation in the survey to also be online. The survey was initially posted on a personal feed on Facebook and a request was made for readers to share on their personal feed. In addition to the initial post, the researcher had the study advertised through Facebook in order to reach a larger audience. The researcher requested that the advertisement for the study be shared with families registering for kindergarten in a local school district. Inclusion criteria for participation in the survey required having a child born in the years of 2014, 2015, or 2016 that would be entering into the educational environment for the first time. Participation was on a voluntary basis and dependent on exposure to the survey through a social media platform or school advertisement. Consent for participation in the survey was obtained before initiation of the survey.

## **Data Collection Methods and Outcome Measures**

The parents participated in the early Fall of 2020 before the child started into the educational environment. The survey for the parents was designed specifically for this study using a Likert scale. The content of the parent's survey included types of mobile media in the home, frequency of usage in the home by the child, and type of fine motor activities the child engaged in at home.

## **Timeline**

The IRB was obtained in Summer of 2020 so that data collection could occur before school resumed in Fall 2020. The survey was distributed when IRB approval was obtained on June 20, 2020, with survey collection continuing until August 31, 2020. The data was then analyzed and capstone completion occurred Fall 2020.

## **Resources**

The survey required the use of Qualtrics through Eastern Kentucky University and distribution through social media.

## **Analysis of Data**

Data were analyzed using Jamovi, which is an open source statistical package (Jamovi.org). One-way ANOVA analysis (analysis of variance) was conducted on results for specific fine motor skills using two separate grouping variables, hours of mobile media per day and number of days per week of mobile media. The data were not normally distributed therefore a nonparametric ANOVA test was used (Kruskal-Wallis) to obtain the difference between means and level of significance. Level of significance was set at  $\alpha < .05$  *a priori*. Pearson *r* coefficients were calculated to look at the relationship among the aforementioned grouping variables and fine motor skills. Results may be found in Tables 1 and 2 in the results section.

**Ethical Considerations**

The survey required informed consent before participants could enter into the survey. All participation was voluntary and confidential with complete anonymity of the participants.



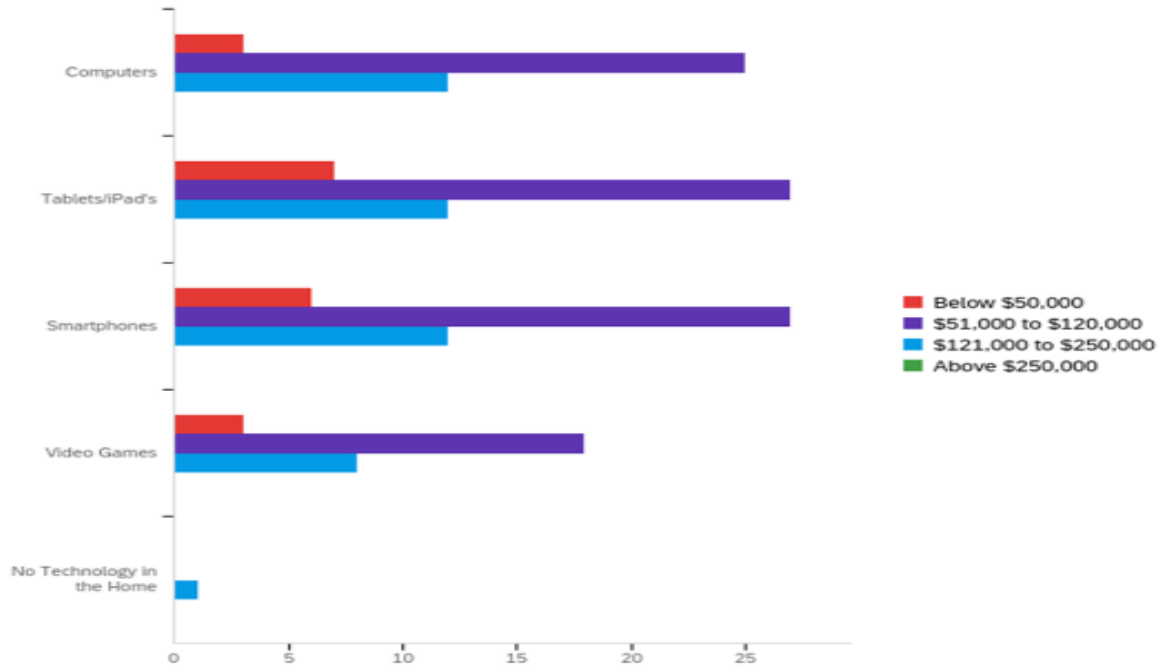
## **Section 4**

### **Results**

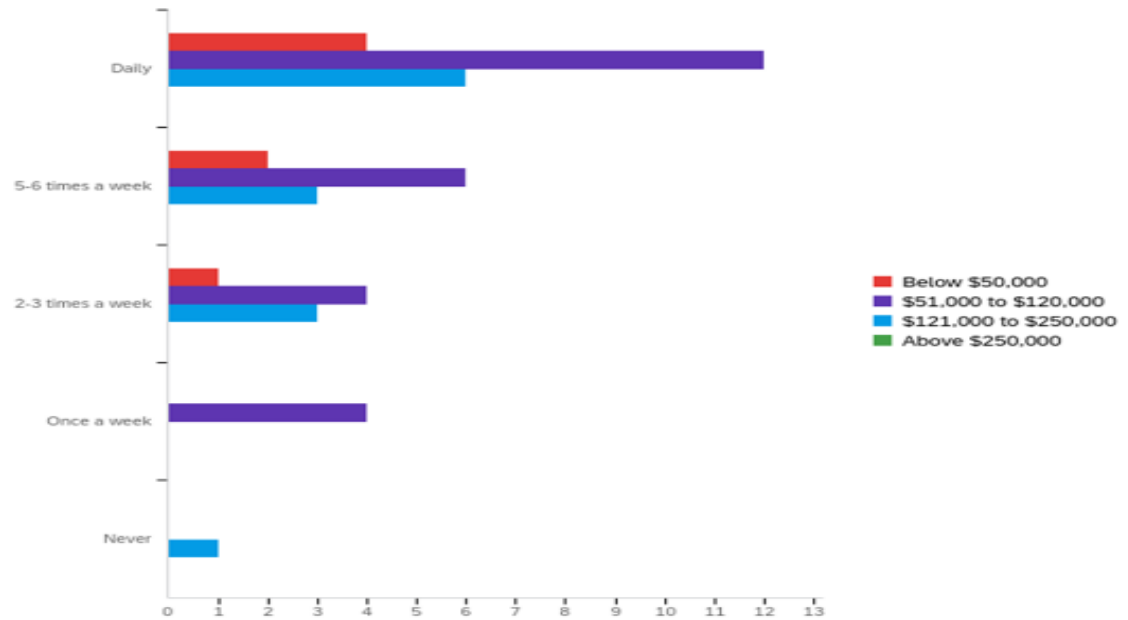
A total of 68 individuals responded to the survey with 14 having children born in 2014, 16 born in 2015, and 4 born in 2016. Nineteen respondents stated that the birth year was a year other than 2014, 2015, or 2016 and were unable to complete the survey. It was found that 15 participants bypassed the birth year to go on and complete the survey. The total number of participants that started the survey was 74 with only 68 participants completing the survey until the end.

The participants were asked to provide their income for comparison to the types of mobile media used and frequency as seen in Figure 1. The majority of respondents indicated that families in the \$50,000 to \$120,000 range used all types of mobile media in the home including computers, tablets/iPads, smartphones and video games. The lower income families, under \$50,000, demonstrated owning tablet/iPads and smartphones more frequently. Daily mobile media use was seen the most from the median income range of \$50,000 to \$120,000 as seen in Figure 2. Families making over \$121,000 also indicated increased daily use of mobile media.

**Figure 1**  
*Income versus Type of technology*  
 Income versus Type of technology



**Figure 2**  
*Income versus Frequency of Use*  
 Income versus Frequency of Use



The survey also indicated that the parents that participated in the study were predominantly in the 35 to 45 age range. The 26 to 35 age range had 24 participants that started the survey. The majority of families indicated that their child had attended preschool (39 participants) and only seven families stated that their child did not attend preschool. Twenty-six of the families indicated that they were in the 35 to 45 age range and had children attend preschool. The percentage of participants that had children attend preschool increased as the salary income increased. The frequency of mobile media use decreased as the family income increased. Families with incomes under \$120,000 were noted to have greater frequency of mobile media use than families with incomes over \$120,000. Over 60% of parents in the age range of 35 to 45 with an income range of \$51,000 to \$120,000 reported that their children utilized mobile media greater than five times a week. The higher income range of \$51,000 and above also indicated a greater chance of having multiple types of mobile media within the home as compared to the below \$50,000 range as seen in Figure 1.

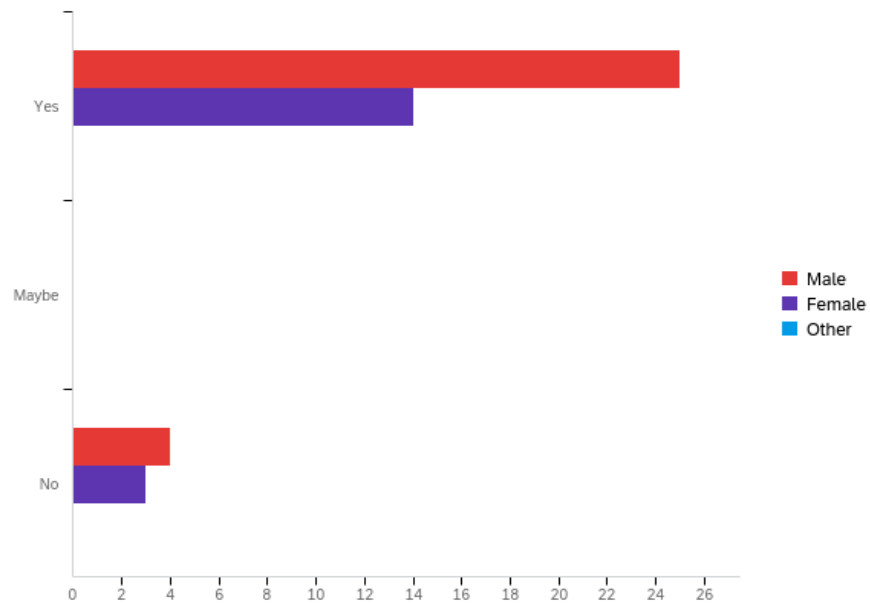
The children of the participants of the survey were identified as male twice as frequently as female. The male children were identified to daily participate with mobile media at a rate of 36% more frequently than the female children. Parents reported that the male children attended preschool 56% more than the female parents as seen in Figure 3. The female parents reported increased ability to replicate vertical, horizontal, circular and cross patterns. Male parents reported 21% of the males were unable to replicate a cross. In regards to cutting skills, approximately 50% of the males could only snip the paper with the remaining 50% able to cut simple shapes. The parents reported that 33% of the girls could only snip paper with 66% able to cut simple shapes. Coloring demonstrated an

even distribution of the males with 1/3 coloring with no regard to lines, 1/3 coloring within the lines, and 1/3 coloring with multiple colors. The parents of the females reported that 61% were able to color with multiple colors, 30% were able to color within the lines and only one female was reported to color with no regard to the lines.

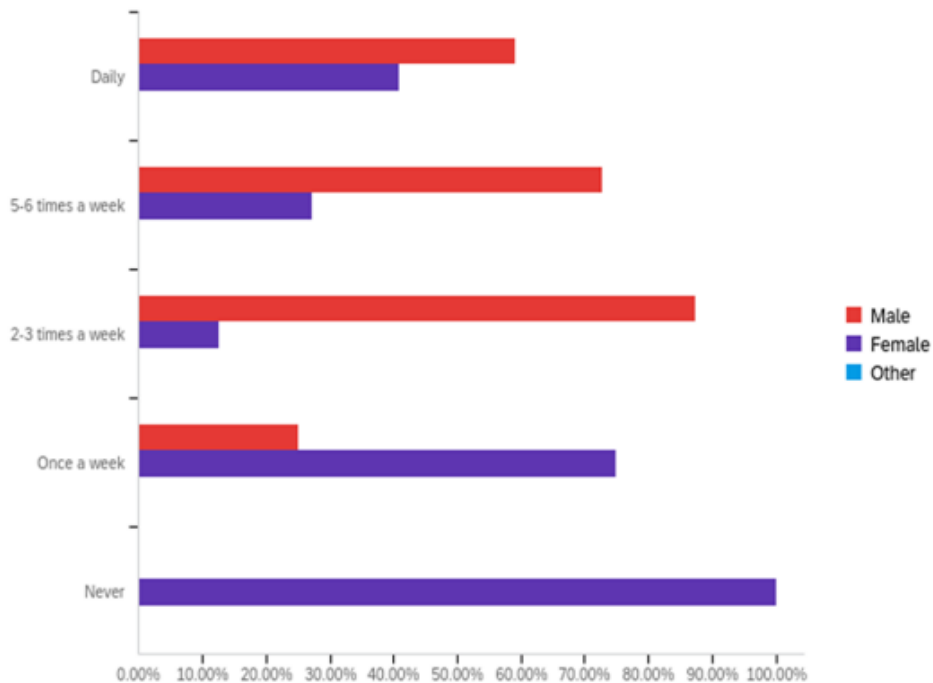
### Figure 3

#### *Gender versus Preschool Attendance*

Gender versus Attending Preschool

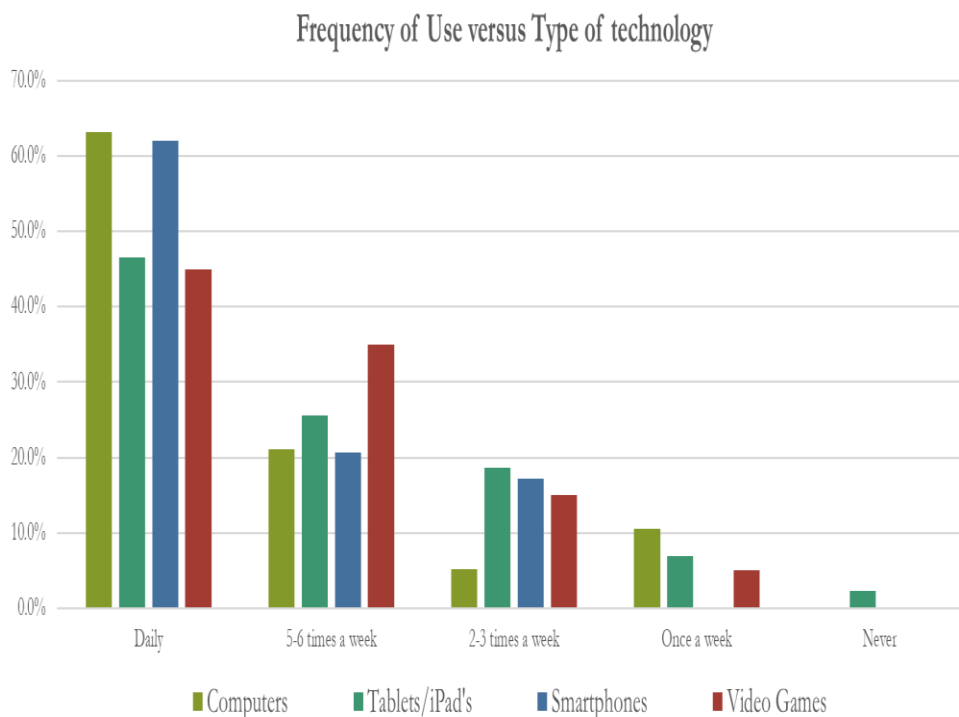


**Figure 4**  
*Gender versus Frequency of Use*  
 Gender versus Frequency of Use



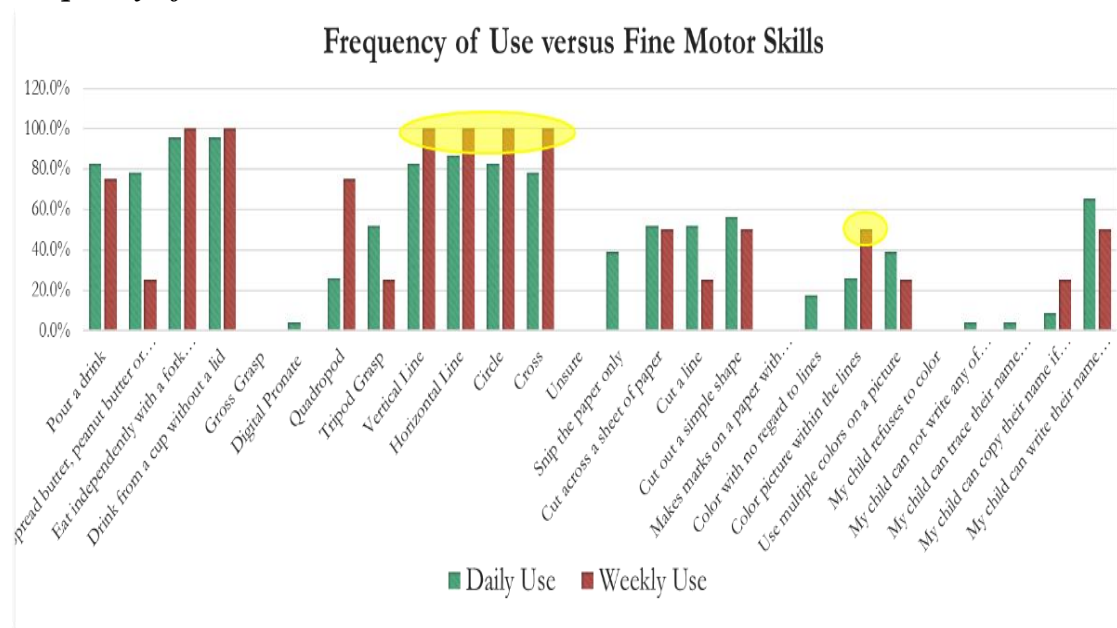
Mobile media reported in the homes included computers, tablet/iPad, smartphones and video games. Families reported having tablets/iPads and smartphones with the greatest frequency as seen in Figure 5. They also reported that greatest amount of daily use, over half, in regards to computers and smartphones. Video games increased in popularity when families chose 5 to 6 times a week. The families that reported that mobile media was utilized only 2 to 3 times a week reported a similar use of computers, tablets/iPads, smartphones and video games.

**Figure 5**  
***Frequency of Use versus Type of Technology***



The parent's response to fine motor skill abilities indicated that the children that utilized mobile media demonstrated increased independence with pouring drinks and spreading butter and peanut butter as seen in Figure 6 although they were not statistically significant differences. Weekly use of mobile media indicated a higher frequency of replicating a vertical, horizontal, circle and cross with a significantly different increased ability to create horizontal lines. The parents also reported that their children more frequently colored within the lines. The weekly mobile media users indicated a more frequent use of a quadruped pencil grasp with the daily users indicating the use of tripod grasp more frequently. Independence with writing their name was seen more frequently with daily users of mobile media versus the weekly users.

**Figure 6**  
**Frequency of Use versus Fine Motor Skills**



**Table 1**  
**Results for ANOVA for hours per day**

Kruskal-Wallis

	$\chi^2$	df	P	Pearson r
Pour a Drink	10.67	5	0.058	0.1904438
Spread butter	10.40	5	0.065	0.23988865
Eat Independently	23.00	5	< .001**	1
Drink from cup without lid	23.00	5	< .001**	1
Draw vertical line	9.91	5	0.078	-0.1867847
Draw horizontal line	13.80	5	0.017*	0.02394676
Draw circle	2.32	4	0.677	-0.0791578
Draw cross	10.19	5	0.070	0.15086583
String bead	11.22	4	0.024*	0.15443236
Cutting	14.69	5	0.012*	0.15443236
Coloring	5.09	5	0.405	0.10358982

## Kruskal-Wallis

	$\chi^2$	df	P	Pearson r
Write name	8.46	5	0.133	0.13783506

Table 2

*Results for ANOVA frequency of use (days per week)*

## Kruskal-Wallis

	$\chi^2$	df	P	Pearson r
Pour a drink	7.06	5	0.216	0.06065731
Spread butter	9.15	5	0.103	0.23649397
Eat independently	44.00	5	< .001**	1
Drink from cup without lip	44.00	5	< .001**	1
Draw vertical line	16.99	5	0.005*	-0.1943514
Draw horizontal line	16.61	5	0.005*	0.0045198
Draw circle	1.85	4	0.763	-0.0765703
Draw cross	8.47	5	0.132	0.01050307
String bead	3.69	4	0.450	0.12294982
Cutting	8.34	5	0.138	0.12294982
Coloring	5.93	5	0.313	0.02627048
Write name	5.42	5	0.367	0.01817516

\* p-value < .05

\*\* p-value < .001



## Section 5

### Discussion

The number of responses to the survey was lower than anticipated. A total of 75 individuals agreed to participate in the study, but 19 participants did not have children born in 2014, 2015, or 2016. Of the remaining 56 that agreed to participate, 15 participants skipped this question so that they could continue with the survey. The researcher noted that not all of 56 respondents answered every question during the survey.

The 56 remaining participants were composed of 30 males and 17 female children with 9 individuals not answering this question. The males were reported to use mobile media daily 59% of the time with the females reporting daily use only 40% of the time. Twenty-five out of thirty males reported having attended preschool were as the females reported 14 out of 17 had attended preschool. The attendance rates of preschools for both males and females were greater than 80%. Lin, et al. (2017) found that children attending preschool had greater fine motor skills when fewer mobile media time was used. The female children in the study demonstrated that 94% could draw vertical, horizontal and circular marks with 88% able to draw a cross. The males were reported to have 93% able to draw a horizontal line, 89% able to draw a vertical and circular line and 72% able to make a cross. The children demonstrated a statistical significance (Table 2) with drawing a vertical and horizontal line when compared with mobile media use per week. However, only drawing a horizontal line (Table 1) was statistically significant for children that used mobile media for a number of hours daily. This fine motor ability was also noted with stringing beads. The female participants were reported to know that 87% could string

with only 77% of the males reporting that they could string. Stringing beads was noted to be statistically significant for the children in Table 2 when mobile media use was classified as hours per day. The bilateral coordination required in stringing beads as well as the eye hand coordination are skills that would be reinforced through using both hands for mobile media use and interaction with some apps.

The average income was \$50,000 to \$120,000 with 50% of the participants reporting this income. About 30% of the participants reported an average income greater than \$120,000. The higher incomes reported associates with the increased amounts and types of mobile media within the home as seen in Figure 3. The average age for the individuals responding to the survey was 35 to 45 for over 50% of the respondents to the survey. The literature varied regarding income and the impact on mobile media. Kabali et. al. (2015) reported that low income families often reported increased use of mobile media devices to distract the children. Whereas, Kilic et. al. (2019) reported in their study that increased economic status and lower education families were seen to use technology to take care of their children.

The current researcher saw an increased use of mobile media being reported by families with many families reporting the increase being due to COVID-19 and the need for the children to do school at home and parents to work at home. This parallel use of technology was seen in Dermoff et. al. (2019) as children were reported to use increased mobile media when the parents were also using mobile media. The parents reported

My kids had only weekend screen time (no weekday screen time) prior to school and daycare being shut down for COVID. I answered all questions honestly to our current situation (two kids at home, husband essential worker, mom attempting to

work from home) but I don't know how your research is going to adjust for situations like ours (where kids had extremely different screen restrictions prior to COVID). I wish you all the luck in the world on your dissertation research and I encourage you to include information like this in your limitations or subjectivity statement. (Anonymous Parent Survey Response, 2020)

Another parent reported "During the pandemic a lot more work was done to improve handwriting, however, there was also more screen time due to my husband and I needing to work" (Anonymous Parent Survey Response, 2020). Fischer (2020) and Lang (2020) both reported that parents had decreased screen limits as more parents were working from home due to the pandemic.

This survey did show that the children that had increased mobile media use did have the fine motor skills that will be needed in kindergarten as seen in Figure 7 and Tables 1 and 2. The skills needed for kindergarten including independence with eating and drinking, drawing a horizontal and vertical line, and cutting paper were all found to be statistically significant for the children that indicated increased days per week and hours per day of mobile media use (Table 1 and 2). The statistical significance of drawing a horizontal and vertical line could be related to the swiping required in mobile media for activation and interaction with the devices. The same results of increased mobile media and increased fine motor skills were seen by Bedford, et. al. (2016), Souto, et. al. (2020), Lin, et al. (2017) and Moon, et. al. (2018) in their studies. The parents reported that 85% of the children attended preschool with 72% reporting more than 5 days of mobile media use per week as seen in Figure 3. The relationship between mobile media and fine motor

skill development is hard to isolate in the current study as these same children also attended preschool.

### **Limitations**

This study was impacted by COVID-19 and the closure of the schools. The original research proposed was to be conducted in person through observation and parent survey. The school closure forced the research to be conducted through a survey on social media. The survey was dependent on the accuracy of the response from the parents. Mobile media usage has been recommended to be limited for children by the American Academy of Pediatrics (2016). The pediatricians are recommended to discuss the need for limits of mobile media usage for their patients. Parents may have answered the mobile media usage question based on the knowledge they have for the need for limits.

Another limitation of the study that arose from COVID-19 was the need for individuals to work and complete school from home. The safer at home mandate impacted 3 billion people and 90% of students were no longer attending school Winther and Byrne (2020). This increase changed the dynamics within the home and the family. Two of the families commented that they had removed screen time limits as both parents were working from home. Schools were also demanding increased instruction through mobile media as the education system shifted to virtual learning.

The data provided by the families was incomplete and limited the results of survey. Forced choices would have inhibited moving on through the survey without answering. This was seen with the greatest impact as 15 individuals did not put a birth

year in for their children but continued on throughout the survey. This was seen in other questions as the response count for each question varied.

### **Implications for Occupational Therapy**

The implications of this study for occupational therapy includes the need for further study for clarification of results. This study starts the conversation about mobile media use with children and its impact on fine motor skill development needed as children start school. Through this study, the need to further examine the long-term impacts of increased mobile media on fine motor and development of children is reinforced. As children engage with mobile media at a greater rate, the importance of understanding the impact is needed for planning and development of future programs.

Axford, et. al., (2018) and Andelic, et. al., (2014) supports the need for balance in both mobile media use and hands on activities. Increased use of mobile media in the home and school environment will impact occupational therapy practices. Through working with the families, occupational therapist needs to help educate families on achieving balance with the use of mobile media. The increase use of mobile media in the educational setting will need to be balanced with use at home. Families should be educated on balancing mobile media use with hands on activities. As the increased use of mobile media continues, it will need to be part of the evaluation in order to help families establish routines and habits that are beneficial for the child's development.

## **Future Research**

This survey demonstrated the need for more studies related to the impact of mobile media on fine motor skills. As fine motor skills are a part of all occupations, it is imperative that occupational therapists understand the impact. The role of the occupational therapist in the school environment will also be impacted by mobile media. The availability of information to increase understanding of the impact of mobile media will assist in the school environment as occupational therapists educate teachers regarding the need to balance hands on with mobile media interaction.

As the use of technology continues to grow within our society and the continuation of COVID-19, the occupational therapists need to understand the impact of mobile media on the development of children. This includes not only fine motor skills, but also visual motor skills, educational skills and play skills. Therapists also need to work on identifying applications that would be beneficial for the development of specific skills. Coutinho (2017) encouraged therapists to tailor technology to the needs of the child. Instructing the parents regarding choice of applications available would allow for the continuation of skill development within the home environment. Occupational therapists need to work with families to balance the use of mobile media but also to direct the child's use toward applications that support the child's development.

## **Conclusion**

Technology continues to grow and change with an increasing impact on the development of children and how they learn. Occupational therapist needs to adapt with

the changes as they occur within our society. The use of mobile media has become an important occupation within the lives of our children. This survey indicated that COVID-19 has switched mobile media to one of the foremost occupations in our children's lives as the majority engage daily. Through future research, occupational therapists can learn to facilitate development of children and negate the possibility of negative impact from this increased use of mobile media.

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Appendix A  
**Eastern Kentucky University Institutional Review  
Board**  
**Limited Review Application for Exemption  
Determination**

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This application is to be used to request an exemption determination under a limited review process. Only the IRB may issue an exemption determination, and the investigator must receive this determination prior to engaging in research activities involving human subjects.

In order for human subjects research to be reviewed under limited review for an exemption determination, the study must represent not greater than minimal risk to its participants and include only activities that fall within the categories listed in this application (see Section 2).

Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

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**Instructions for Applying for Limited Review**

1. All applications for IRB review must be submitted online by the principal investigator.
2. After completing this application form and all required attachments, access the online submission system at [eku.infoready4.com](http://eku.infoready4.com). Choose Limited Review Application for Exemption Determination from the list of available opportunities and click the Apply button on the right. If needed, you can filter the category column by Institutional Review Board (Human Subjects Research).
3. If you are a current ECU employee or student, click the option to log in as an ECU user. Your user name and password are the same as what you use to log in to ECU's network. Your user name is not your email address.
4. Complete the basic information in the online application and upload this application form and all required attachments in their original file formats (i.e., Microsoft Word documents). **Please do not convert files to PDFs.** PDFs are allowable for signed documents, CITI training documentation, and other files that were provided to you in PDF format. **If you copy and paste text into the application's form fields, please format your text to Tahoma font in size 10 prior to copying.**
5. Upon receipt of a new online application, the IRB administrator will review the submission for completeness and return incomplete applications for updates prior to processing.
6. Once an application is accepted by the IRB administrator, it will be assigned to the faculty advisor (if the principal investigator is a student) and the department chair for approvals prior to being reviewed by the IRB.

7. If the IRB reviewers have questions or request updates to the application materials, the principal investigator will be notified by email and asked to resubmit application materials by email.

8. Once the IRB has approved the application, the principal investigator will be notified by email.

## Application Checklist

In order for the IRB to consider an exemption determination through a limited review process, the following items are required:

- Limited Review Application for Exemption Determination (this application)
- CITI Training Completion Reports for all investigators, key personnel, and faculty research advisors

Note that the Basic Course for Social Behavioral or Biomedical Researchers is required. The Refresher Course cannot be accepted unless the investigator has previously completed the Basic Course and is using the Refresher Course to renew training credentials.

As applicable (check all that apply):

- Recruitment materials (i.e., advertisements, verbal scripts, cover letters, etc.)
- Consent Materials (i.e., introductory cover letter, consent script, etc.)
- Instrument(s) to be used for data collection (i.e., surveys, questionnaires, interview questions, assessments, etc.)
- Letter(s) granting permission to use off-campus facility for research

All documents that will be provided to subjects must include the title of the study. This includes recruitment, consent, and data collection documents.

## Limited Review Application for Exemption Determination Section 1: General Information

**1. Title of Study:** The Impact of Mobile Media on the Fine Motor Development of Students Entering into the Educational System

**2. Principal Investigator:**

Principal Investigator Name: Bernadette Needham  
Department: Department of Occupational Therapy  
Position: Student

**3. Degree Program, Faculty Advisor, and Committee Members:**

(Skip to Item 4 if principal investigator is not an ECU student)

Degree Program: Occupational Therapy Doctorate  
 Faculty Research Advisor: Julie Duckart, PhD, MS, OTR/L  
 Committee Members (required for theses, dissertations, scholarly projects, field experience, or other studies guided by an academic committee): Dr. Shirley Peganoff O'Brien

**4. Other Investigators:** Identify all other investigators assisting in the study. If additional lines are needed, please attach a Continuation Page for Other Investigators.

Name: Julie Duckart, PhD, MS, OTR/L Authorized to obtain consent? Yes No

Responsibility in Project: Management of Data and analysis of data Name: [Click and type.](#)

Authorized to obtain consent? Yes No

Responsibility in Project: [Click and type.](#)

Name: [Click and type.](#) Authorized to obtain consent? Yes No Responsibility in Project: [Click and type.](#)

Name: [Click and type.](#) Authorized to obtain consent? Yes No Responsibility in Project: [Click and type.](#)

Name: [Click and type.](#) Authorized to obtain consent? Yes No Responsibility in Project: [Click and type.](#)

Please check if a Continuation Page for Other Investigators is attached.

**5. Estimated Duration of Research Project:** upon IRB approval through 6/30/2021  
 Note that research may not begin until IRB approval has been granted. Projects may be approved for a period of up to three years, after which time, a new application is required.

**6. Funding Support:** Is the research study funded by an internal grant or an external grant or contract? Yes No Funding Agency: [Click and type.](#)

**7. Is the proposed study a clinical trial?** Yes No

Please respond to the following questions to determine whether a study meets the clinical trial definition:

✦ Does the study involve human participants? Yes No

✦ Are the participants prospectively assigned to an intervention? Yes No

✦ Is the study designed to evaluate the effect of the intervention on the participants?  
Yes No

✦ Is the effect being evaluated a health-related biomedical or behavioral outcome? Yes  
No

If the answers are all "yes," the study is a clinical trial. If any answers are "no," the study is not a clinical trial



**8. Risk Category:**

- Not greater than minimal risk
- Greater than minimal risk, but of direct benefit to individual participants – Please complete full review application instead of this form.
- Greater than minimal risk and no direct benefit to individual participants, but likely to yield generalizable knowledge about the subject's disorder or condition - Please complete full review application instead of this form.

## **Limited Review Application for Exemption Determination Section 2: Exemption Categories**

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Research activities may be classified as exempt when the only involvement of human subjects falls within one or more of the categories below and the study represents not greater than minimal risk to its participants. If any activities do not fit in the categories below, the project is not eligible for exemption, and the investigator is required to instead apply for expedited or full review.

**1. Select one or more of the categories below that apply to the research project:**

- Category 1:** Research conducted in established or commonly accepted educational settings that specifically involves normal educational practices that are not likely to adversely impact students' opportunity to learn required educational content or the assessment of educators who provide instruction. This includes most research on regular and special education instructional strategies, and research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.
- Category 2:** Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
  - (i) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects;
  - (ii) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or
  - (iii) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination that there are adequate safeguards to protect the privacy and confidentiality of the subjects.

**IMPORTANT: Subpart D: Additional Protections for Children Involved as Subjects in Research restricts Exemption 2 in the following ways:**

- ✦ For research involving children, exemption 2 (i) and 2 (ii) above may be applied only to research involving educational tests or the observation of public behavior when the investigator(s) do not participate in the activities being observed.
  - ✦ Exemption 2 may not be applied to survey procedures or interview procedures involving children as subjects.
  - ✦ Exemption 2 (iii) above may not be applied to research involving children.
- Category 3:** Research involving benign behavioral interventions\* in conjunction with the collection of information from an **adult** subject through verbal or written responses (including data entry) or audiovisual recording if the subject prospectively agrees to the intervention and information collection and at least one of the following criteria is met:
- (i) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects;
  - (ii) Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or
  - (iii) The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination that there are adequate safeguards to protect the privacy and confidentiality of the subjects.

\*Benign behavioral interventions are brief in duration, harmless, painless, not physically invasive, not likely to have a significant adverse lasting impact on the subjects, and the investigator has no reason to think the subjects will find the interventions offensive or embarrassing. Provided all such criteria are met, examples of such benign behavioral interventions would include having the subjects play an online game, having them solve puzzles under various noise conditions, or having them decide how to allocate a nominal amount of received cash between themselves and someone else.

**Does the project involve deception?** Yes No

If the research involves deceiving the subjects regarding the nature or purposes of the research, this exemption is not applicable unless the subject authorizes the deception through a prospective agreement to participate in research in

circumstances in which the subject is informed that he or she will be unaware of or misled regarding the nature or purposes of the research.

**IMPORTANT:** Note that this exemption applies only to adult subjects and cannot be applied to research involving children.

- **Category 4:** Secondary research for which consent is not required: Secondary research uses of identifiable private information or identifiable biospecimens, if at least one of the following criteria is met:
  - (i) The identifiable private information or identifiable biospecimens are publicly available;
  - (ii) Information, which may include information about biospecimens, is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained directly or through identifiers linked to the subjects, the investigator does not contact the subjects, and the investigator will not re-identify subjects;
  - (iii) The research involves only information collection and analysis involving the investigator's use of identifiable health information when that use is regulated under 45 CFR parts 160 and 164, subparts A and E, for the purposes of "health care operations" or "research" as those terms are defined at 45 CFR 164.501 or for "public health activities and purposes" as described under 45 CFR 164.512(b); or
  - (iv) The research is conducted by, or on behalf of, a Federal department or agency using government-generated or government-collected information obtained for non-research activities, if the research generates identifiable private information that is or will be maintained on information technology that is subject to and in compliance with section 208(b) of the E-Government Act of 2002, 44 U.S.C. 3501 note, if all of the identifiable private information collected, used, or generated as part of the activity will be maintained in systems of records subject to the Privacy Act of 1974, 5 U.S.C. 552a, and, if applicable, the information used in the research was collected subject to the Paperwork Reduction Act of 1995, 44 U.S.C. 3501 et seq.
- **Category 5:** Research and demonstration projects that are conducted or supported by a Federal department or agency, or otherwise subject to the approval of department or agency heads (or the approval of the heads of bureaus or other subordinate agencies that have been delegated authority to conduct the research and demonstration projects), and that are designed to study, evaluate, improve, or otherwise examine public benefit or service programs, including procedures for obtaining benefits or services under those programs, possible changes in or alternatives to those programs or procedures, or possible changes in methods or levels of payment for benefits or services under those programs. Such projects include, but are not limited to, internal studies by Federal employees, and studies under contracts or consulting arrangements, cooperative agreements, or grants. Exempt projects also include waivers of otherwise mandatory requirements using authorities such as sections 1115 and 1115A of the Social Security Act, as amended. Each Federal department or agency conducting or supporting the research and demonstration projects must establish, on a publicly accessible Federal Web site or in such other manner as the department or agency head may determine, a list of the research and demonstration projects that the Federal department or agency conducts or supports under this provision. The research or demonstration project must be published on this list prior to commencing the research involving human subjects.

- Category 6:** Taste and food quality evaluation and consumer acceptance studies:
- (i) If wholesome foods without additives are consumed, or
  - (ii) If a food is consumed that contains a food ingredient at or below the level and for a use found to be safe, or agricultural chemical or environmental contaminant at or below the level found to be safe, by the Food and Drug Administration or approved by the Environmental Protection Agency or the Food Safety and Inspection Service of the U.S. Department of Agriculture.

**2. Will the study involve any procedures that fall outside the categories selected in Item 1 of this section?**

- No       Yes – apply for full or expedited review instead of exemption

**3. Will the project involve prisoners?**  No       Possibly Incidentally       Yes  
– apply for full review

Subpart C: Additional Protections Pertaining to Biomedical and Behavioral Research Involving Prisoners as Subjects restricts the exemption categories below from being applied to research involving prisoners except for research aimed at involving a broader subject population that only incidentally includes prisoners (i.e., a web-based survey that an inmate may be able to access from a prison computer without the researcher being aware of the prisoner status).

## Limited Review Application for Exemption Determination Section 3: Research Description

**1. Research Objectives:**

**a. List the research objectives/hypotheses.**

The purpose of this capstone is to determine if a correlation exists between a child's fine motor development and the amount of time they have spent using mobile media/technology.

**2. Project Location:**

**a. Where will the study take place?**

The research study will take place online through a survey that the individuals complete.

**b. If the study will take place at a location other than ECU, attach a letter from an authorized representative of the organization granting permission to use facility for research purposes.**  ECU only  Letter(s) attached

**c. Will any data be collected through organizations other than Eastern Kentucky University?**  No  Yes, complete the following:

+ Will personnel of the organization be involved in the data collection process or have access to data after collection?  No  Yes - If yes, list personnel in Section 1, include copies of CITI training completion reports, and define role(s) here: [Click here to enter text.](#)

**3. Subject Population:**

**a. What criteria will be used to determine the inclusion of participants in the study?**

Parents of children between the ages of 4-6 that are enrolling in kindergarten for the Fall of 2020.

**b. What criteria will be used to determine the exclusion of participants in the study?**

The only individuals that will be excluded are parents of children that are already in school or that are too young to start school in Fall of 2020.

**c. Anticipated Number of Participants** (maximum): 200

**d. Age Range of Participants:** 18 to 75 years of age

**e. Gender of Participants:**  Male  Female or  Gender not considered in subject selection

**f. Ethnicity of Participants:** [Click and type.](#) or  Ethnicity not considered in subject selection

**g. Health Status of Participants:** [Click and type.](#) or  Health status not considered in subject selection

**h. Will the study involve prisoners?**  No  Possibly Incidentally without the investigator's knowledge  
 Yes (not eligible for exemption)

**i. Will the study involve subjects who do not speak and/or read English?**  No

Yes (see Translation Certification form and guidance)

**4. Recruitment of Participants:**

**a. How will prospective participants be identified for recruitment into the study?**

Families with children entering kindergarten will be invited to complete the survey for the study.

**b. Describe the recruitment procedures to be used with potential participants.**

The recruitment will be online and e-mailed to other therapists, schools systems, and placed on Facebook to recruit potential survey participants.

**c. Recruitment materials to be used:** Check all that will be used and attach copies. The study's title must be included on all documents.

None    Advertisement    Flyer    Verbal Recruitment Script

Cover Letter

Text to be posted in electronic participant management software

Other: Brief narrative on social media platforms explaining the survey and requesting participants.

**5. Ensuring Voluntary Participation:** While studies that are appropriate for exemption are not required to formally document the informed consent process, investigators are expected to provide information to potential participants and ensure their voluntary agreement to participate.

**a. What procedures will be followed to ensure that potential participants are informed about the study and made aware that their decision to participate is voluntary?**

The participant will only be able to access the survey once they have marked the consent box.

**b. Consent materials to be used:** Formal consent forms are not required for exempt research; the following are examples of items typically used in exempt research to ensure voluntary participation. Check all that will be used and attach copies: None, Cover Letter, Introductory paragraph on data collection instrument, Other: Click and type.

## 6. Research Procedures

**a. Describe in detail the research procedures to be followed that pertain to human participants.** Be specific about what you will do and how you will do it.

This study is to explore the correlation between decreased fine motor skill development and increased mobile media usage for students entering Kindergarten. This research will be conducted using a survey for parents of children entering into the educational environment in the Fall of 2020. The following are the steps to the research procedures:

- Advertise survey
- Parents participate in completion of survey
- Analyze results of survey questions

## 7. Potential Risks

**a. Describe any potential risks**—physical, psychological, social, legal, or other.

Not greater than a minimal risk

**b. What procedures will be followed to protect against or minimize any potential risks?**

The nature of the data collection ensures anonymity as identifying information will not be collected.

**8. Potential Benefits and Subject Compensation**

**a. Describe any potential benefits subjects will receive**

It will afford the participant with an opportunity to identify their child's fine motor abilities.

**b. Will subjects receive compensation for their participation?**  No  Yes (describe in detail below)

Yes (describe in detail below)

Click and type.

**9. Research Materials, Records, and Confidentiality**

**a. What materials will be used for the research process?** Include a description of both data collected through the study as well as other data accessed for the study. Copies of all data collection instruments must be attached and must include the title of the study.

A 20 question survey for parents.

**b. Describe procedures for maintaining the confidentiality of data.**

The survey will not collect any identifiable information that could compromise confidentiality.

**c. Who will have access to the data?** If anyone outside the research team will have access to the data, provide a justification and include a disclaimer in consent documents.

Only the research team will have access to the data.

**d. Describe how and where research records will be stored.** Note that all research-related records must be maintained for a period of three years from the study's completion and are subject to audit. Student research records must be maintained by the faculty advisor who identified in Section 1, Item 3 of this application or provided to the IRB for records maintenance.

Records will be stored in a locked cabinet in a locked office in Disney Building office 126 on EKU's campus for a period of three years from the studies completion. All data will be identified only by a number.

**e. How will data be destroyed at the end of the records retention period (i.e., shredding paper documents, deleting electronic files, physically destroying audio/video recordings)?**

The electronic files will be deleted and all paper documents will be shredded.

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## Appendix B

# The Impact of Mobile Media on the Development of Fine Motor Skills in Children

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## Start of Block: Default Question Block

**The Impact of Mobile Media Devices on the Development of Fine Motor Skills in Children entering the Educational System** You are being invited to take part in a research study on how increased use of tablets, iPhones and touch screen devices is impacting the development of fine motor skills of children. This study is being conducted by Bernadette Needham, MS, OTR/L and doctoral student at Eastern Kentucky University. If you decide to participate in the study, you will be asked to complete a survey. Your participation is expected to take no more than 15 minutes. This study is anonymous. You will not be asked to provide your name or other identifying information as part of the study. No one, not even members of the research team, will know that the information you give came from you. Your information will be combined with information from other people taking part in the study. When we write up the results of the study, we will write about this combined information. We will make every effort to safeguard your data, but as with anything online, we cannot guarantee the security of data obtained via the Internet. Third-party applications used in this study may have terms of service and privacy policies outside the control of Eastern Kentucky University. If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering. This study has been reviewed and approved for exemption by the Institutional Review Board at Eastern Kentucky University as research protocol number 003151. If you have any questions about the study, please contact Bernadette Needham at (423) 863-7025. If you have questions about your rights as a research volunteer, please contact the Division of Sponsored Programs at Eastern Kentucky University by calling 859-622-3636. By completing the activity that begins on the next screen, you agree that you (1) are at least 18 years of age; (2) have read and understand the information above; and (3) voluntarily agree to participate in this study.

- Yes, I will participate in this survey. (1)
- No, I do not want to participate in this survey (2)

*Skip To: End of Survey If The Impact of Mobile Media Devices on the Development of Fine Motor Skills in Children entering t... = No, I do not want to participate in this survey*

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Page Break

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1 Please mark which age group you (the adult) fall into:

- Under 25 (1)
  - 26 to 35 (2)
  - 35 to 45 (3)
  - 46 and above (4)
- 

2 What is your gender (the adult)?

- Male (1)
  - Female (2)
  - Other (3)
- 

3 Please indicate your household income

- Below \$50,000 (1)
  - \$51,000 to \$120,000 (2)
  - \$121,000 to \$250,000 (3)
  - Above \$250,000 (4)
-

4 What is the year of your child's birth?

▼ 2014 (1) ... Other (4)

*Skip To: End of Survey If What is the year of your child's birth? = Other*

---

5 What is the gender of your child?

- Male (1)
  - Female (2)
  - Other (3)
- 

6 What types of technology do you have in the home environment? (Chose all that apply)

- Computers (1)
  - Tablets/iPad's (2)
  - Smartphones (3)
  - Video Games (4)
  - No Technology in the Home (5)
-

7 What types of technology does your child use in the home? (Chose all that apply)

- Computers (1)
  - Tablets/iPad's (2)
  - Smartphones (3)
  - Video Games (4)
- 

8 Which technology in the home has touchscreen ability? (Chose all that apply)

- Computers (1)
  - Tablets/iPad's (2)
  - Smartphones (3)
  - Video Games (4)
- 

9 How frequently does your child use the touch screen technology?

- Daily (1)
  - 5-6 times a week (2)
  - 2-3 times a week (3)
  - Once a week (4)
  - Never (5)
-

*Display This Question:*

*If How frequently does your child use the touch screen technology? = Daily*

9b How much time does your child engage with touchscreen technology (computers, tablets/iPad's/smartphones, and/or video games) daily?

- Less than an hour a day (1)
  - One hour a day (2)
  - 2-3 hours a day (3)
  - Greater than 3 hours a day (4)
- 

10 Did your child attend a preschool or head start program?

- Yes (1)
  - Maybe (2)
  - No (3)
- 

11 Which hand does your child use most often when eating, brushing teeth or using crayons, or pencils?

- Right (1)
  - Left (2)
  - Both Equally (3)
-

12 Which of the following can your child do? (Chose all that apply)

- Pour a drink (1)
  - Spread butter, peanut butter or jelly with a knife (2)
  - Eat independently with a fork and spoon (3)
  - Drink from a cup without a lid (4)
- 

13 How does your child hold a pencil or crayon?

- Image:Capture (1)
  - Image:Capture 2 (2)
  - Image:Capture 3 (3)
  - Image:Capture 4 (4)
- 

14 Which shapes can your child draw with no help? (Chose all that apply)

- Vertical Line (1)
  - Horizontal Line (2)
  - Circle (3)
  - Cross (4)
  - Unsure (5)
-

15 Can your child put beads or cereal on a string with no help? (Chose all that apply)

- Yes (1)
  - Maybe (2)
  - No (3)
- 

16 Can your child cut with scissors with no help? (Chose all that apply)

- Snip the paper only (1)
  - Cut across a sheet of paper (2)
  - Cut a line (3)
  - Cut out a simple shape (4)
- 

17 Can your child color a picture with no help?

- Makes marks on a paper with no regard to picture (1)
  - Color with no regard to lines (2)
  - Color picture within the lines (3)
  - Use multiple colors on a picture (4)
  - My child refuses to color (5)
-

18 Can your child write their name?

- My child can not write any of their name (1)
  - My child can trace their name only (2)
  - My child can copy their name if someone writes it first (3)
  - My child can write their name with no help (4)
- 

19 Can your child manage buttons and zippers with no help from an adult?

- Yes, they do not need any help (1)
  - Yes, but they require 25% help (2)
  - Yes, but they require 50% or more help (3)
  - No my child requires help with all buttons and zippers (4)
- 

20 Please share any comments regarding your child's fine motor developmental skills.

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**End of Block: Default Question Block**

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