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**IMPACT OF iPADS ON KUWAITI CHILDREN'S PLAY: MOTHERS'  
PERSPECTIVES**

A Thesis in

Curriculum and Instruction

by

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## **ABSTRACT**

Play is an essential component of children's lives. Through play, children learn and acquire the skills that they need for the future. Researchers primarily have focused on the importance of play for children from a developmental perspective. Likewise, educators use play to deliver new information and to help students acquire skills.

In recent decades, technology has changed how people interact with each other and the environment. Modern technological devices ranging from personal computers to smartphones have changed how young children play. Many children now use electronic devices such as PlayStations and iPads as toys and spend hours playing in virtual worlds. Many scholars have investigated the effects of these new technological devices on young children's development mainly from educational and health perspectives. Many researchers have found significant changes in children's educational performance and lifestyle and have attributed these changes to long-term engagement with digital toys in virtual worlds.

Apple's tablet, the iPad, is the most common electronic device owned by Kuwaiti children. Since its introduction to the market 4 years ago, playing the iPad has become a favorite pastime for many children in Kuwait. In this research, I investigate the reported estimates of use and perceived effects of children's digital (iPad) play on traditional play among young children in Kuwait. I identify and discuss changes in children's play preferences since the introduction of the iPad and how Kuwaiti mothers perceive these changes.

The results show that Kuwaiti mothers believe that the iPad has had a significant impact on their children's play preferences. Moreover the study shows that Kuwaiti mothers see the iPad as a device that can be used to enhance their children's cognitive development. Furthermore, Kuwaiti children spend many hours playing iPad games on weekdays, weekends, and summer vacations.

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## **Chapter 1**

### **Statement of the Problem**

Childhood is an important phase in life when children begin to learn and interact with the world around them. Providing proper education and care during early childhood supports balanced growth for children. Play is one of the most important activities in achieving this balance, thereby influencing children's present states and future growth and development. In recent years, electronic devices that provide play experiences for children have become widely available due to unprecedented advancements in technology. These devices range from simple digital toys such as talking dolls, to complex gaming systems such as PlayStation and Xbox.

Children's interactions with these devices are the focus of new concerns and issues in the academic field of children's play. New electronic gadgets may disrupt children's ability to enjoy a balanced play life and achieve balance in life and development overall. Furthermore, play accessibility is a main concern with these new devices because many kids around the world do not have access to them.

On the other hand, we need to be open to how such new devices might provide positive opportunities for children's play. In this study, I investigate the effect of these new devices on children's play preferences in Kuwait. Specifically, I explore the effect of the iPad on children's play preferences from mothers' perspectives. Very little is known about this topic since iPads were introduced relatively recently.

In this chapter, I provide a summary of traditional play theories and briefly discuss the importance of play to children. By traditional play, I mean children's play

activities that do not involve modern electronic gaming devices. I then define and discuss digital play and contrast it with traditional play. Moreover, I link traditional play theories with digital play. At the end of this chapter, I explain my research problem and present my research questions. I explain the importance of investigating this topic and preview my research methods.

## **Play**

Play is an essential component of child development and is considered to be the main mechanism by which children acquire skills and knowledge during their early years. According to Johnson, Christie, and Wardle (2005), play and child development go hand in hand. Through play, children can express themselves and can learn different skills. However, play is difficult to define for two main reasons (Johnson et al., 2005): (a) it is abstract and lacks a physical presence, much like love, fear, etc.; and (b) it has many different meanings.

There are several advantages of play for children. Researchers have found that play can facilitate different aspects of child development. Therefore, child caregivers such as parents and teachers can utilize play to enhance the cognitive, physical, social, and emotional development of a child (Barrent, 1990; Lillard, Lerner, Hopkins, Dore, Smith, & Palmquist, 2013; McEntire, 2009; Sam, 2007; Tahmores, 2011; Tsao, 2002). Frost (1998) presented an overview of research on the impact of play on child development in which he discussed the relationship between play and brain development in early childhood and the contribution of play to a child's cognitive, language, social, emotional, and physical development. He noted that play helps children engage and

interact with the world around them and helps children acquire necessary skills for the future.

Other researchers have focused on skill development as a critical outcome of play. For instance, McElwain and Volling (2005) conducted a study that shows how play helps children develop skills related to working in groups, sharing, negotiating, and resolving conflicts. Likewise, Blasi and Hurwitz (2012) highlighted how play helps children develop the competencies required to pursue their future careers.

In general, children's play can be divided into four different types (Johnson et al., 2005). The first type involves muscular movement and is known as *motor play*. The three main categories of motor play are physical and manipulative play, locomotor play, and rough-and-tumble play. Other classifications of motor play are based on the types of muscles involved (e.g., gross motor play, fine motor play). The second type of play is known as *object play* and it centers on children's use of physical items during play. Object play is categorized into object manipulation, exploratory play, and constructive play. The third type of play is known as *symbolic play*, in which children use objects to represent other objects during play. For example, a child might push a block to resemble the movement of a car or pretend an object is a cell phone (pretend play). *Social play* is the fourth type of children's play and it involves interaction with other children in different play settings. In many cases, children can be involved in more than one type of play at a given time. For instance, a child may pretend to be a builder (symbolic play) while constructing a house with Lego blocks (motor play).

## **Digital Play**

In recent decades, technological advancements have affected nearly all aspects of life, and children's play is no exception. *Digital play* is a new term reflecting the use of technology in children's play activities. Johnson and Christie (2009) published a review of literature related to the impact of computers and digital toys on children's play. They defined digital toys as "technology-enhanced battery-operated toys and toys with computer chips installed that make the toys talk or act in certain ways" (p. 287).

Nowadays, children are playing with new electronic devices in many parts of the world. According to their manufacturers, the main purposes of these devices are to educate and entertain children. Examples of these devices include PlayStation, Xbox, Nintendo, iPod, and iPad. The list is growing and new versions of these digital devices are expected to be introduced over the next few years. In this study, the definition of digital play is expanded to include children's play with new technological devices.

Among the new electronic devices, iPad has gained widespread popularity due to many factors, including ease of use, portability and affordability. Many children like the iPad because it provides them with a virtual world in which they can explore and try different tasks. According to Prigg (2014) the iPad brand is now more popular than Disney, McDonalds and YouTube, and it is ranking first among American children between 6 and 12 years old.

## **Traditional Play and Digital Play: Theoretical Frameworks**

Due to the importance of play and its role in children's lives, researchers have conducted many studies in attempts to understand and develop theoretical frameworks of

the process. Johnson et al. (2005) briefly summarized the main play theories. The first play theory, known as *surplus-energy theory*, was first mentioned by Friedrich Schiller in the 18<sup>th</sup> century, and elaborated by Herbert Spencer in the 19<sup>th</sup> century. The basis of this theory is:

Each living organism generates more than enough energy to meet its survival needs. Any energy that is left over after these needs have been met becomes surplus energy that builds up over time and must be expended. Play, which is viewed as frivolous behavior, serves an important purpose by enabling humans and animals to get rid of this surplus energy. (Johnson et al., 2005, p. 34)

*Recreation theory* was proposed by Moritz Lazarus. Opposite to the surplus energy theory, this theory states that energy is expended by work and play is a main source of energy restoration. *Recapitulation theory* is derived from general recapitulation theory related to human development. According to this theory, children mimic the developmental stages of the human race by mimicking animals first, then savages, then tribal members, and so on through their play. The fourth theory is known as *practice theory*, which proposes that children strengthen the instincts that they will need in the future through their play. *Psychodynamic theories* are recent, and link children's play to their emotional development. *Social learning theory* is based on the observation that behaviors are often influenced by subsequent events. Thus, behaviors are likely to be repeated if they are followed by a pleasurable activity and vice versa. *Cognitive theories* are based mainly on the works of Piaget and Vygotsky. Prior to this theoretical framework, play had been examined mainly for its contribution to children's social skills.

However, after the works of Piaget and Vygotsky were published, the trend shifted toward the role of play in children's development. Finally, Brian *Sutton-Smith's theories of play* emphasize the contribution of play to children's cognitive development. Sutton-Smith said:

When a child plays with particular objects, varying his responses to them playfully, he increases the range of his associations for those particular objects. In addition, he discovers many more uses for those objects than he would otherwise. This is to say that play increases the child's repertoire of responses, an increase which has potential value (though no inevitable utility) for subsequent adaptive responses. (Johnson et al., 2005, p. 45)

I describe these existing theories in order to fit children's iPad play into the proper theoretical frameworks. Playing with iPads provides children with the opportunity to develop cognitively and socially. After, examining the objectives of children's play proposed by these theories, I think digital play can be examined using the theoretical frameworks of social learning theory, cognitive theories, and Sutton-Smith's theories of play.

Other researchers also are attempting to link digital play to appropriate theoretical frameworks. Recently, Buckleitner (2014) applied different theoretical frameworks to iPad play. From a behaviorism theoretical framework, he explained how many iPad applications (apps) are designed to encourage desired behaviors and to discourage negative ones. He provided some examples of iPad apps that reinforce some attributes of behaviorism. For example, he mentioned that the Lego Star Wars iPad app reinforces the



idea of “a token economy” by allowing children to collect building studs to reach to the next level in the game. He also discussed the application of a constructivist theoretical framework that states that children construct their knowledge internally through iPad play. He also examined iPad play from a social constructivist perspective, noting that iPad apps have great potential to establish cross-cultural communication and cognition, which are main pillars in frameworks of social constructivism.

### **Statement of the Problem**

In Kuwait, the iPad has become a popular electronic device among young children. It is not uncommon to see children spending many hours each day playing on them. For some, playing iPad games and apps is more enjoyable than playing with other children. However, limited studies are available in Kuwait about the effects of electronic games on children. For example, Sabti (2013) conducted a field study to investigate the relationship between electronic games and students’ academic performance for a number of Kuwaiti public school students in the 5<sup>th</sup> and 12<sup>th</sup> grades. His study revealed that 35.5% of the students spend 3 hours or more each day playing electronic games. Moreover, he found that 56.3% of Kuwaiti parents are not satisfied with how their children use electronic games. The results indicate that playing electronic games affected the academic performance of 51.2% of students in the study. In fact, the daily activities of Kuwaiti children may have changed since the introduction of the iPad. Published literature on this topic is scarce, and further investigation of the impact of the iPad on Kuwaiti children’s play is warranted.

## **Objectives and Importance**

In this research, I investigate how iPad play has affected Kuwaiti children's traditional play by performing statistical analysis of survey data on Kuwaiti mothers' perceptions about their children's iPad usage. The objectives of the study are three-fold: (a) to highlight the effect of iPad usage on Kuwaiti children's traditional play; (b) to quantify the number of hours that Kuwaiti children spend using iPads; and (c) to evaluate Kuwaiti mothers' perceptions about their children's iPad usage. This study is important for future explorations of how iPad play can be utilized to enrich child development in Kuwait. Moreover, this study paves the way for possible future studies concerning iPads and children in Kuwait.

## **Research Questions**

In order to fulfill the objectives of this study, I plan to answer the following research questions:

1. How popular is the iPad as a play mechanism among Kuwaiti children?
2. How does iPad usage affect the play preferences of Kuwaiti children?
3. At what age do Kuwaiti children begin to use iPads?
4. How many hours do Kuwaiti children spend on iPads on typical weekdays and weekends? Does usage change during summer vacation?
5. What are the perceptions of Kuwaiti mothers about their children's iPad usage?
6. How satisfied are Kuwaiti mothers with their children's iPad usage?
7. What are the preferred uses for iPads among Kuwaiti children?
8. What do Kuwaiti mothers like about their children's iPad usage?

9. What do Kuwaiti mothers dislike about their children's iPad usage?

Answering the first question will measure of the popularity of iPads among Kuwaiti children. The purpose of the second research question is to explore whether or not iPads affect Kuwaiti children's play preferences. Answers to the third and fourth questions will reveal the age at which Kuwaiti children start to use iPad devices, and the number of hours that Kuwaiti children spend playing with iPads on weekdays, weekends, and summer vacations. The fifth and sixth questions will gauge how Kuwaiti mothers perceive iPads as play media for their children and how satisfied they are with their children's usage of this device. Answers to the seventh question will reveal the preferred iPad usage mode among Kuwaiti children. The eighth and ninth questions explore the things that Kuwaiti mothers like and dislike about their children's iPad usage.

### **Study Plan**

In order to answer the research questions, I gathered quantitative and qualitative data via survey. I designed and distributed a survey among a sample of Kuwaiti mothers and evaluated their responses using statistical analysis techniques. I chose to distribute the survey to Kuwaiti mothers because they typically spend more time supervising their children than Kuwaiti fathers.

The rest of this thesis is organized as follows. In Chapter 2, I review relevant literature. After describing my research methods in Chapter 3, I present my results in Chapter 4. In Chapter 5, I use the results of the survey to answer each of my research questions before concluding with some final thoughts.

## **Chapter 2**

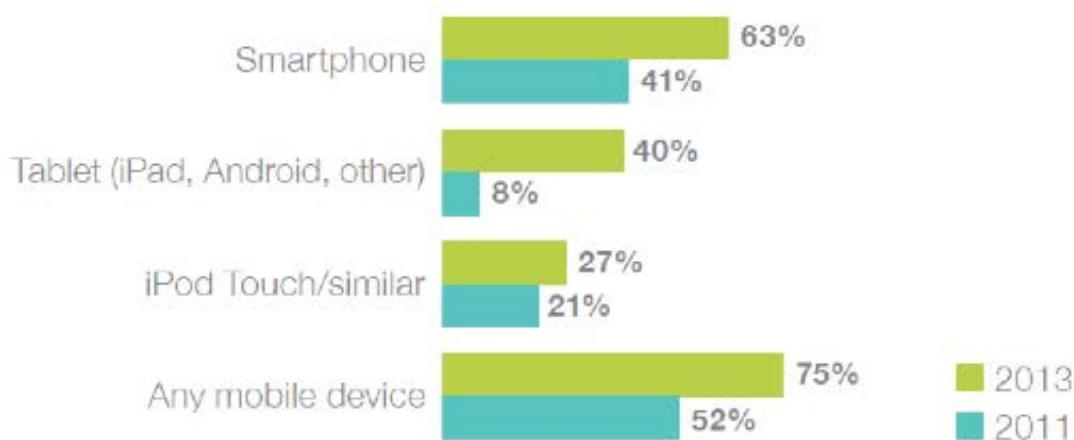
### **Literature Review**

In this chapter, I review academic literature relevant to my study. The literature is full of articles about children's play and its importance to child development, as well as the impact of digital games on young children and teenagers. The majority of researchers have focused on the impact of new technology on children's school performance and behavior. I first present some statistics about children's use of electronic devices (e.g., PlayStation, Nintendo, iPod, iPad) before discussing some studies about the effects digital play on children's health and sedentary behavior. Then, I review studies that investigate the relationship between digital play and child development, as well as studies about the positive impact of digital play on children's lives and the future of digital play. At the end of this chapter I discuss a number of studies that investigate children's interaction with iPads.

#### **Digital Games: Statistics**

Modern children spend many hours playing digital games. It has become a mechanism for play and enjoyment as well as skill development. Digital device usage and ownership is growing rapidly. According to Johnson and Christie (2009), 70% of American children aged 4 to 6 years were using computers for more than 1 hour each day in 2009. Likewise, Verenikina and Kervin (2010) reported that 88% of Australian children aged 5 to 8 years use the computer to play games. Witherspoon and Manning (2012) reported that an average child aged 8 to 18 years spends more than 6 hours each day using technology-driven devices. Moreover, they found that on average, 88% of

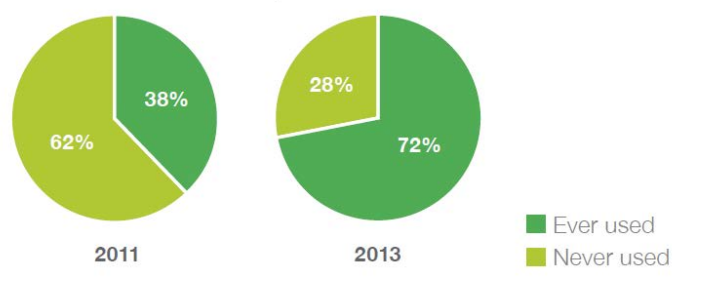
American children have digital gaming consoles (e.g., PlayStation, Nintendo, Xbox), while 85% have access to computers at home and the majority use them to play video games (Witherspoon & Manning, 2012). Recently, Common Sense Media (2013) conducted a survey to evaluate digital media usage for children younger than 8 years old. In the survey, 1,463 American parents revealed how their children's digital media usage changed from 2011 to 2013. The survey indicated a major shift during this short period of time. For instance, children's access to mobile media devices such as smartphones and tablets increased dramatically during these 2 years. Figure 2-1 shows a comparison of mobile media ownership by household for different platforms in 2011 and 2013.



*Figure 2-1. Mobile media ownership in 2011 and 2013 (Common Sense Media, 2013).*

As shown in Figure 2-1, 75% of surveyed parents owned a mobile device in 2013 compared to 57% in 2011. Moreover, Figure 2-1 shows that the ownership of tablet devices such as iPads jumped from 8% in 2011 to 40% in 2013. This represents an increase of 500% in just 2 years. Furthermore, the study revealed that 72% of children

younger than 8 years old had used a mobile device in 2013 compared to 38% in 2011. This represents an increase of almost 190%. Figure 2-2 compares children's usage of mobile media in 2011 and 2013.



*Figure 2-2. Children's use of mobile devices in 2011 and 2013 (Common Sense Media, 2013).*

Recently, Straker, Abbott, Collins, and Campbell (2014) reported worldwide statistics about children's technology usage. They found that the majority of non-television time for children younger than 11 years old in the United States is spent on digital games. Furthermore, they mentioned that 65% of children between the ages of 8 and 18 years have their own hand-held digital gaming devices and at least 45% have a digital gaming console in their bedroom. Moreover, 38% of Canadian children under the age of 5 years regularly play digital games. They also noted that in Australia, 85% of children between the ages of 5 and 14 years regularly play digital games or use computers. In the United Kingdom, the United States and Australia, the average child spends between 38 and 90 minutes each day playing digital games. They reported that 20% of 5 year olds in the United Kingdom spend more than 1 hour per day on digital

games compared to 30 to 60 minutes for children in the United States between the ages of 5 and 8 years and 90 minutes for children between the ages of 10 and 12 years.

### **Digital Play and Children's Health**

Other researchers have raised concerns about the possible effects of digital play on children's health in terms of visual strain, obesity, and other consequences of sedentary behavior (Cordes & Miller, 2000). A recent study by Witherspoon and Manning (2012) showed that 18.8% of children in the United States aged 6 to 11 years are overweight compared to 6.5% 30 years earlier. Furthermore, the proportion of overweight children between the ages of 12 and 19 years increased from 6.5% 30 years ago to 17.4%. Chahal, Fung, Kuhle, and Veugelers (2013) conducted a survey of 3,398 fifth graders in Canada to assess children's lifestyles, health behaviors and physical activity, and collected their height and weight measurements. They also assessed children's nighttime access to and use of digital games, and effects on their sleep, diet quality, physical activity, and body weights. Results indicate that 64% of those children had access to digital games in their bedrooms, which was associated with shortened sleep duration, excess body weight, poorer diet quality, and lower physical activity levels.

Researchers also have investigated the effect of new technology-based games on children's physical activities. Some research has shown that the use of digital games enhances children's physical activities. For example, Sit, Lam, and McKenzie (2010) examined the physical activities of 70 Chinese children in Hong Kong in two types of digital play settings: interactive digital play and online digital play. During interactive digital play, a child competes with virtual opponents, while in the online play setting, a

child competes with other children. They observed 35 boys and 35 girls aged 9 to 12 years during two 60-minute recreation sessions and recorded their physical activity levels. They observed that children engaged in significantly more physical activity during interactive games than during online sessions. They concluded that a new generation of interactive games can be used to enhance children's level of physical activity. On the other hand, some research has shown that digital games have minimal effects on children's level of physical activity. For example, LeBlanc et al. (2013) conducted a systematic review of 51 unique studies with a total of 1,992 participants aged 3 to 17 years from eight countries. They reported that active digital gaming in which children must move their bodies during play induces physical activity of light to moderate intensity. However, they concluded that there is not enough evidence to recommend digital games as a means of enhancing daily physical activity levels. In another study, Baranowski et al. (2012) exposed 78 children between the ages of 9 and 12 years to active digital games and observed their physical activity levels. They concluded that children's physical activity levels are not enhanced by using digital games.

In a recent study, Straker, Abbott, Collins, and Campbell (2014) conducted a literature review on possible impacts of digital games on children from a different perspective. First, they classified digital games as being either sedentary or active. Sedentary games require very little physical activity, while active games require extensive movement of the arms, legs, and/or body. Examples of sedentary game machines are Nintendo Gameboy, Sony PlayStation, mobile phones, and tablet devices, and examples of active game machines are Nintendo Wii and PlayStation Move. They



concluded that fine motor skills can be improved by playing some sedentary games and gross motor skills and confidence can be improved by playing some active games.

However, focusing on small screens for a long time during digital gaming may result in vision problems. In addition, children who have digital games in their bedrooms sleep less. While digital games can be used to enhance children's cognitive development, excessive digital gaming may have a negative impact on psychosocial health and digital games with a violent focus may be detrimental to mental well-being.

### **Digital Play and Child Development**

Researchers also have conducted studies to explore the effect of digital play on various aspects of child development. They have found that technology can be used to nurture children's cognitive and emotional development: "Used well, computers can make a unique and substantial contribution to the education of young children" (Clements & Sarama, 2003, p. 40). Evans Schmidt and Vandewater (2008) reviewed research on links between various types of electronic media and the cognitive skills of school-aged children and adolescents. They reported that children's cognitive skills, especially problem solving skills, are enhanced by the use of electronic media such as digital games. However, they concluded that there is little empirical evidence to confirm the superiority of electronic media over other instruction methods. Nevertheless, some researchers have found digital play to have a negative effect on children's behavior. Hastings, Karas, Winsler, Way, and Madigan (2009) conducted a survey of 70 children (50% male), between the ages of 6 and 10 years and their parents. The objective of the survey was to explore the relationship between children's digital game usage and school performance

and behavior. Their results reveal that playing violent digital games is positively correlated with aggressive behavior and negatively associated with school performance. Moreover, they observed that educational games are positively correlated with school performance.

Other researchers have called for the integration of new technological devices into early childhood education classrooms. For example, Couse and Chen (2010) conducted a field study of 41 children between the ages of 3 and 6 years. In their study, they explored the practicality of tablet devices such as iPads in early education by investigating preschool children's ease in adapting to tablet technology and its effectiveness in engaging them to draw. They reported that teachers have noticed a high interest among children in using tablets to draw. Moreover, teachers observed that children developed their drawing skills easily using tablet pens. Likewise, Banister (2010) presented a paper about classroom technology for K-12 students. Although she focused her discussion on the use of iPods in education, she mentioned that her discussion and notes could be generalized to include iPads, which had just been introduced when the article was written. Moreover, she referred to the work of other researchers to highlight the impact of new technology on reading, mathematics, social studies, and science teaching, indicating that these devices provide children with an opportunity to explore many applications such as *PreSchool Adventures*, *At the Zoo*, *Wheels on the Bus*, *ABC Letters*, and *iDoodle* which are aligned with the theme of inclusion of technology and early childhood education as articulated by the National Association for the Education of Young Children. Recently, McPake, Plowman, and Stephen (2013) suggested that early

childhood education specialists and teachers should prepare their classrooms to receive children with higher technological knowledge compared to their predecessors. Doing so would require interdisciplinary work to integrate many aspects of early childhood education.

### **Advantages of Digital Play**

Many researchers are worried about the extent to which new digital games are influencing children's lives and have expressed concerns about possible effects of digital games on children's traditional play (Brown, 2009; Frost, Wortham, & Reifel, 2008). Others, however, have noticed an opportunity to develop children's play with these new digital games. For example, Johnson and Christie (2009) indicated that children's play has changed considerably as a result of new developments in toy manufacturing, and these "technological advances in toy manufacturing bring significant opportunities and challenges to early childhood education" (Johnson & Christie, p. 284). Furthermore, they indicated that when computer software programs are designed to target children's problem-solving skills, they tend to engage in creative play, which stimulates positive interaction with peers. They mentioned that children's engagement with digital play can complement and may also trigger other types of play.

Plowman, McPake, and Stephen (2008) performed a 2-year empirical investigation on the use of technology at home by 3- and 4-year-old children. Their investigation was based on a survey of 346 families and 24 case studies. They concluded that young children acquire a wide range of competencies when interacting with technology at home through self-learning. They found that many parents did not teach

their children how to use technology at home; parents believed that their children acquired their technology skills mainly by trial and error. Likewise, Marsh (2010) conducted an online survey of 175 children, 15 of whom took part in group interviews. The objective of the study was to explore how children use the virtual world where digital play occurs. She divided children's play into online and offline digital play. During online play, children interacted with other children through a digital network, while in offline play, children played games without interacting with other children. In her article, she presented data for 17 children aged 5 to 7 years. She concluded that virtual worlds present children with an opportunity to play. Moreover, she concluded that children who are 5 to 7 years old tend to choose the offline play mode. Consequently, she suggested that children at these ages should be prepared for online play to enhance their social development.

### **Future of Digital Games**

Despite the advantages and disadvantages of digital games to children, the use of digital games is growing. These games are not going away, and their sales and popularity among young children are growing rapidly. According to Johnson and Christie (2009):

Digital media are here to stay and are going to be widely used by young children.

The important issue is how to maximize the positive consequences of these new media so that they enrich rather than hinder children's play experiences. (p. 285)

In fact, other researchers in the early childhood education field are welcoming these advancements and they envision new potentials for children's play. For example, Singer and Singer (2006) indicated that allowing children to play with computer-based

games will enhance their imaginative capabilities. Bavelier, Green, and Dye (2010) explained the effect of technology on child development:

The central question for researchers is therefore not whether technology is affecting cognitive development—that is a given. The question is instead, how is technology affecting cognitive development? Are the changes for the better or for the worse? How can we harness technology to effect more changes for the better? How do we limit technology’s ability to effect changes for the worse? However, before we can begin, we must first admit that the overarching question “How is technology affecting cognitive development?” is poorly posed. “Technology” is not a single unique entity, and thus it is unlikely to have a single unique effect. One can no more ask, “How is technology affecting cognitive development?” than one can ask, “How is food affecting physical development?” As with food, the effects of technology will depend critically on what type of technology is consumed, how much of it is consumed, and for how long it is consumed. (p. 692)

Recently, Witherspoon and Manning (2012) presented an overview of children’s play in light of new technological developments. They claimed that the new trend of children’s play has shifted from traditional play to play that uses technology. Moreover, they noted that active digital gaming, in which a child is involved in active physical movements while playing with devices, not only meets the academic definition of play, but also may fill the void left by the absence of traditional play. Furthermore, they attributed children’s reluctance to engage in traditional play to several factors such as parental concerns about children playing outside after dark, poor maintenance and

availability of playgrounds, reduced recess time in schools, and society's new immersion in technology. They commented that playing with technology has become more enjoyable to children than traditional play and the play trend is becoming more sedentary.

### **iPads and Children**

One may wonder why this research is focused specifically on the iPad and not on other types of digital devices. Many researchers have discussed why iPads are so popular compared to other digital devices. For example, Learmonth (2010) reported the experience of a 3-year-old child with iPad usage. He argued that the simplicity of use is one of the main reasons behind the iPad's popularity among young children. Leoni (2010) sees great potential for iPads in education due to their portability and affordability compared to laptops. Moreover, she noted how minimal costs of iPad applications, which in many cases can be downloaded free of charge, are a main contributor to the iPad's popularity from an economic point of view. Along the same lines, Banister (2010) mentioned that iPads are inexpensive digital devices compared to laptops and their portability and durability provides users (especially students) with various learning tools that can be used in classrooms, at the bus stop, and at home.

Kucirkova, Messer, Sheehy, and Flewitt (2013) attributed the popularity of the iPad to its multifunctional capabilities that combine the functions of separate digital devices into one pleasing device. For example, Riley (2013) presented a study in which she observed children using iPads during their music class. She highlighted the various applications of the iPad and how children prefer the iPad to complete musical tasks over traditional musical instruments.

Researchers in various education fields have conducted studies focused on how children interact with iPads. For example, Verenikina and Kervin (2010) conducted an observational study of three families with children between the ages of 3 and 4 years old. Their study was divided into three main tasks. The first task was to investigate the role of digital technologies in the lives of young children from parents' perspectives. The second task was to select an iPad app for children to play with. The third task was to observe the three children while playing with the selected app. They found that parents are generally in favor of their children using technology for educational purposes. Moreover, they said that all children in their study accepted the rules that their parents made regarding the use of technology devices. In addition, they found that digital play provides opportunities for social interaction between children and their parents and/or siblings. They also observed that the children preferred games that allowed them to use their imagination and design their own play.

In a corporate study, the Michael Cohen Group (2011) studied the use of touch screen devices (specifically iPads) among 60 children (29 boys and 31 girls) aged 2 to 8 years. In the study, the touch screen applications used by children were divided into gaming, creating, and e-book applications. The study revealed that children tend to use creating and gaming applications more often. Moreover, children's interactions with touch screen devices are characterized as being governed by their developmental level, previous experience, and iPad application designs. The researchers in the study observed that engagement in creative activities on the iPad shifts the child's focus from winning/losing to self-competing. They concluded that children play and learn from

iPads and these devices allow for sustained engagement owing to their large screen size. Moreover, they concluded that when using iPads, children explore and learn in ways that are natural to them.

Recently, Crescenzi, Price, and Jewitt (2014) investigated children's physical interactions with iPads. They aimed to explore touch-based interaction since it is a central part of a child's sensory system. In their study, the intent was to investigate how finger painting might change from the traditional physical context to a digital context using iPad. The results indicated that children performed differently on iPads. These differences include variations mainly in the movement of the fingers and types of touch that children make when drawing on paper as opposed to on iPads.

### **Scarcity of Literature**

Despite previous studies exploring the effects of iPad on children, many researchers have noted the scarcity of published literature on digital play in early childhood education (Banister, 2010; McPake et al., 2013). Over a decade ago, Marsh (2002) noted the difficulties associated with finding studies that indicate the effects of digital play on children and pointed out that more research is needed to investigate the effect of technology-enhanced toys on young children. Likewise, Lieberman, Fisk, and Biely (2009) stated: "Over the past decade, there has been an increasing body of research into digital games and play in a range of age groups, however, very little research focuses specifically on digital games and young children" (p. 300). Johnson and Christie (2009) also referred to the scarcity of literature in the field of digital play: "These toys have become popular with affluent parents and children, but there are few studies on how



children play with these toys—and, additionally, how these toys affect children’s play” (p. 287).

In order to contribute in a modest way to addressing these important research gaps, this survey study investigates Kuwaiti mothers’ perceptions of how iPad usage seems to affect their children’s play. In the next chapter, I describe the research methodology of this study.

## **Chapter 3**

### **Methodology**

The primary objective of this study was to explore the effect of iPads on children's play preferences in Kuwait. I also investigated the perceptions of Kuwaiti mothers about their children's interactions with iPads and the extent to which this new technology is being used by Kuwaiti children. My goal was to answer the following research questions:

1. How popular is the iPad as a play mechanism among Kuwaiti children?
2. How does iPad usage affect the play preferences of Kuwaiti children?
3. At what age do Kuwaiti children begin to use iPads?
4. How many hours do Kuwaiti children spend on iPads on typical weekdays and weekends? Does usage change during summer vacation?
5. What are the perceptions of Kuwaiti mothers about their children's iPad usage?
6. How satisfied are Kuwaiti mothers with their children's iPad usage?
7. What are the preferred uses for iPads among Kuwaiti children?
8. What do Kuwaiti mothers like about their children's iPad usage?
9. What do Kuwaiti mothers dislike about their children's iPad usage?

In this chapter, I present information about the methods and procedures I used to answer my research questions. The chapter is organized into sections describing the research study setting, research participants, research procedure, survey design, data analysis, and participants' demographic data.

## **Research Setting**

In order to contextualize my research setting, I provide basic information about the local population and economy. This research study was conducted in Kuwait, a small country located in the Middle East. In 2014, Kuwait's population was 4.1 million people, including 1.2 million Kuwaitis. Among this population, 25.6% were under the age of 15; 15.4% were between the ages of 15 and 24; 52.3% were between the ages of 25 and 54; 4.5% were between the ages of 55 and 64 and just 2.1% were age 65 and older. The population pyramid of Kuwait shows an unbalanced structure for working-age groups due to high immigration rates and a large reliance on foreign labor. Kuwait has a petroleum-based economy. Revenues from petroleum sales account for more than 94% of the annual budget. Moreover, Kuwait is one of the wealthiest countries in the world. Due to the country's wealth, purchasing new technological devices such as iPads is not a financial hardship for most residents.

## **Research Participants**

Study participants were Kuwaiti mothers with at least one child between the ages of 4 and 10 years. I selected mothers (as opposed to fathers) because in Kuwait, mothers are more likely to spend more time observing their children during a regular day. Moreover, I selected mothers of children in a certain age group because that age range is when most children engage in traditional play in Kuwait.

The majority of participants were selected female teachers in public schools located in the Ahmadi governorate in southern Kuwait. The following criteria are considered for study's participants: Kuwaiti Mothers, have children age between 4 and 10

years old, and residents of Ahmadi Governorate in Kuwait. I cooperated with a kindergarten supervisor to distribute research questionnaire among Kuwaiti mothers. With the help of many kindergarten and elementary school teachers, through kindergarten supervisor, I identified potential participants from different kindergarten and elementary schools in Ahmadi governorate in Kuwait. Participants were approached in kindergarten and elementary schools, in Ahmadi governorate, to participate in this study by filling out the questionnaire that address the topic endorsed by this study. Other participants were recruited through personal invitations.

In the Ahmadi governorate, the vast majority of working Kuwaiti women work in educational fields, typically as school teachers or as administrators. Research questionnaires were distributed to and collected from the participants. When the surveys were distributed, the participants were asked to respond to questions about their children's iPad usage and were informed that they would receive no compensation for doing so. In total, 100 surveys were distributed and received, 88 of which were used in this research; 12 surveys were returned blank, therefore, I excluded them from the study. I was surprised by this high (88%) response rate, which may be due to high interest among mothers in the research topic. Participants' identities were protected by shuffling the received survey papers, which were anonymous and contained no personal identifiers.

### **Research Procedure**

The Institutional Review Board (IRB) of Penn State University approved this research study on October 24, 2014. After receiving approval, I conducted a pilot study with 15 Kuwaiti mothers about their perceptions of their children's iPad usage. Based on

the results of the pilot study, I modified the original questionnaire slightly for clarification purposes. Survey questions were written first in English and then translated into Arabic since it was the participants' native language. I also ensured that the questions had equivalent meanings in both languages.

I distributed the modified survey to 100 Kuwaiti mothers with at least one child aged 4 to 10 years. The participants were selected from kindergarten and elementary schools. Moreover, I personally recruited some participants in order to diversify the backgrounds within the participant pool. I distributed the survey in mid-November 2014 and collected data over a 6-week period.

### **Survey Design**

I collected data using a survey comprised of a set of multiple-choice questions and two open-ended questions (see Appendix A). Survey questions were originally written in English and translated into Arabic, the participants' native language. The survey questions are linked to the research questions as shown in Table 3-1.

Table 3-1 *Relationships between Survey Questions and Research Questions*

<u>Targeted research question</u>	<u>Survey questions</u>
How popular is the iPad as a play mechanism among Kuwaiti children?	Q7
How does iPad usage affect the play preferences of Kuwaiti children?	Q8, Q19, Q20
At what age do Kuwaiti children begin to use iPads?	Q9
How many hours do Kuwaiti children spend on iPads on typical weekdays and weekends? Does usage change during summer vacation?	Q10, Q11, Q12
What are the perceptions of Kuwaiti mothers about their children's iPad usage?	Q13, Q14, Q17, Q19, Q20, Q22
How satisfied are Kuwaiti mothers with their children's iPad usage?	Q13, Q16, Q20, Q21
What are the preferred uses for iPads among Kuwaiti children?	Q15
What do Kuwaiti mothers like about their children's iPad usage?	Q22
What do Kuwaiti mothers dislike about their children's iPad usage?	Q22

Each question in my survey was aimed at measuring one of three different types of data: demographic data, children's iPad usage, and mothers' perceptions. Table 3-2 shows corresponding survey questions for each study measure, classified by data type. See the survey in Appendix A to see specific questions for these measures. A total of 23 measures were included in my questionnaire.

Table 3-2 *Research Measures*

<u>Type</u>	<u>Measure no.</u>	<u>Measure</u>	<u>Survey question</u>
Participants' demographic information	1	Mother's age group	Q1
	2	Mother's occupation	Q2
	3	Number of children in household under 18	Q3
	4	Number of children between ages 4 and 10	Q4
	5	Child age	Q5
	6	Child gender	Q5
	7	Mother's highest academic degree	Q6
Children's iPad usage	8	Number of iPads owned by household	Q7
	9	Age at which children began using iPads	Q9
	10	Number of hours spent on iPad play on weekdays	Q10
	11	Number of hours spent on iPad play on weekends	Q11
	12	Usage of iPad during summer vacations	Q12
	13	Purpose of iPad usage	Q15
	14	Mother's intervention	Q16
	15	Mother's supervision	Q18
Mothers' perceptions about iPad play	16	iPad's effect on play preferences	Q8
	17	Mother's satisfaction with her child's iPad	Q13
	18	Mother's comparison of her child to other children	Q14
	19	iPad and cognitive development	Q17
	20	iPad deprives children from traditional play	Q19
	21	Time spent on iPad play compared to traditional play	Q20
	22	Mother's encouragement	Q21
	23	What do mothers like and dislike about iPad usage?	Q22

### Data Analysis

I analyzed the data using SPSS statistical software. Data analysis was divided into four main stages. At the first stage, I analyzed participants' demographic data using descriptive statistics. I began by examining, in detail, the demographic characteristics of the research sample: mother's age group, mother's occupation, number of children under

age 18, number of children between the ages of 4 and 10, child's age, child's gender, and mother's highest academic degree. Using quantitative methods, I calculated descriptive statistics for each measure based on participants' survey responses at the second stage. I present my analyses as percentages. At the third stage, I determined correlations between the research variables. Finally, I performed chi-square tests on the responses. In order to provide more detailed background information about the research participants, I present descriptive statistics for the demographic data in this chapter. Results from the second, third, and fourth stages of data analysis are presented in Chapter 4.

### **Participants' Demographic Data**

Participants' demographic information such as mother's age group, mother's occupation, number of children under age 18, number of children between the ages of 4 and 10, child's age, child's gender, and mother's highest academic degree provides insight into the backgrounds of the 88 participants. Table 3-3 lists demographic measures and corresponding survey questions.

Table 3-3 *Demographic Measures*

<u>Demographic measure</u>	<u>Survey question</u>
Mother's age	Q1
Mother's occupation	Q2
Number of children under age 18	Q3
Number of children between ages 4 and 10	Q4
Child's age	Q5
Child's gender	Q5
Mother's highest academic degree	Q6



**Mother's age.** Four different age groups are identified in the questionnaire: 20 to 30 years, 31 to 35 years, 36 to 40 years, and older than 40 years. I assigned numerical values to these groups, for statistical analysis purposes as shown in Table 3-4.

Table 3-4 Age Groups and Assigned Values

<u>Age group</u>	<u>Value</u>
20 to 30	1
31 to 35	2
36 to 40	3
Older than 40	4

Figure 3-1 shows the age distribution of participants.

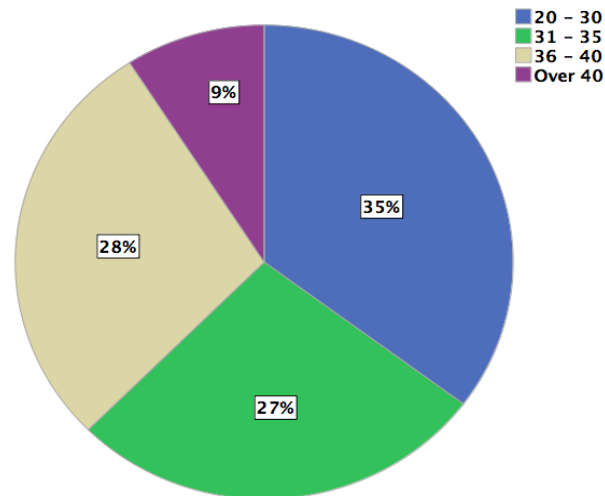


Figure 3-1: Age distribution of participants

Of the participants, 35% were between 20 and 30 years old, 27% were between 31 and 35 years old, 28% were between 36 and 40 years old, and 9% were older than 40.

**Mother's occupation.** I divided mother's occupation into four main categories: housewives, administrators, teachers, and professionals such as engineers and lawyers. Administrators' category include mothers who work as secretaries or students' affairs

personals. The different categories of mother's occupation reflect were coded according to the level of work engagement, i.e. level of responsibility. Housewives were assigned a code of 1, administrators a code of 2, teachers a code of 3, and professional a code of 4. The objective of this coding is to treat mother's occupation as an ordinal variable.

Descriptive statistics for these data are shown in Table 3-5, along with the corresponding numerical values assigned for statistical analysis purposes.

*Table 3-5 Mother's Occupation*

Occupation	Frequency	Percentage	Cumulative Percentage
Housewife	26	29.5	29.5
Administrator	17	19.3	48.9
Teacher	38	43.2	92.0
Professional	7	8.0	100.0
Total	88	100.0	

Teachers dominated the study sample comprising 43.2%, followed by housewives at 29.5%, then administrators at 19.3%, and finally professionals at 8% of the study sample.

The distribution of occupations among the study sample reflects the current situation in Kuwait. According to the statistics of Civil Service Commission in Kuwait, there were 130,778 female employees in Kuwait at the end of year 2013 (Civil Service Commission, 2013). Out of these female workers, around 40,000 works as kindergarten and school teacher as indicated by Ministry of Education (Ministry of Education, 2013). This represent a 30% of women workforce in Kuwait. Women prefer to work as teacher for several reasons. The first is due to religious purposes where they feel comfortable working on schools dedicated for girls only and that they do not have to deal with men. The other reason is related to the relative high pay teachers have in Kuwait.

**Number of children under 18 years old.** The number of children under age 18 was selected as a variable in the study to indicate the number of children living in the household. The distribution for this measure is shown in Figure 3-2.

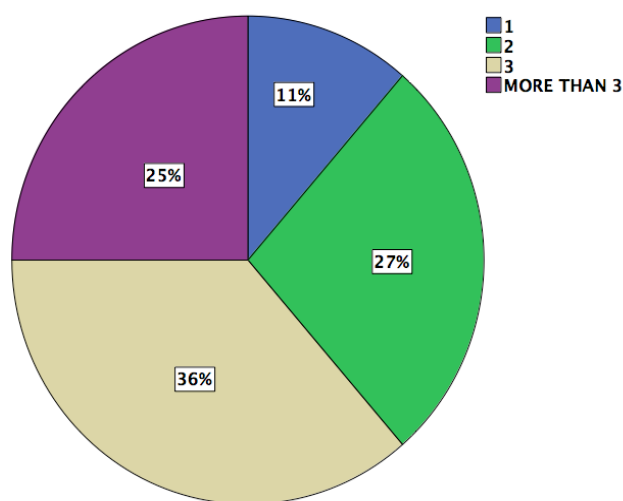


Figure 3-2. *Number of children in the household under the age of 18.*

As Figure 3-2 indicates, 11% of the households included 1 child, 27% included 2 children, 36% included 3 children, and 25% included more than 3 children under the age of 18 years.

**Number of children between the ages of 4 and 10 years.** This measure indicates the number of children in each household in the target age group for the study. As mentioned in the methodology, this was a criterion for participation in the survey.

Figure 3-3 shows the participant distribution for this variable: 20% of households included one child, 39% included 2 children, 27% included 3 children, 10% included 4 children, and 3% included five children between the ages of 4 and 10 years. It is worth mentioning that many families in the study included twin children.

**Child age.** This variable indicates the age of the focus child evaluated by each mother on the survey. The age range for this study was 4 to 10 years old. Figure 3-4 shows the age distribution of the focus children in the survey.

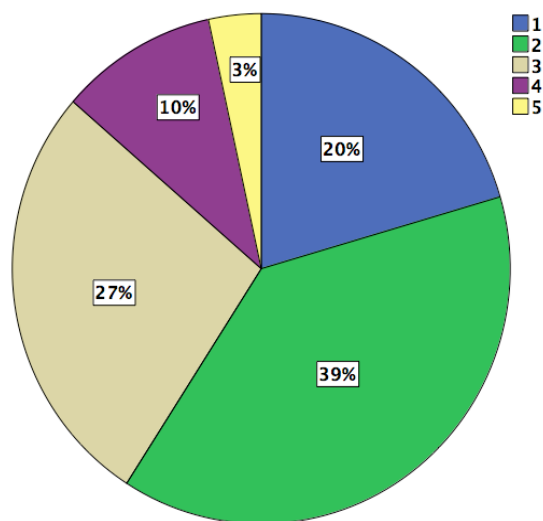


Figure 3-3. Number of children between the ages of 4 and 10 years.

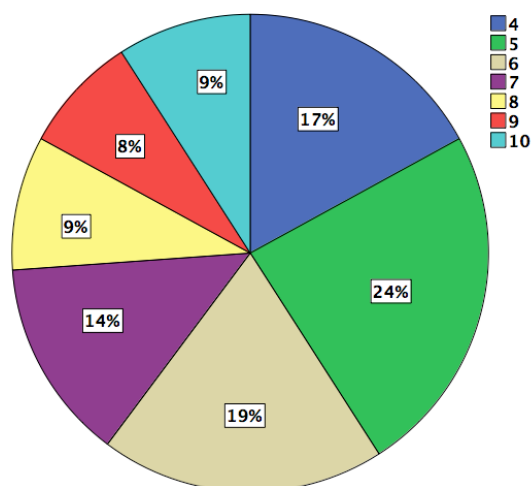
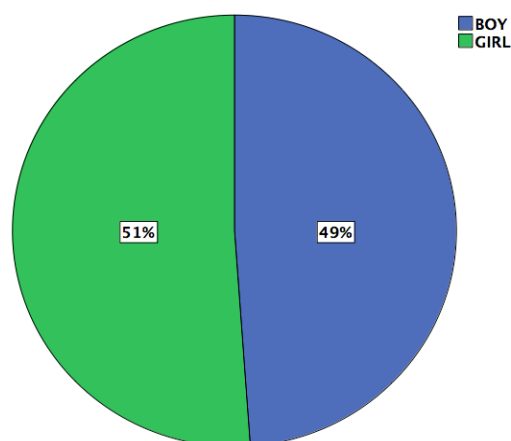


Figure 3-4. Age distribution of focus children in the survey.

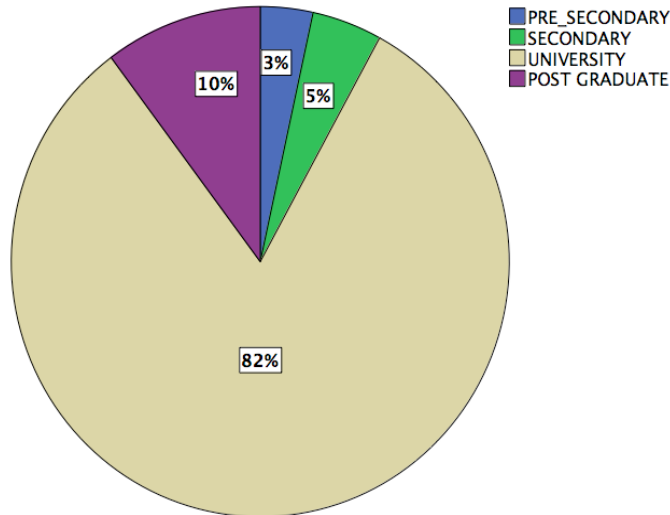
Figure 3-4 shows that 17% of the children were 4 years old, 24% were 5 years old, 19% were 6 years old, 14% were 7 years old, 9% were 8 years old, 8% were 9 years old, and 9% were 10 years old at the time of the survey.

**Child gender.** The collected data indicate that 51% of the women in the study provided feedback about boys and 49% provided feedback about girls. This distribution is shown in Figure 3-5.



*Figure 3-5.* Gender distribution of focus children in the survey.

**Mother's highest academic degree.** The academic level of the mother is evaluated with this measure. Figure 3-6 shows a distribution of participants according to their highest level of academic achievement.



*Figure 3-6. Distribution of mothers' highest level of academic achievement.*

As shown in Figure 3-6, 82% of the women in this study had a university degree, 10% had a postgraduate degree, 5% had a secondary school degree, and 3% had a pre-secondary education. Unsurprisingly, university graduates dominate the study sample because the majority of Kuwaiti women obtain university degrees, which are offered to all at no cost.

In light of the previous discussions, I believe the study sample represents a representative sample of Kuwaiti mothers.

## Chapter 4

### Results

In this chapter, I present the results of this study. This chapter is divided into three main parts: analysis of research measures, analysis of correlations, and chi-square tests.

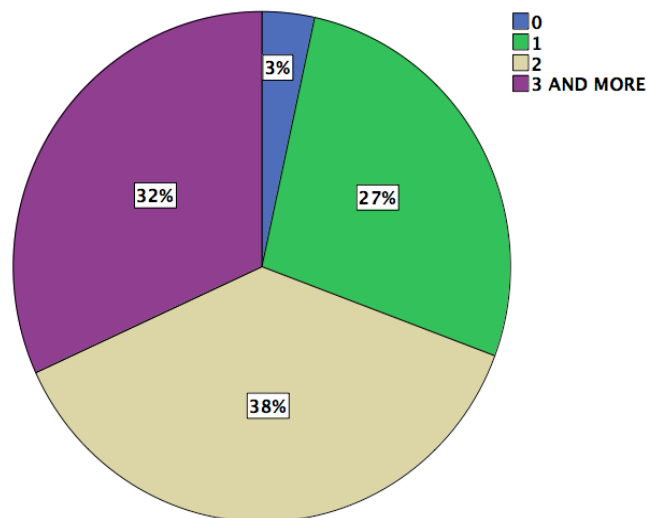
#### Research Measures

Table 4-1 lists the research measures considered in this chapter related to children's iPad usage and mothers' perceptions about iPad play. In the following sections, I present these data in detail. The results for each measure are shown in pie chart formats to indicate the percentage of mothers' responses.

Table 4-1 *Research Variables*

<u>No.</u>	<u>Variable</u>
8	Number of iPads owned by household
9	Age at which child began using iPad
10	Number of hours spent playing iPad on weekdays
11	Number of hours spent playing iPad on weekends
12	Usage of iPad during summer vacations
13	Purpose of iPad usage
14	Mother's intervention
15	Mother's supervision
16	Effect of iPads on play preferences
17	Mother's satisfaction with her child's iPad usage
18	Mother's comparison of her child to other children
19	Extent to which iPads facilitate cognitive development
20	Extent to which iPads deprive children of traditional play opportunities
21	Time spent on iPad play compared to traditional play
22	Mother's encouragement
23	What do mothers like and dislike about iPad usage?

**Number of iPads owned by household.** This measure indicates the number of iPads in the household that are designated for children's use. Figure 4-1 shows the distribution of the number of iPads in each household.

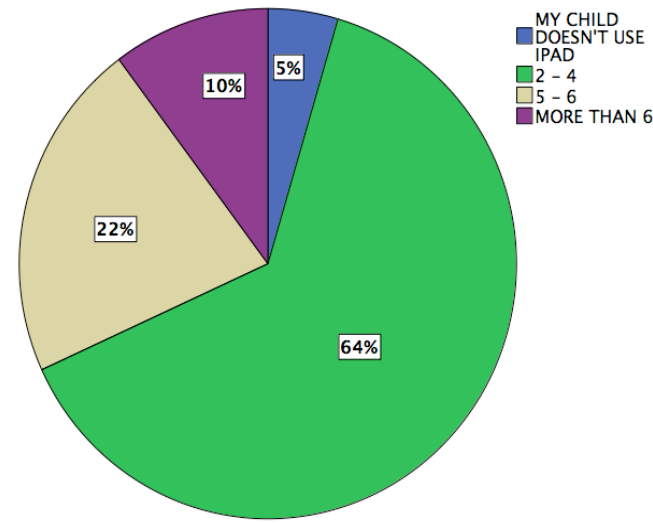


*Figure 4-1.* Distribution of the number of iPads owned by each household.

The figure shows that only 3% of households did not have an iPad designated for children's use; 27% of households had one, 38% had two and 32% had three or more iPads designated for children's use. In other words, 70% of families had at least two iPads designated for children's use. This is not surprising, since iPads are becoming more common among Kuwaiti children.

**Age at which children began using iPads.** This measure indicates the age at which the children began using iPads. Figure 4-2 shows the distribution of this measure.

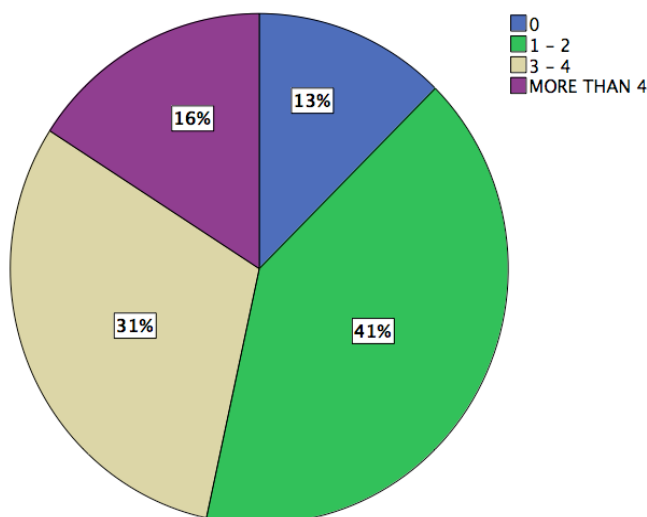




*Figure 4-2.* Distribution of the ages at which children began using iPads.

As shown in the figure, 64% of the children in the study began using iPads between the ages of 2 and 4 years, 22% between the ages of 5 and 6 years, and 10% after the age of 6 years. Only 5% of mothers indicated that their children did not use iPads. The results show that 86% of children had used iPads before the age of 7 years, indicating the potential for iPads to be used in various child development activities.

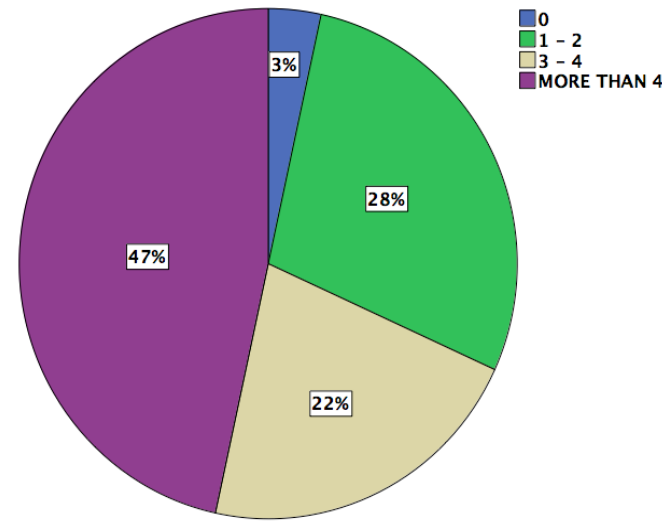
**Number of hours spent playing with iPads on weekdays.** This measure is used to quantify the amount of time children spent playing with iPads on regular weekdays and the distribution is shown in Figure 4-3.



*Figure 4-3. Number of hours spent playing with iPads on weekdays.*

As shown in the figure, 13% of the mothers indicated that their children do not use iPads on weekdays. However, 41% of mothers responded that their children spend between 1 and 2 hours, 31% indicated that their children spend between 3 and 4 hours, and 16% indicated that their children spend more than 4 hours playing with iPads on weekdays. This last number is quite high, considering the amount of time children spend at school and asleep.

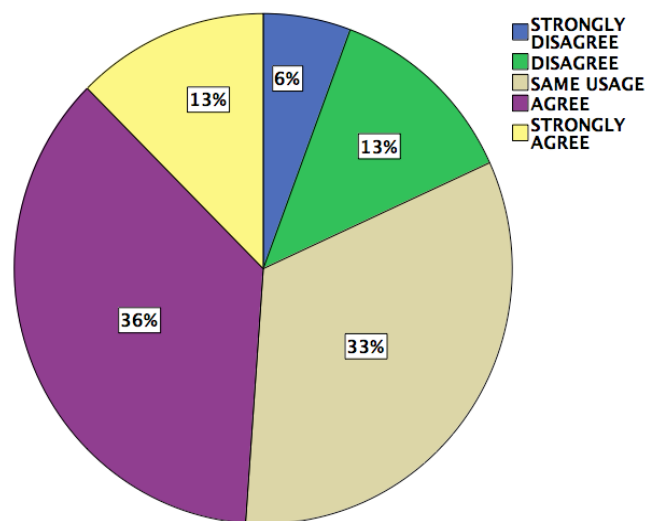
**Number of hours spent playing with iPads on weekends.** This measure indicates the amount of time children spent playing with iPads on the weekends. Figure 4-4 shows the response distribution for this measure.



*Figure 4-4. Number of hours spent playing with iPads on weekends.*

Figure 4-4 shows extensive iPad usage by children on weekends, with 47% of mothers indicating that their children spend more than 4 hours each day on this activity. This corresponds to a 300% increase in time spent playing iPads compared to weekdays. Moreover, 28% of participants indicated that their children spent 1 to 2 hours and 22% indicated that their children spent 3 to 4 hours playing with iPads each weekend day. In sum, 69% of the children in the study spent 3 or more hours playing with iPads on weekend days. This is a high percentage, indicating that iPads significantly affected children's weekend routines.

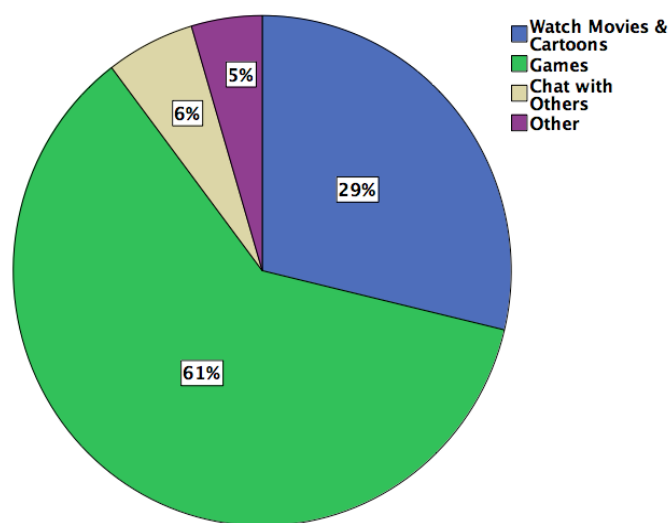
**Usage of iPads during summer vacation.** For this measure, mothers indicated whether iPad usage increased during summer vacation compared to during the school year. The response distribution is shown in Figure 4-5.



*Figure 4-5.* Extent to which children used iPads more during summer vacation than during the school year.

As Figure 4-5 shows, 49% of mothers (13% and 36%) agreed that their children played with iPads more during summer vacations, 33% saw no difference, and 19% disagreed. I expected more agreement since traditional outside play is limited in the summer due to the hot climate.

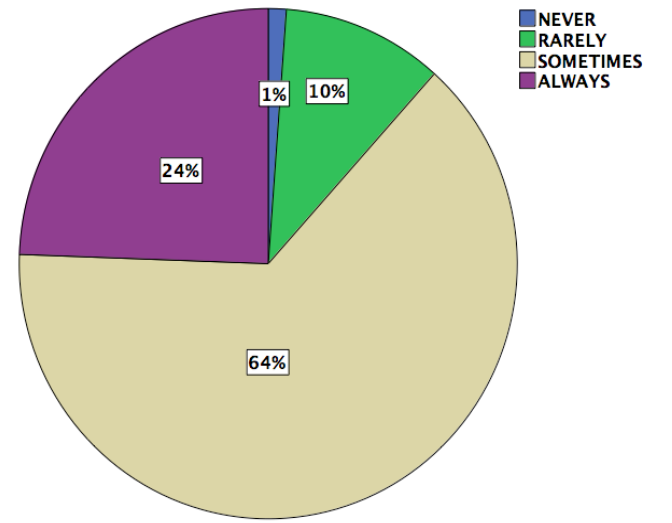
**Purpose of iPad usage.** This measure indicates the primary activity for which children used iPads. Figure 4-6 shows the distribution of mothers' responses to this measure.



*Figure 4-6. Children's primary iPad activity.*

Figure 4-6 shows that 61% of children used iPads primarily to play games, while 29% of children used iPads primarily to watch movies and cartoons. Only 6% used iPads primarily to chat with others and 5% used iPads primarily for other purposes.

**Mother's intervention.** This measure explores whether mothers forced their children to stop playing with their iPads or not, and is meant to indicate children's level of attachment to their iPads. Figure 4-7 shows the distribution of Kuwaiti mothers' responses to this question.



*Figure 4-7. Mother's intervention.*

The responses suggest that majority of Kuwaiti mothers sometimes force their children to close their iPads (64%) and almost one-quarter of them always force their children to close their iPads (24%). This is quite a high percentage, which indicates that many children evaluated in this survey may have been strongly attached to their iPads.

**Mother's supervision.** This measure explores whether participants supervised their children's iPad usage or not. The distribution of mothers' responses to this question is shown in Figure 4-8.

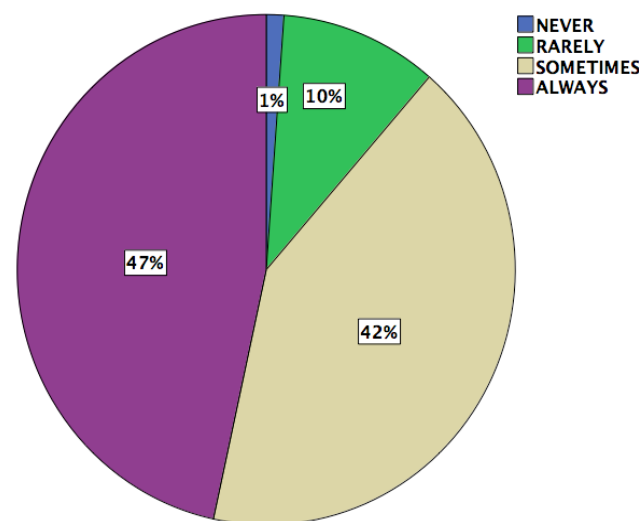
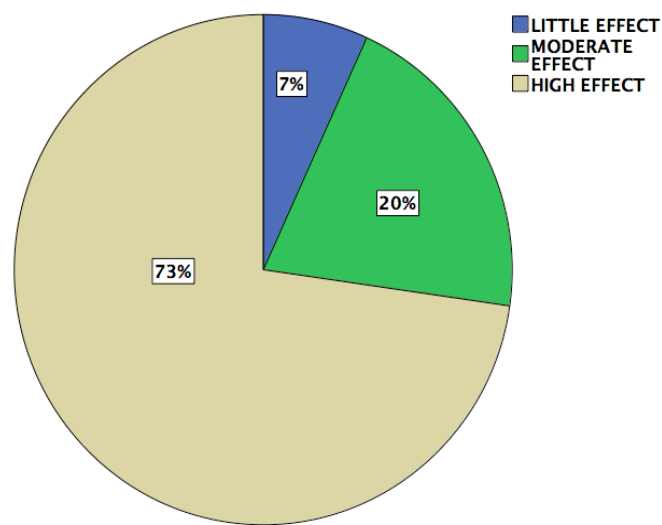


Figure 4-8. *Mother's supervision.*

The responses indicate that participants typically supervised their children when they played with iPads. As shown in Figure 4-8, 89% of the mothers in this research always or sometimes supervised their children when they played with iPads. Just 10% said that they rarely supervised their children during iPad usage.

**The effect of iPads on play preferences.** This measure indicates the extent to which iPads have affected children's play preferences. The distribution of participants' responses is shown in Figure 4-9.



*Figure 4-9. The effect of iPads on play preferences.*

Figure 4-9 shows that 73% of the mothers felt that iPads had a high effect on their children's play preferences while 20% indicated a moderate effect and only 7% indicated little effect. These data indicate that iPads may have replaced other types of children's play.

**Mothers' satisfaction with their children's iPad usage.** This measure indicates mothers' satisfaction levels with their children's iPad usage. Participants responded to the statement: "I am happy to see my child using iPad." Figure 4-10 shows the response distribution.



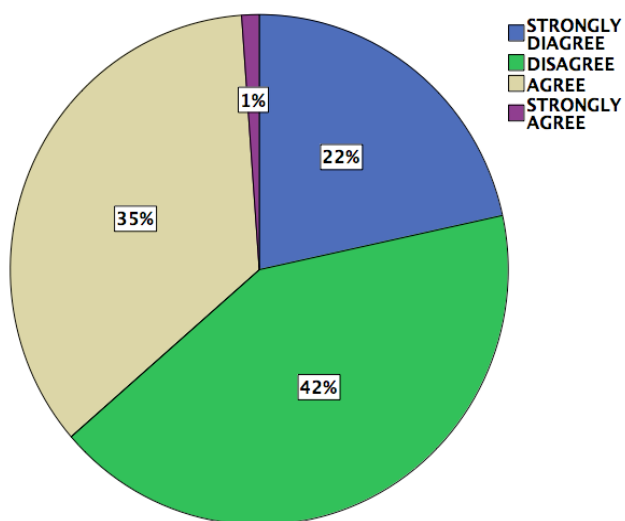


Figure 4-10. *Mothers' satisfaction with their children's iPad usage.*

Figure 4-10 shows that 64% of the mothers in this study were highly dissatisfied or dissatisfied with their children's iPad usage—nearly two-thirds of the sample. Indeed, this is a high percentage and a detailed investigation is warranted to identify why Kuwaiti mothers are not satisfied with their children's iPad usage. Only 1% of mothers were highly satisfied with their children's iPad usage.

**Comparisons to other children's iPad usage.** With this measure, I explored how Kuwaiti mothers perceived their children's iPad usage compared to other children. Figure 4-11 shows the distribution of mothers' responses.

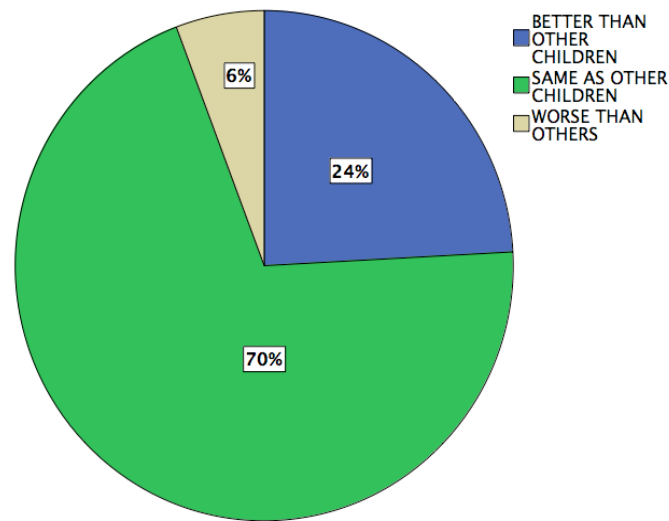
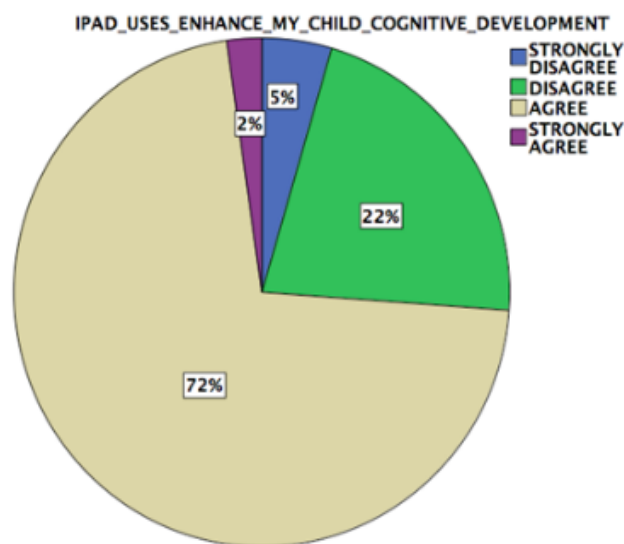


Figure 4-11. *Usage of iPads compared to other children.*

Figure 4-11 shows that 70% of mothers indicated that their children used iPads similarly to other children, 24% felt that their children's usage was better, and only 6% felt that their children's usage was worse than that of other children.

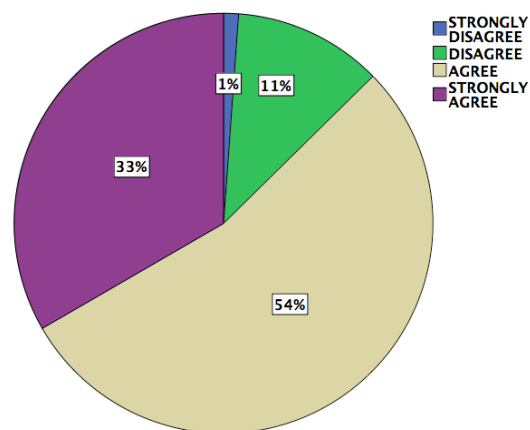
**iPads and cognitive development.** The purpose of this measure was to identify the extent to which mothers felt that iPads enhanced their children's cognitive development. Figure 4-12 shows the response distribution.



*Figure 4-12. iPads and cognitive development.*

Figure 4-12 shows that 72% of mothers agreed that iPads enhanced their children's cognitive development and 22% disagreed. Only 5% strongly disagreed and 2% strongly agreed. These results demonstrate the common belief among the mothers in this study regarding the importance of digital (iPad) play in their children's cognitive development.

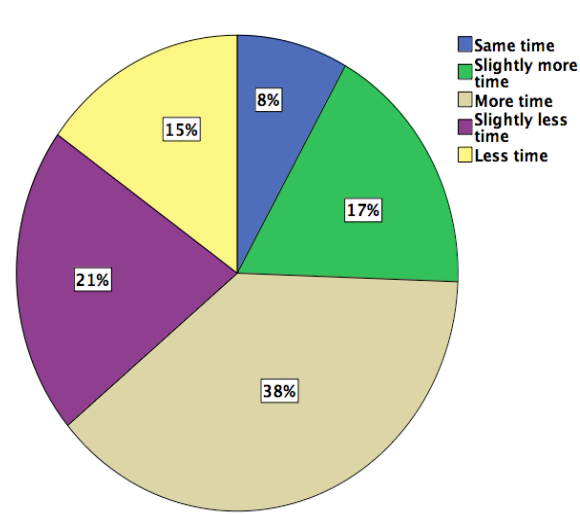
**iPads and the deprivation of traditional play opportunities.** This measure was intended to explore the extent to which iPad usage affects children's traditional play in Kuwait. Participants responded to the statement: "iPad deprives my child from traditional play." The response distribution is shown in Figure 4-13.



*Figure 4-13. Depriving children of traditional play opportunities.*

Figure 4-13 shows that 54% of mothers agreed and 33% strongly agreed with this statement. In total, 87% of mothers agreed that iPads deprived their children of traditional play opportunities. Only, 1% strongly disagreed and 11% disagreed with this statement. This is another indication that Kuwaiti mothers believed iPads were affecting children's traditional play.

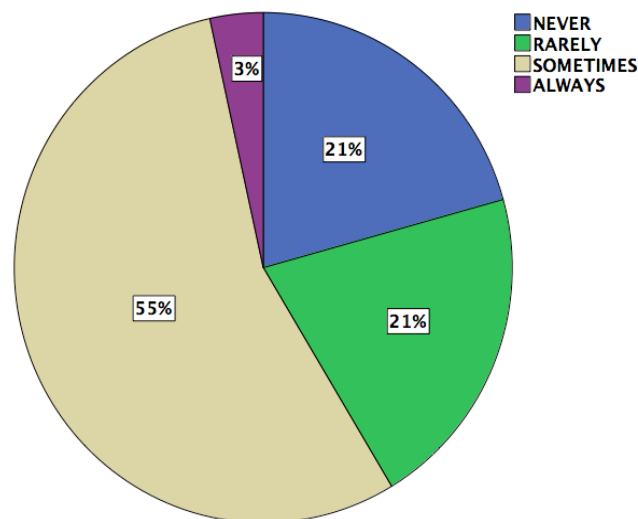
**Time spent on iPad play compared to traditional play.** This measure was used to compare the amounts of time children spent on iPad play and traditional play. Figure 4-14 shows the response distribution for this measure.



*Figure 4-14.* Time spent on iPad play compared to traditional play.

As shown in Figure 4-14, 55% of mothers indicated that their children spent more time on iPad play than traditional play and 8% of mothers saw no difference between the amounts of time spent by their children on iPad vs. traditional play. This figure shows that compared to traditional play, a majority of these Kuwaiti children spent more or a comparable amount of time on iPads.

**Mother's encouragement.** This measure was used to explore the extent to which Kuwaiti mothers encouraged their children to use iPads. Mothers responded to the statement: "I encourage my child to use the iPad." Figure 4-15 shows the response distribution for this measure.



*Figure 4-15. Mother's encouragement.*

As shown in Figure 4-15, 55% of mothers indicated that they sometimes encourage their children to use iPads and 3% of mothers indicated that they always encourage their children to use iPads, while 21% said that they rarely encourage and 21% said that they never encourage their children to use iPads. Overall, the Kuwaiti mothers who participated in the survey tended to encourage their children to use iPads.

#### **Open-ended Questions:**

At the end of survey, participants were asked to answer two open-ended questions. The first question is about what mother like about iPad for their children and the second one is about what mother dislike about iPad usage for their children. After reviewing mothers' responses, the answers of the first question are classified into four main parts. The responses reveal that mothers like iPad for their children due to the following usages:

- 1- Educational usage: mothers like their children to use iPad to enhance their cognitive skills by exploring into useful educational materials such as learning new languages, learning math skills, etc.
- 2- Spend Spare Time: mothers like iPad because their children it is a good option for their children to spend their spare time.
- 3- Nothing: mothers did not like their children to use iPad.

Moreover, the mothers' responses to the second question can be categorized into four main parts:

- 1- Isolation: mothers fear that iPad usage isolates their children from normal life and make them more isolated.
- 2- Inappropriate contents: mothers show concerns about the material that their children are exposed to while using iPad. They indicated that these material include mainly violence and sexual contents.
- 3- Nothing: mothers do not see a point to dislike their children's iPad usage.
- 4- Loss of security: mothers indicate that they dislike the loss of security when their children use iPad. They mention chatting with strangers and being targets for cyber space hackers as the main security concerns.

Table 4-2 shows a summary of mothers' responses to the open-ended questions. The number between parentheses indicates the counts of mothers whose response falls into the corresponded category.

*Table 4-2: Summary of mothers' responses to the open-ended questions*

Category	Like	Dislike
1	Educational usage (77)	Isolation (12)
2	Spend Spare Time (2)	Inappropriate contents (61)
3	Nothing (2)	Nothing (2)
4		Loss of Security (3)
<b>Total Responses</b>	<b>82</b>	<b>78</b>

**What mothers like about iPad?** The answers for this question were collected and categorized into three main points. Figure 4-16 shows the distribution of mothers' responses for the first question.

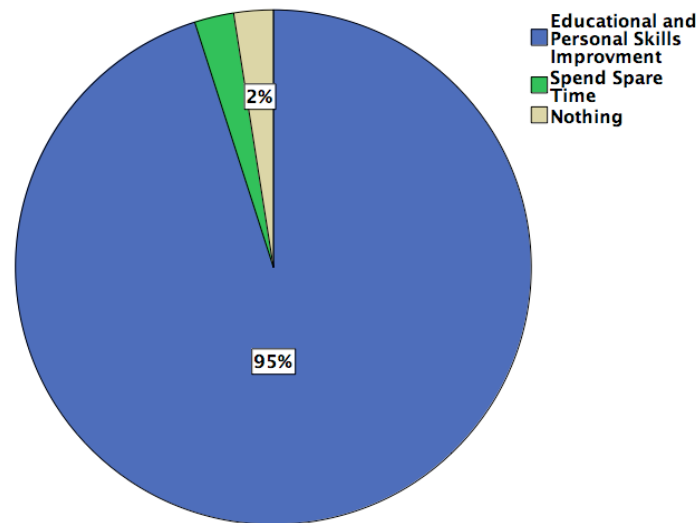


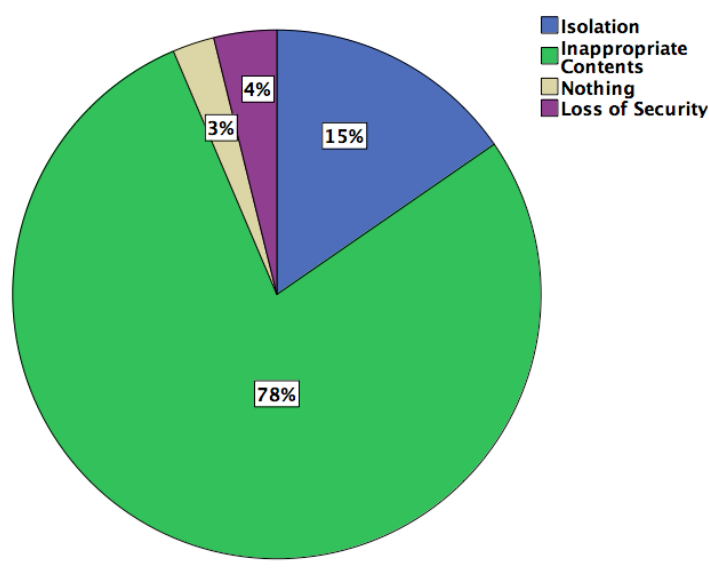
Figure 4-16. What mothers like about iPad.

As shown in Figure 4-16, 95% of mothers indicated that they like the educational opportunities that iPad provide for their children. One mother mentioned that “She like to download educational apps to help her son to understand many lessons”. Another mother indicated that “iPad can help her daughter to design her school projects”. The results also show that 2% of the mother like iPad because it provides their children with a



way to spend their free time. Another 2% of the participated mothers indicated that they do not like iPad for their children. The responses show the vast majority of mothers appreciate the use of iPad as an educational tools.

**What mothers dislike about iPad?** The answers for this question were collected and categorized into four main points as indicated in Table 4-2. Figure 4-17 shows the distribution of mothers' responses to the second question.



*Figure 4-17. What mothers dislike about iPad.*

As shown in Figure 4-17, 78% of mothers show concerns about their children's exposure to inappropriate contents when using iPad. One mother indicated that "I am afraid that my daughter can be exposed to some inappropriate messages that do not fit with our traditions and characters". The results also shows that 15% of the mothers indicated that they do not like iPad because it make their children more isolated and prevent them from living a normal life and interact with their peers. Furthermore, 4% of

the mother indicated that they have concerns about security loss when their children chat with strangers and unknown people over the net. One mother mentioned that “I do not like some games that involve direct contact with other players through the net because my son do not know the identity of other players”. Only 3% of the participated mothers indicated that they cannot list any unfavorable usage of iPad.

A summary of descriptive statistic of research variables is shown in Appendix C.

### **Relationships between Variables**

After calculating the descriptive statistics for each measure, I investigate the presence of relationships between them using correlation analysis techniques. The results presented in Table 4-3 indicate the existence of significant relationships between many variables:

- Mother’s age group is significantly related to the age at which children began using iPads ( $r = 0.554, p < 0.01$ ), number of hours spent on iPad play on weekdays ( $r = 0.215, p < 0.05$ ), number of hours spent on iPad play on weekends ( $r = 0.268, p < 0.01$ ), and the effect of iPads on play preferences ( $r = 0.198, p < 0.05$ ).
- Mothers’ occupation is significantly and negatively related to iPad use during summer vacations ( $r = -0.199, p < 0.05$ ). It is worth to mention that mother’s occupation was coded into SPSS according to the level of work engagement, i.e. level of responsibility. Housewives were assigned a code of 1, administrators a code of 2, teachers a code of 3, and professional a code of 4. The objective of this coding is to treat mother’s occupation as an ordinal variable.

- The number of children in the household under the age of 18 is significantly related to number of iPads owned by the household ( $r = 0.523, p < 0.01$ ), the age at which children began using iPads ( $r = 0.200, p < 0.05$ ), the effect of iPads on play preferences ( $r = 0.306, p < 0.01$ ), and mothers' comparisons of their children to other children ( $r = 0.236, p < 0.05$ ).
- The number of children between the ages of 4 and 10 years is significantly and positively related to the number of iPads owned by the household ( $r = 0.413, p < 0.01$ ) and mothers' comparisons of their children to other children ( $r = 0.218, p < 0.05$ ), and significantly and negatively correlated with mother's opinion about the extent to which iPads facilitate cognitive development ( $r = -0.259, p < 0.01$ ).
- Child age is significantly related to number of iPads owned by the household ( $r = 0.298, p < 0.01$ ), the age at which children began using iPads ( $r = 0.467, p < 0.001$ ), the number of hours spent on iPad play on weekends ( $r = 0.337, p < 0.01$ ) and mother's intervention ( $r = 0.236, p < 0.05$ ), and negatively correlated with mother's supervision ( $r = -0.201, p < 0.001$ ) and mother's opinion about the extent to which iPads facilitate cognitive development ( $r = -0.183, p < 0.05$ ).
- Child gender, female, is negatively correlated with mother's encouragement ( $r = -0.260, p < 0.01$ ).
- Mother's highest academic degree is positively correlated with time spent on iPad play compared to traditional play ( $r = 0.213, p < 0.05$ ).
- The number of iPads owned by the household is significantly related to the number of hours spent on iPad play on weekdays ( $r = 0.206, p < 0.05$ ), the number of hours

spent on iPad play on weekends ( $r = 0.331, p < 0.01$ ), iPad use during summer vacation ( $r = 0.28, p < 0.01$ ), purpose of iPad usage ( $r = -0.213, p < 0.05$ ), the effect of iPads on play preferences ( $r = 0.295, p < 0.01$ ), mother's satisfaction with her child's iPad usage ( $r = 0.249, p < 0.01$ ), and mother's encouragement ( $r = 0.308, p < 0.01$ ).

- The age at which children began using iPads is significantly and positively correlated with number of hours spent on iPad play on weekends ( $r = 0.322, p < 0.01$ ) and mothers' comparisons of their children to other children ( $r = 0.179, p < 0.05$ ).
- The number of hours spent on iPad play on weekdays is significantly correlated with iPad use during summer vacation ( $r = 0.343, p < 0.01$ ), mother's intervention ( $r = 0.217, p < 0.05$ ), mother's supervision ( $r = -0.335, p < 0.01$ ), and the effect of iPads on play preferences ( $r = 0.251, p < 0.01$ ), mothers' comparisons of their children to other children ( $r = 0.231, p < 0.05$ ), time spent on iPad play compared to traditional play ( $r = -0.180, p < 0.05$ ), and mother's encouragement ( $r = 0.267, p < 0.01$ ).
- iPad use during summer vacations is significantly correlated with purpose of iPad usage ( $r = -0.288, p < 0.01$ ), mother's satisfaction with her child's iPad usage ( $r = 0.282, p < 0.01$ ), and mother's encouragement ( $r = 0.178, p < 0.05$ ).
- Purpose of iPad usage is significantly and negatively correlated with mother's encouragement ( $r = -0.257, p < 0.01$ ).
- Mother's intervention is correlated to mother's satisfaction with her child's iPad usage ( $r = -0.189, p < 0.05$ ), mother's opinion on the extent to which iPads deprive

children of traditional play opportunities ( $r = 0.367, p < 0.01$ ), and mother's encouragement ( $r = -0.183, p < 0.05$ ).

- Mother's supervision is significantly and positively correlated to mother's opinion about the extent to which iPads facilitate cognitive development ( $r = 0.208, p < 0.05$ ).
- The effect of iPads on traditional play is significantly correlated with mother's satisfaction with her child's iPad usage ( $r = -0.179, p < 0.05$ ) and mother's comparison of her child to other children ( $r = 0.248, p < 0.05$ ).
- Mother's satisfaction with her child's iPad usage is significantly correlated with mother's opinion about the extent to which iPads facilitate cognitive development ( $r = 0.228, p < 0.05$ ) and mother's opinion on the extent to which iPads deprive children of traditional play opportunities ( $r = -0.259, p < 0.01$ ), and mother's encouragement ( $r = 0.434, p < 0.01$ ).
- Mother's opinion on the extent to which iPads deprive children of traditional play opportunities is significantly and negatively correlated with mother's encouragement ( $r = -0.23, p < 0.05$ ).

Table 4-3 *Correlations between Variables*

No.	Measure	1																					
1	Mother's age group	1	2																				
2	Mother's occupation	-0.116	1	3																			
3	Number of children in household under age 18	<b>0.341**</b>	0.055	1	4																		
4	Number of children between ages 4 and 10	0.092	0.116	<b>0.675**</b>	1	5																	
5	Child age	<b>0.409**</b>	-0.136	<b>0.386**</b>	<b>0.272**</b>	1	6																
6	Child gender	0.112	<b>0.202*</b>	-0.113	-0.042	-0.016	1	7															
7	Mother's highest academic degree	0.024	0.115	0.017	-0.034	<b>-0.202*</b>	0.107	1	8														
8	Number of iPads owned by household	0.057	0.035	<b>0.523**</b>	<b>0.413**</b>	<b>0.298**</b>	-0.133	-0.151	1	9													
9	Age at which children began using iPad	<b>0.554**</b>	-0.171	<b>0.200*</b>	0.055	<b>0.467**</b>	0.16	0.04	0.069	1	10												
10	Number of hours spent on iPad play on weekdays	<b>0.215*</b>	0.116	-0.053	0.031	0.168	-0.038	-0.106	<b>0.206*</b>	0.043	1	11											
11	Number of hours spent on iPad play on weekends	<b>0.268**</b>	-0.173	0.019	0.05	<b>0.337**</b>	-0.149	-0.02	<b>0.331**</b>	<b>0.322**</b>	<b>0.591**</b>	1	12										
12	Usage of iPad during summer vacation	0.091	<b>-0.199</b>	0.014	-0.015	0.098	-0.173	-0.136	<b>0.280**</b>	-0.021	0.103	<b>0.343**</b>	1	13									
13	Purpose of iPad usage	<b>0.214*</b>	-0.072	0.069	0.04	0.134	0.099	0.056	<b>-0.213*</b>	0.173	-0.068	-0.13	<b>-0.288**</b>	1	14								
14	Mother's intervention	0.153	-0.075	0.048	0.114	<b>0.236*</b>	-0.038	-0.136	0.156	0.162	<b>0.205*</b>	<b>0.217*</b>	0.003	0.093	1	15							
15	Mother's supervision	-0.136	-0.014	-0.126	-0.082	<b>-0.201*</b>	0.053	-0.111	-0.157	-0.072	<b>-0.267**</b>	<b>-0.335**</b>	-0.035	-0.042	-0.01	1	16						
16	Effect of iPad on play preferences	<b>0.198*</b>	0.075	<b>0.306**</b>	0.134	0.165	0.013	0.059	<b>0.295**</b>	0.136	0.105	<b>0.251**</b>	0.114	-0.108	0.137	-0.021	1	17					
17	Mother's satisfaction	-0.083	0.013	0.023	-0.076	-0.062	-0.153	0.032	<b>0.249**</b>	-0.127	0.082	0.117	<b>0.282**</b>	-0.067	<b>-0.189*</b>	0.026	<b>-0.178*</b>	1	18				
18	Mother's comparison of her child to other children	-0.058	0.091	<b>0.236*</b>	<b>0.218*</b>	0.098	0.004	0.112	.231*	<b>0.179*</b>	<b>0.193*</b>	<b>0.231*</b>	0.005	0.019	-0.009	-0.047	<b>0.248*</b>	0.103	1	19			
19	iPad facilitates cognitive development	0.075	0.107	-0.127	<b>-0.259**</b>	<b>-0.183*</b>	0.07	0.099	-0.15	0.037	0.075	-0.108	-0.087	0.015	-0.039	<b>0.208*</b>	-0.082	<b>0.228*</b>	0.092	1	20		
20	iPad deprives children of traditional play opportunities	0.147	-0.162	0.055	0.141	-0.05	-0.157	0.142	-0.116	0.047	-0.137	0.114	0.121	0.092	<b>0.367**</b>	-0.069	0.104	<b>-0.259**</b>	-0.03	-0.09	1	21	
21	Time spent in iPad play compared to traditional play	-0.004	-0.004	0.05	-0.009	-0.177	0.174	<b>0.213*</b>	-0.055	-0.063	-0.15	<b>-0.180*</b>	-0.132	-0.075	-0.167	-0.059	-0.064	-0.044	-0.03	0.091	0.144	1	22
22	Mother's encouragement	-0.123	0.067	-0.01	-0.12	0.035	<b>-0.260**</b>	-0.015	<b>0.308**</b>	-0.086	0.146	<b>0.267**</b>	<b>0.178*</b>	<b>-0.257**</b>	<b>-0.183*</b>	0.049	0.06	<b>0.434**</b>	0.093	0.146	<b>-0.230*</b>	-0.11	1

\* Correlation is significant at the 0.05 level (1-tailed).

\*\* Correlation is significant at the 0.01 level (1-tailed).

## **Chi-Square Tests**

I recoded mothers' responses based on their responses to categorical background variables (i.e., age group of mother, age group of child, and gender of child). In the survey, mothers were asked to select from among three to five different categories to indicate their perceptions regarding the iPad's influence on play, the number of hours each child spent using the iPad, and mother's supervision of the child when using the iPad. Therefore, I needed to compare categorical (nominal) variables in my analysis. This is, in fact, the purpose of the chi-square test. I had originally planned to use regression and analysis of variance (ANOVA) techniques, but they are not appropriate for these data since such techniques are used to analyze continuous variables. In a chi-square test, response frequency is used to test the relationships between different categorical variables, whereas in regression and one-way ANOVA techniques, the means are used to analyze the relationships between variables (Field, 2009).

In addition to analyzing categorical data, Chi Square can be used as a simple statistical test that permits us to assess if relationships between two variables in a sample are due to chance or the relationship which cannot be achieved by observing statistical correlations only. It is important to note that correlations do not test the statistical significance of the relationship between two variables and it is only used to describe the direction and relative magnitude of a relationship between two variables.

My intention in using Chi Square method is to test some hypothesis about iPad usage and mothers' perceptions in Kuwaiti. In doing so, I assume the presence of a null hypothesis, which means there is no association between two variables, and the expected

mothers' responses is equally distributed between these two variables. Chi Square method tests the presence of the null hypothesis and whether to reject it or not. This test cannot be achieved by observing the correlations mentioned in the previous section.

The analysis in this section is divided into three parts. In the first part, I analyze mothers' perceptions regarding iPad usage based on child's gender. In the second part, I analyze mothers' behaviors (i.e., encouraging iPad usage, supervision, and intervention) based on child's age. In the third part, I analyze child's iPad usage (on weekdays, weekends, and during summer vacations) based on mother's age group.

Table 4-4 shows the results of the chi-square tests on five variables (items 16, 17, 19, 20, and 21) based on child's gender. The null hypothesis is that there is no child gender difference associated with mothers' perceptions about iPad usage. The null hypothesis is not rejected when  $p > 0.05$ . As shown in Table 4-4, the  $p$ -values for all five items is greater than 0.05; thus, we accept the null hypothesis that Kuwaiti mothers do not have different opinions about iPad usage for these five items with respect to child's gender.



Table 4-4 *Mothers' Perceptions about iPad Usage and Gender*

<u>Statement and response options</u>	<u>Child gender</u>		<u><math>\chi^2</math></u>	<u><math>\Phi</math></u>	<u><math>p</math></u>
	<u>Boy (%)</u>	<u>Girl (%)</u>			
Effect of iPads on play preferences			0.371	0.065	0.356
Little to Moderate Effect	30.2	24.4			
High Effect	69.8	75.6			
Mother's satisfaction with child's iPad usage			1.098	-	0.204
Strongly disagree and disagree	58.1	68.9		0.112	
Strongly agree and agree	41.9	31.1			
iPad deprives children of traditional play opportunities			0.859	-	0.274
Strongly disagree and disagree	9.3	15.9		0.099	
Strongly agree and agree	90.7	84.1			
iPad facilitates cognitive development			0.137	0.039	0.449
Strongly disagree and disagree	27.9	24.4			
Strongly agree and agree	72.1	75.6			
Time spent on iPad vs. traditional play			0.754	0.094	0.258
More	60.5	51.2			
Same or less	39.5	48.8			

In Table 4-5 I present the chi-square test results regarding mothers' behaviors (supervision, encouragement, intervention) related to their children's iPad usage based on child's age group. The null hypothesis is that mothers' behaviors are independent of child's age group. Table 4-5 shows that the frequency of mother's supervision is influenced by child's age group ( $\chi^2 = 10.669$ ,  $p = 0.001$ ). Mothers supervised younger (4 to 7 year old) children much more frequently (56.9% responded "Always") than older children (17.4% responded "Always"). There were no significant associations for the other two items, although mother's intervention by age group of the child approached statistical significance.

Table 4-5 *Mother's Behaviors and Child's Age Group*

<u>Statement and response option</u>	<u>Child's age group</u>		<u>X<sup>2</sup></u>	<u>Φ</u>	<u>p</u>
	<u>4-7 years (%)</u>	<u>8-10 years (%)</u>			
Mother's supervision			10.669	-0.348	0.001
Never, rarely, and sometimes	43.1	82.6			
Always	56.9	17.4			
Mother's encouragement			0.536	-0.078	0.312
Never and rarely	39.1	47.8			
Sometimes and always	60.9	52.2			
Mother's intervention			3.682	0.207	0.054
Never, rarely, and sometimes	81.0	60.9			
Always	19.0	39.1			

The aim of the third analysis was to investigate iPad play trends (on weekdays, weekends, and summer vacation) with respect to mother's age. I considered two different age groups: 20 to 35 years, and older than 35 years. The null hypothesis for this analysis is that the amount of time children spent on iPad play on weekdays, weekends, and summer vacation is independent of mother's age. Table 4-6 presents the chi-square test results showing that the amount of time children spent on iPad play is not related to their mothers' ages. Although the number of hours spent using the iPad on weekends and during summer vacations approaches statistical significance, the null hypothesis is not rejected.

Table 4-6 *Time Spent on iPad Play and Mother's Age*

<u>Statement and response options</u>	<u>Mother's age</u>		<u><math>\chi^2</math></u>	<u><math>\Phi</math></u>	<u><math>p</math></u>
	<u>20-35 (%)</u>	<u><math>\geq 35</math> (%)</u>			
Number of hours spent on iPad play on weekdays			0.515	0.076	0.310
0-2 hours	56.4	48.5			
3 or more hours	43.6	51.5			
Number of hours spent on iPad play on weekends			2.738	0.176	0.077
0-2 hours	38.2	21.2			
3 or more hours	61.8	78.8			
Use of iPad during summer vacation			2.914	0.182	0.068
Strongly disagree, disagree and same	58.2	39.4			
Agree and strongly agree	41.8	60.6			

## **Chapter 5**

### **Discussion and Conclusions**

The purpose of this study was to investigate the effect of iPads on Kuwaiti children's play preferences from mothers' perspectives. To achieve this purpose, I followed a detailed study plan according to the methodology discussed in Chapter 3. The effect of iPads on Kuwaiti children's play was investigated by answering the following research questions:

1. How popular is the iPad as a play mechanism among Kuwaiti children?
2. How does iPad usage affect the play preferences of Kuwaiti children?
3. At what age do Kuwaiti children begin to use iPads?
4. How many hours do Kuwaiti children spend on iPads in typical weekdays and weekends? Does usage change during summer vacation?
5. What are the perceptions of Kuwaiti mothers about their children's iPad usage?
6. How satisfied are Kuwaiti mothers with their children's iPad usage?
7. What are the preferred uses for iPads among Kuwaiti children?
8. What do Kuwaiti mothers like about their children's iPad usage?
9. What do Kuwaiti mothers dislike about their children's iPad usage?

The following discussion is devoted to answering these questions in light of the survey results presented in Chapter 4.

### **Research Question 1**

As shown in Figure 4-1, 97% of the mothers who participated in the survey indicated that they had at least one iPad device in their households that was designated for their children's use. In detail, 27% of the mothers indicated that they had one iPad, 38% had two iPads, and 32% had three or more iPads designated for their children's use. These data indicate that iPads are commonly used as a play mechanism by Kuwaiti children.

### **Research Question 2**

As shown in Figure 4-9, 73% of the mothers surveyed indicated that the iPad has had a strong effect on their children's play preferences. Just 20% of the mothers indicated a moderate effect and 7% indicated that the iPad had little effect on their children's play preferences. These data indicate nearly three-quarters of mothers surveyed felt that iPad play has replaced other types of play activities. The amount of time that children spent using iPad on weekdays, weekends, or during summer vacation is another indicator of the effect of iPads on Kuwaiti children's play preferences. On regular school days, just 13% of the mothers indicated that their children do not use iPads compared to 41% of children who spent between 1 and 2 hours, 31% of children who spent between 3 and 4 hours and 16% of children who spent more than 4 hours using iPads. On weekends, mothers' responses indicate that 47% of the children spent more than 4 hours, 28% of the children spent between 1 and 2 hours, and 22% of the children spent between 3 and 4 hours using iPads. In sum, 69% of the children spent 3 or more

hours each day using iPads on weekends. Moreover, 49% of mothers agreed that their children played with iPads more during summer vacations.

In addition, Figure 4-13 shows that 54% of mothers agreed and 33% strongly agreed with the claim that iPads deprived their children of traditional play opportunities, compared to just 1% who strongly disagreed and 11% who disagreed with this claim. In total, 87% of mothers felt that iPads deprived their children of traditional play opportunities. The chi-square tests indicate that there is no significant difference between boys and girls in terms of iPad usage. From this discussion, one can conclude that iPads have had an impact on these Kuwaiti children's play preferences.

### **Research Question 3**

Figure 4-2 shows that 64% of the children in the study began using iPads between the ages of 2 and 4 years, 22% between the ages of 5 and 6 years, and 10% after the age of 6 years. Only 5% of the mothers indicated that their children did not use iPads. The results indicate 86% of children evaluated in this study began using iPads before they were 7 years old. If this statistic reflects general trends, this observation might indicate an excellent opportunity to use iPads for various child development activities.

### **Research Question 4**

This research question was answered in my response to Research Question 2. On regular school days, just 13% of the mothers indicated that their children do not use iPads compared to 41% of children who spent between 1 and 2 hours, 31% of children who spent between 3 and 4 hours and 16% of children who spent more than 4 hours using iPads. On weekends, mothers' responses indicate that 47% of the children spent more

than 4 hours, 28% of the children spent between 1 and 2 hours, and 22% of the children spent between 3 and 4 hours using iPads. In sum, 69% of the children spent 3 or more hours each day using iPads on weekends. Moreover, 49% of mothers agreed that their children play with iPads more during summer vacations.

### **Research Question 5**

The answer to this question is based on mothers' responses to three survey questions. The first was related to mothers' opinions about whether using iPads enhanced their children's cognitive development. As Figure 4-12 shows, 72% of mothers in this study believed that using iPads enhanced their children's cognitive development compared to 22% who disagreed with this claim. The second survey question was related to the extent to which mothers encouraged their children to use iPads. As shown in Figure 4-15, 55% of mothers encouraged and 3% always encouraged their children to use iPads compared to 21% who rarely encouraged and 21% who never encouraged their children to use iPads. Based on these data and the data presented for Research Question 2, one can conclude that these Kuwaiti mothers felt that iPads had a significant effect on their children's play preferences and that iPad usage had positively affected their children's cognitive development.

### **Research Question 6**

As shown in Figure 4-10, 64% of the mothers in this study were strongly dissatisfied or dissatisfied with their children's usage of iPad. This is a high percentage, especially since many of these same mothers felt that iPad usage had positively affected their children's cognitive development, as revealed in the response to Research Question

5. A detailed investigation is warranted to investigate why Kuwaiti mothers are not satisfied with their children's iPad usage.

### **Research Question 7**

As shown in Figure 4-6, 29% of children use iPads to watch movies and cartoons compared to 61% who use iPads to play games. The results indicate that only 6% use iPads to chat with others and 5% use iPads for other purposes. The results show that most of these children used iPads to play games.

### **Research Question 8**

Figure 4-16 shows that 95% of mothers highlighted the educational usage of iPad as the main thing that they like iPad for their children. Indeed, this is a high percentage which reflect the importance of education as a concern for children's mothers.

### **Research Question 9**

The study reveals that inappropriate contents and excessive iPad usage are the two main things that mothers do not like iPad for their children. The analysis shows that 78% of mothers show concerns about their children's exposure to inappropriate contents when using iPad and 15% of the mothers indicated that they do not like iPad because it make their children more isolated and prevent them from living a normal life and interact with their peers.

### **Other Findings**

In addition to answering the research questions, the results show some correlations between the study's variables. For example, the data indicate the presence of a positive correlation between mother's age and the time a child spent on iPad play on weekdays and weekends. The data also show that older mothers tended to believe that



iPads had affected children's play preferences more than younger mothers. Furthermore, the results indicate that Kuwaiti mothers tended to supervise younger children more than older children during iPad usage and to interfere with older children more frequently. Moreover, the data show that mothers tended to interfere more frequently with children who used iPads for longer time periods.

### **Limitations**

The results from this study are hard to generalize to other populations of children. Therefore, future work should involve a broader sample as a basis for determining the effects of iPads on play preferences. The present study can be extended to include a larger sample size with mothers of different occupations since the sample in this study was dominated by mothers who worked as teachers. Furthermore, the research sample shows little variability in terms of mother's highest educational level. However, this reflects the current status of women in Kuwait. Nowadays, majority of mothers pose university degree since Kuwait government encourages them to continue their education. As a matter of fact, university education is free of charge in Kuwait and job holders with university degree have more salary compared to other without university degree.

Moreover, to gather more informative data, the answers on the questionnaire should be continuous, and based on a scale to measure mother's responses instead of predetermined responses. This would enable the use of statistical analysis tools such as regression and one-way ANOVA to interpret the results.

**Strengths of the Study and Implications**

The strength of this study is that it investigates a new mechanism of children's play: iPads and other tablets. The outcomes of this study could help these new devices to be better utilized in order to provide children with pleasant and purposeful play experiences. In addition, several findings can be explored further in the future to expand knowledge related to this important trend.

**Concluding Remarks**

To conclude, this study supports the presence of a connections between iPad and play preferences among Kuwaiti children. To be more specific, the study highlights the effect of iPad usage on Kuwaiti children's traditional play and the analysis on the gathered research questionnaire indicate that high percentage of Kuwaiti children tend to play with iPad compared to traditional play. Moreover, the study shows that Kuwaiti children spend, on average, more than one hour daily using iPad during weekdays and more than 2 hours during weekends. In addition, the study indicates that majority of Kuwaiti children are using iPad to either watch movies/cartoons or play digital games.

The study, also, indicates that majority of Kuwaiti mothers are not satisfied with their children's usage of iPad. Furthermore, the vast majority of Kuwaiti mothers believe that iPad deprives their children from traditional play. On the other side, the study shows that Kuwaiti mothers believe that iPad can provide their children with more educational options to learn new skills and languages.

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## Appendix A

### Survey

1. Which range includes your age?

- a) 20-30
- b) 31-35
- c) 36-40
- d) > 40

2. Please indicate your occupation.

---

3. Please indicate the number of children under the age of 18 years in your household.

- a) 1
- b) 2
- c) 3
- d) > 3

4. Please fill out the table for your children between the ages of 4 and 10 years.

No.	Age	Gender
1		
2		
3		
4		
5		
6		
7		

5. Which child is targeted in this survey?

---

6. Please indicate your highest academic degree:

- a) Pre-secondary
- b) Secondary
- c) University degree
- d) Post graduate

7. How many iPads do you have at home that are used by your children?

- a) 0
- b) 1

- c) 2
  - d) 3 or more
8. In your opinion, to what extent does the iPad affect play preferences for children in Kuwait?
    - a) No effect
    - b) Little effect
    - c) Medium effect
    - d) High effect
  9. At which age did your child start to use the iPad?
    - a) My child doesn't use an iPad
    - b) 2 to 4 years
    - c) 5 to 6 years
    - d) > 6 years
  10. How many hours does your child spend using the iPad **daily (not including weekends)**?
    - a) 0 hours
    - b) 1 to 2 hours
    - c) 3 to 4 hours
    - d) > 4 hours
  11. How many hours does your child spend using the iPad **on weekend days**?
    - a) 0 hours
    - b) 1 to 2 hours
    - c) 3 to 4 hours
    - d) > 4 hours
  12. My child uses the iPad more frequently during summer vacation than during school year.
    - a) Totally disagree
    - b) Disagree
    - c) Same usage
    - d) Agree
    - e) Totally agree
  13. I am happy to see my child using the iPad.
    - a) Totally disagree
    - b) Disagree
    - c) Agree
    - d) Totally agree
  14. How do you see your child's utilization of iPad compared to his/her peers?
    - a) My child uses the iPad in a better way than his/her peers
    - b) My child uses the iPad in the same way compared to his/her peers
    - c) Other children use the iPad in a better way than my child
  15. Please indicate the **one major** use for which your child uses the iPad?
    - a) Watching movies and cartoons
    - b) Playing games
    - c) Chatting with others
    - d) Other, please indicate \_\_\_\_\_
  16. I force my child to close his/her iPad.
    - a) Almost Never
    - b) Rarely

- c) Sometimes
  - d) Almost Always
17. The use of iPad enhances knowledge development for my child.
- a) Totally disagree
  - b) Disagree
  - c) Agree
  - d) Totally agree
18. I supervise my child when he or she is using the iPad.
- a) Almost Never
  - b) Rarely
  - c) Sometime
  - d) Almost Always
19. I think the iPad deprives or limits my child from participating in normal play.
- a) Totally disagree
  - b) Disagree
  - c) Agree
  - d) Totally agree
20. How much does your child engage in iPad play compared to normal play?
- a) About the same
  - b) iPad play a little more than traditional play
  - c) iPad play a lot more than traditional play
  - d) Traditional play a little more than iPad play
  - e) Traditional play a lot more than iPad play
21. I encourage my child to use the iPad.
- a) Almost Never
  - b) Rarely
  - c) Sometimes
  - d) Almost Always
22. If your child plays with the iPad:
- a) What do you like about iPad for your kids? Why?
  - b) What do you dislike about iPad for your kids? Why?

## Appendix B

### IRB Approval

PENNSTATE



Vice President for Research  
Office for Research Protections

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#### EXEMPTION DETERMINATION

**Date:** October 24, 2014  
**From:** Courtney Whetzel, IRB Analyst  
**To:** Nadeyah Alazemi

Type of Submission:	Initial Study
Title of Study:	Impact of iPad on Kuwaiti Children Play: Mothers Prospective
Principal Investigator:	Nadeyah Alazemi
Study ID:	STUDY00000958
Submission ID:	STUDY00000958
Funding:	Not Applicable
Documents Approved:	<ul style="list-style-type: none"> <li>Survey.docx (V1), Category: Data Collection Instrument</li> <li>HRP-591 - Protocol for Human Subject Research (V2), Category: IRB Protocol</li> </ul>

The Office for Research Protections determined that the proposed activity, as described in the above-referenced submission, does not require formal IRB review because the research met the criteria for exempt research according to the policies of this institution and the provisions of applicable federal regulations.

Continuing Progress Reports are **not** required for exempt research. Record of this research determined to be exempt will be maintained for five years from the date of this notification. If your research will continue beyond five years, please contact the Office for Research Protections closer to the determination end date.

Changes to exempt research only need to be submitted to the Office for Research Protections in limited circumstances described in the below-referenced Investigator Manual. If changes are being considered and there are questions about whether IRB review is needed, please contact the Office for Research Protections.

Penn State researchers are required to follow the requirements listed in the Investigator Manual ([HRP-103](#)), which can be found by navigating to the IRB Library within CATS IRB (<http://irb.psu.edu>).

This correspondence should be maintained with your records.

**Appendix C**

**Summary of**

**Descriptive Statistics**

No.	Measure	Possible Answers	Numeric Value	Mean	Standard Deviation
1	Mother's age group	20-30	1	2.11	0.999
		31-35	2		
		36-40	3		
		> 40	4		
2	Mother's occupation	Housewife	1	2.30	0.984
		Administrator	2		
		Teacher	3		
		Professional	4		
3	Number of children in household under age 18	1	1	2.75	0.962
		2	2		
		3	3		
		> 3	4		
4	Number of children between ages 4 and 10	1	1	2.38	1.032
		2	2		
		3	3		
		4	4		
		5	5		
5	Child age	4	4	6.34	1.875
		5	5		
		6	6		
		7	7		
		8	8		
		9	9		
		10	10		
6	Child gender	Boy	1	1.51	0.503
		Girl	2		

No.	Measure	Possible Answers	Numeric Value	Mean	Standard Deviation
7	Mother's highest academic degree	Pre-secondary	1	2.99	0.536
		Secondary	2		
		University degree	3		
		Post graduate	4		
8	Number of iPads owned by household	0	1	2.98	0.857
		1	2		
		2	3		
		3 or more	4		
9	Age at which children began using iPad	My child doesn't use an iPad	1	2.38	0.732
		2 to 4 years	2		
		5 to 6 years	3		
		> 6 years	4		
10	Number of hours spent on iPad play on weekdays	0 hours	1	2.50	0.910
		1 to 2 hours	2		
		3 to 4 hours	3		
		> 4 hours	4		
11	Number of hours spent on iPad play on weekends	0 hours	1	3.11	0.940
		1 to 2 hours	2		
		3 to 4 hours	3		
		> 4 hours	4		
12	Usage of iPad during summer vacation	Totally disagree	1	3.38	1.043
		Disagree	2		
		Same usage	3		
		Agree	4		
		Totally agree	5		
13	Purpose of iPad usage	Watching movies and cartoons	1	1.86	0.718
		Playing games	2		
		Chatting with others	3		
		Other	4		
14	Mother's intervention	Almost Never	1	3.12	0.622
		Rarely	2		
		Sometimes	3		
		Almost Always	4		

No.	Measure	Possible Answers	Numeric Value	Mean	Standard Deviation
15	Mother's supervision	Almost Never	1	3.34	0.709
		Rarely	2		
		Sometime	3		
		Almost Always	4		
16	Effect of iPad on play preferences	No effect	1	3.66	0.604
		Little effect	2		
		Medium effect	3		
		High effect	4		
17	Time spent in iPad play compared to traditional play	About the same	1	3.17	1.140
		iPad play a little more than traditional play	2		
		iPad play a lot more than traditional play	3		
		Traditional play a little more than iPad play	4		
		Traditional play a lot more than iPad play	5		
18	Mother's satisfaction	Totally disagree	1	2.16	0.771
		Disagree	2		
		Agree	3		
		Totally agree	4		
19	Mother's comparison of her child to other children	My child uses the iPad in a better way than his/her peers	1	1.82	0.518
		My child uses the iPad in the same way compared to his/her peers	2		
		Other children use the iPad in a better way than my child	3		
20	iPad facilitates cognitive development	Totally disagree	1	2.72	0.586
		Disagree	2		
		Agree	3		
		Totally agree	4		
21	iPad deprives children of traditional play opportunities	Totally disagree	1	3.20	0.679
		Disagree	2		
		Agree	3		
		Totally agree	4		
22	Mother's encouragement	Almost Never	1	2.41	0.857
		Rarely	2		
		Sometimes	3		
		Almost Always	4		