Combining Digital Media and Unstructured, Outdoor Play

in Order to Foster Healthy Child Development

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by

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Chapter I

Children are spending more time indoors in front of a television, computer screen or electronic gaming device and not going outside to play and interact with other children and the natural world around them. Children spend more than seven hours a day in front of a screen and only four to seven minutes in unstructured, outdoor play (Rideout, Foehr & Roberts, 2010). Imaginative play is critical for children in becoming socially adept, building cognitive skills such as problem solving, and coping with stress (Wenner, 2009). Dr. Kenneth Ginsburg, author of, “The Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds” found that play is important for healthy brain development, and it is through play that children engage and interact in the world around them (Ginsburg, 2007). The increased presence of digital media in the home has a profound effect on the extent to which children play outside, and modern children are leading a more passive, inactive life indoors (Clemens, 2004). Computers, televisions and multi-media devices are here to stay. They have created a new, virtual world in which children have learned to adjust. This adaptation is healthiest when built on a foundation of knowledge about the real world—a foundation that can only be acquired through self-initiated and spontaneous outdoor play (Elkind, 2006).

Increased Presence of Digital Media in Children’s Lives

Over the last 10 years there has been a significant rise in the amount of time children spend playing video games. It went from an average of 29 minutes in 1999 to 1 hour and 13 minutes in 2009. There are many reasons for this hike in digital use, including the fact
that more children are playing video games during a typical day, and using handheld
devices for game play (Rideout et al., 2010). In addition, children have greater access to
computers and the Internet, which introduce new games and activities that are very
appealing to children and young adults.

“The vast majority of young people now carry devices on which they play games,
listen to music, and, in many cases, connect to the Internet and watch videos” (Rideout et
al., 2010, p. 10). A large number of eight- to ten-year-olds own a mobile media device, such
as Nintendo DS®, Sony PSP®, and iPods. About one-third of young people have a cell
phone, and a small number even have their own laptop. Today, approximately twenty
percent of children’s media use takes place on mobile devices. A great increase of media
consumption occurs by the time children are between eleven and fourteen years of age. This
age group has seen an increase of more than three hours a day using digital media, and four
hours a day in media exposure. These children average slightly less than nine hours of
media use per day, and, when multitasking, it increases to nearly twelve hours per day,
composed mostly of television and video game consumption (Rideout et al., 2010).

**Children are spending less time playing outdoors**

“From 1997 to 2003 there was a decline of fifty percent in the proportion of children nine
to twelve who spent time in such activities as hiking, walking, fishing and
gardening” (Louv, 2008, p. 34). There are many factors that isolate children from the
natural, outside world, including the lack of neighborhood parks, the rapid urbanization
of cities, the lack of time and money for parents to take their children out of the city and,
more recently, the rise in new technologies. Researchers at the University of Maryland discovered that between 1981 and 2003 children lost over nine hours of free time during a typical week. Their digital media use doubled, and they spent less time in unstructured indoor and outdoor play (Louv, 2008). In his book, *Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder*, Richard Louv quotes a 4th grader in San Diego who says, “I like to play indoors better because that’s where all the electrical outlets are” (Louv, 2008, p. 10).

Children have lost twelve hours of free time a week over the last two decades, and eight of those hours were once devoted to unstructured play and outdoor activities (Elkind, 2006). What composes unstructured play? It is freely chosen, usually includes children of mixed ages, and is non-competitive due to the fact that the children set their own rules. It is very different from structured, extracurricular activities and sports that are mainly adult-driven and consisting of adult-directed rules.

In her article, *An Investigation of the Status of Outdoor Play*, Rhonda Clements found that children in the U.S. spend less time playing outdoors than their parent’s generation. Eighty-five percent of the mothers surveyed agreed that children today play outdoors less often than children did even just a few years ago. They also singled out their child’s computer game playing and television viewing as the biggest reason for the lack of outdoor play (Clements, 2004). These findings support the likelihood that children today are choosing to play indoors.
Importance of Unstructured, Imaginative Play in the Lives of Children

From ancient philosophy to modern, scientific research, play has been regarded as an essential component in healthy child development (Fisher, Hirsh-Dasek, Koft & Gryte, 2008). The types of play activities that foster this development are losing power in our world as society shifts from encouraging child-initiated, unstructured play to a more structured, educational activities in both the home and school environments. Play is crucial for a child’s social, intellectual, emotional, physical and creative development. It teaches lifelong skills and operates as a natural educational tool. Play is a way for children to use real and life-like situations to answer questions as they continually try to make sense of their lives, feelings and experiences (Smidt, 2011).

“Play is, first and foremost, done for it’s own sake” (Gray, 2011, p. 454). In free, unstructured play, children do what they want to do, and growth and learning are the positive byproducts of the activity, not the end goals. During play, children learn to solve problems, make decisions, follow rules and practice self-control. Play is directed and controlled by the players themselves, who must decide how and what to do, and solve problems that may come up within the frame of play. The players also learn to troubleshoot problems that come up outside of the frame of play, such as a skinned knee or bee sting. “In play, children learn to control their own lives and to manage the physical and social environment around them” (Gray, 2011, p. 454). Fantasy play is important for fostering a child’s ability to self-soothe and cope emotionally. Play also helps children develop strong social skills and helps with language development. Children often use more sophisticated language when playing with other children compared to when they
play with their parents or other adults. Children who have frequent and positive exposure to social play experiences are more likely to become adults who can manage difficult and unpredictable social situations (Wenner, 2009).

In the *American Journal of Play* article entitled, “Why Parents Should Stop Overprotecting Kids and Let Them Play,” Lenore Skenazy calls play, “a super vitamin for cognitive development” (Skenazy, 2011, p. 439). Play promotes neural development in the brain areas that are associated with emotional reactions and social learning. In addition, it helps children work through anxiety and stress and is crucial for their emotional health. The creative aspect of free play is critical because it challenges the developing brain. Children must use their imagination and engage in new activities and roles. Pretend play, such as playing house, pretending to be animals in a farm, and even cowboys and indians, focuses on the enactment of narrative scenarios. This type of play helps to improve narrative skills. For children, both listening to stories and telling them helps them to learn “the symbolic potential of language: its power to create possible and imaginary worlds through words.” Building pretend worlds through the creative copying and reworking of cultural elements involves both the imaginative and cognitive functions that are conveyed in and promoted by children’s play (Göncü & Gaskins, Nicolopoloulou, 2006). For older children, role play with peers encourages them to imagine the world from someone else’s point of view and to explore their own inner thoughts and feelings, as well as the thoughts and feelings of their friends. This helps to foster children’s ability to understand perspective and develop empathy for others, which is important for the broader development of social cognition (Göncü et al., 2006).
Importance of Outdoor Play

Play has also become the means of teaching children respect for the natural environment (Westland & Knight, 1982). Children need exposure to the outdoors for the healthy development of their senses which inspire learning and creativity. Robin Moore, an expert in the design of play and learning environments has written that, “…natural settings are essential for healthy child development because they stimulate all the senses and integrate informal play with formal learning” (Louv, 2008, p. 86). In nature, a child can find privacy and create fantasy worlds for themselves away from the adult world. There is also a growing awareness that a child’s mental and physical health are linked to the natural environment (Louv, 2008).

Natural experiences such as throwing rocks in a pond, collecting leaves, building sandcastles, and building forts challenge a child’s reasoning abilities and imagination. Outdoor play provides opportunities for children to explore their community, to have sensory experiences playing with dirt, mud, and water, and to find and create their own places for play. They may engage in collecting objects, establishing hobbies and, as an added benefit, increase their enjoyment for physical activity. “Between the ages of three and 12 a child’s body experiences it’s greatest physical growth, as demonstrated by the child’s urge to run, climb, and jump in outdoor spaces” (Clements, 2004, p. 68). Lively outdoor play activities help to foster the development of the primary nervous centers in the brain for increased learning abilities.

Unstructured, outdoor play is important at all age levels, but especially in early childhood and the elementary years. Through playful contact with the world, children
create learning experiences that allow them to make the world their own. Because play is the dominant drive for children in their early years, most learning that happens during this period is self-directed (Elkind, 2006). Today’s children have parents who enjoyed free, natural play in the outdoors. However, within the span of a few decades, the way children experience and understand nature has changed, and their physical contact with nature is fading. “Without outdoor play kids lose the capacity to get together and play spontaneously, which in turn, creates a lack of social skills. When free play is denied, the opportunity for kids to practice democracy, or social equality, is also lost” (Marano, 2011, p. 426). Researchers are making efforts to prove the importance of nature in a child’s development and evidence is growing to show that it does have a positive effect on children’s mental and physical health. Just as children need adequate sleep and good nutrition, they also need contact with the tangible, outdoor world. “Stress reduction, greater physical health, a deeper sense of spirit, more creativity, a sense of play, even a safer life—these are awards that await a family when it invites more nature into children’s lives” (Louv, 2008, p. 163).

Play, along with the basic needs of shelter, nutrition, health and education, is important for the development of a child’s potential. Children will play anywhere and anytime, if given the opportunity to do so. “Play is an integral part of life itself; it is instructive, spontaneous and natural. Play for the child means exploring; it is communication and an important means of expression. In play, the child combines action and thought, and through play it finds satisfaction and a feeling of accomplishment. Through play a child learns to live” (Westland & Knight, 1982, p. 2).
Negative Effects of Increased Digital Media in the Home

Recent studies show that as children spend more time in front of the television and computer they spend less time in leisure-based activities. “For a whole generation of kids, direct experience in the backyard, in the tool shed, in the fields and woods, has been replaced by indirect learning, through machines” (Louv, 2008, p. 67). The decline in free play can be attributed to the passive entertainment of children by the television, computer and video games. This form of entertainment can have harmful effects. In 2004, the Children’s Hospital and Regional Medical Center in Seattle reported that each hour of television watched per day by preschoolers increases by ten percent the chances that by the age of seven they will develop concentration problems (Louv, 2008).

The explosion of digital media in the home has had a profound effect on the amount of time that children play outdoors. Many children today are amusing themselves in front of the television or computer and isolating themselves from peer groups. “Certainly there is a place for television watching and computer use. Yet these seem so barren and empty compared to what the out of doors offers to young children” (Elkind, 2006). Due to the amount of time children spend indoors, they are not developing an appreciation or awareness for the outdoor environment, and are more inclined to be the recipient of entertainment rather than creative, independent and self-reliant individuals (Clements, 2004). It is important that the basic needs of children do not become replaced by technological advancement. The interests of speed and efficiency should not be carried
out at the expense of the needs of children for real-world, interpersonal contacts and individual growth and development (Westland & Knight, 1982).

**Adult Influence on Children’s Unstructured Play: Organized Sports**

Traditional games and make-believe play are disappearing from modern childhood because of adult-supervised recreation and organized sports. In 1997, a group of sociologists at the University of Michigan discovered that children play less and had less free time for all self-chosen activities than in 1981. They found a 25 percent decrease in time spent playing, a 55 percent decrease in time spent talking with others at home, and a 19 percent decrease in television watching for six-to eight-year-olds over the sixteen-year period (Gray, 2011). The increased presence of adult-managed games and sports in children’s lives is to blame for the decline of children’s free, unstructured play is being blamed on. From 1981 to 1997 the amount of time children spent participating in organized sports went up by 27 percent (Louv, 2008). Free play is an activity that children freely choose and is done for its own sake. Adult-directed play does not fall into this category. “Experts point to a shift in childhood play, with a focus on controlled environments, techno-goodies and material objects. Instead of working out issues themselves during free play outside, children are micro-managed by parents who step in to resolve conflicts for them” (Lancy & Grove, 2011, p. 498).

Organized sports and recreation do not necessarily provide a means for children to play. Providing for play involves making available the time, space, proper atmosphere and children with which to play, and then allowing the children themselves to take charge
and create play situations. “Adult-oriented rules frequently hamper the development of a real play atmosphere” (Westland & Knight, 1982, p. 2). When children are “over-scheduled” by their parents, bogged down by adult-supervised and motivated activities, their free play time is reduced. Beneficial downtime that allow parents and children productive time for interaction is limited as well. Children are not allowed the chance to control their own actions, make their own decisions or solve their own problems by participating in free play, which may make them grow up feeling like they are not in control of their own lives (Wenner, 2009).

**Adult Influence on Children’s Unstructured Play: Stranger Danger**

The decline of children’s outdoor play is often blamed on the increase of digital media use, however another important factor is parents’ fear of children’s outdoor play in today’s society. Children may be spending so much time playing video games and watching television indoors because they are not allowed to play freely outside due to safety concerns. In the article, *An Investigation of the Status of Outdoor Play*, Rhonda Clements writes that, “82% of the mothers surveyed identified crime and safety concerns as factors that prevent their children from playing outdoors” (Clements, 2004, p. 74). Parental beliefs have an indirect relationship with child development, and they influence how their children’s lives are organized, from the objects found in their home environment to their social interactions and daily routines (Fisher et al., 2008). Advertising and the media are causing parents to believe there are dangers hiding everywhere, causing them to become overprotective of their children. This, in turn, has
direct consequences for children’s outdoor play. Advertisers are aware of the fact that parents strive for perfectly controlled environments in which to raise their children, and they take advantage of it by dramatizing fear and fabricating concerns that don’t really exist for parents (Marano, 2011). It is much less risky for a child to cross the street if their parents teach them basic safety principles and believe and trust in the ability of their children to learn.

Fear is what prevents parents from giving their children the freedoms they themselves enjoyed when they were young. “In a 2002 survey, 56% of parents in the U.S. said that by the time they were ten years old they were allowed to bike or walk to school, but only 36% of those same parents said their own kids should be allowed to do the same” (Louv, 2008, p. 123). Stranger-danger is not the only reason parents tighten the boundaries of their children’s lives. Children and adults are beginning to see nature as an enemy, which is further exaggerated by the media. “An indoor childhood increases risks to physical and psychological health, risk to the child’s concept and perception of community, risk to self-confidence and the ability to discern true danger—and beauty” (Louv, 2008, p. 124). Parents need help discerning the truths in advertising and media messages and to rely on common sense and their own good judgement when it comes to putting into perspective risks associated with outdoor play. Parents need to recognize that their children have to cope with life on their own, and give them the confidence to do so.
Adult Influence on Children’s Unstructured Play: School

Along with the increase of organized sports in a child’s life, the rise of study-time and homework has also had a negative effect on unstructured time and natural, outdoor play. As early as preschool, children’s after-school time is being filled with music lessons and sports, further reducing the time they have to spend in the type of imaginative, free play that fosters cooperation and creativity. “The emphasis on academic preparation over unstructured play may represent an emerging parental belief of play’s reduced effectiveness for early academic learning” (Fisher et al., 2008, p. 306).

An increasing number of elementary schools are getting rid of recess, or at least considering it, and their unfavorable attitude toward play shows a critical misunderstanding of what children need for healthy physical, mental, emotional and social growth. Schools frequently over-emphasize academic studies, often at the cost of informal learning through play. Children who are exposed to recess in natural, outdoor settings are more physically active, more socially aware of one another and more creative (Louv, 2008).

Positive Effects of Digital Media in Children’s Lives

“The problem with computers isn’t computers—they’re just tools. The problem is the over-dependence on them displaces other sources of education, from the arts to nature” (Louv, 2008, p. 137). Digital media devices, including video games, are now a routine part of normal childhood and adolescence. Many studies have focused on how video games cause potential harm to children ranging from exposure to unsuitable game content. However, current research is being conducted to find out what children can gain
from them, often drawing attention to video games’ potential to teach academic skills. Compared to other media such as films, books and radio, video games have a broad appeal to children and provide them with a number of intellectual, social and emotional needs. The benefits of video games are best understood when it comes to children’s motivations for play (Olson, 2010). “Video games create a naturalness to which unprovoked teaching and learning occur among young people and their inventiveness in finding productive learning arrangements” (Salen, Stevens, 2008, p. 52). Children often create collaborative environments around their video game playing which gives them “in room” opportunities to meet up with their friends, work together and share knowledge of the game play.

Gamers under the age of eighteen spend approximately 61 percent of their game time playing with family and “real-life” friends rather than with strangers or alone (McGonigal, 2008). Making friends is a motivating factor for children who play online games, whether they play to compete or connect with other children. Whether or not they ever meet in real life does not lessen the connection felt by online gamers. Children gain a level of satisfaction from teaching others how to play through mentorship. “In peer-based learning, young people congregate around common interests and motivate one another to learn through a combination of affiliation and competition” (Olson, 2010, p. 182). When children are playing a good video game they are highly engaged, which puts them in the right frame of mind to create positive experiences and emotions. Video games make children happy, and this positive engagement makes it possible for them to think positively, build personal strengths and make social connections (McGonigal, 2011).
Video games should be a fun activity in which children play a central role. “If children are playing video games in such a way as to learn actively and critically then they are learning to experience the world in a new way” (Gee, 2003, p. 45). When they have a need for physical activity and outdoor social interaction they will return to traditional, non-electronic games. The technology that children play with and are exposed to today can be irresistible and addictive. There is nothing wrong with children playing these games, but they need to be taught to set boundaries and strengthen the will power it takes to stop and set them aside. With the help of their parents, children can set these boundaries and learn how to create a sense of balance in their lives.

Chapter III

The Researchable Question

Due to the importance of unstructured, outdoor play in children’s lives, the following researchable question and sub problems are presented:

How can digital media and unstructured, outdoor play be integrated in order to foster healthy child development?

1. How can children’s interests in current digital media devices be utilized in order to inspire them to go outside and play by their own free will?

2. How can parents be empowered to become more involved with their children’s outdoor play experience?

3. How can tools be developed for parents that will enable them to be more aware of the time their children spend indoors with digital media?
Based upon primary and secondary research, a mobile application has been developed specifically for both the iPod and iPhone that both children and parents can utilize in order to help increase the balance between digital media use and outdoor play experiences. The focus of this research is boys and girls between the ages of 8 and 12 years of age in Northeast Ohio, as well as their parents.

Chapter IV: The Mobile Application

Mobile Devices and Game Play

There are 183 million active gamers in the United States alone (McGonigal, 2011). Media use among American youth has exploded due to both the transformation of the cell phone into a gaming and media content delivery platform as well as the increased presence of the iPod and other MP3 devices in their lives. “Over the past five years, the proportion of 8- to 18-year-olds who own their own cell phone has grown from about four in ten (39%) to about two-thirds (66%). The proportion who have iPods or other MP3 players increased even more dramatically, jumping from 18% to 76%” (Rideout, et al., 2010, p. 3). Cell phones have changed from a means of verbal communication into a way to consume more media.

“One of the things that makes video games so powerful is their ability to create whole worlds and invite players to take on various identities within them” (Gee, 2003, p. 139). Players get to try out new identities that help to test some of their assumptions about the world as well as about themselves. Genre differences and technological complexities aside, all games share four defining attributes: a goal, rules, a way to provide feedback and voluntary participation among its players. Games not only provide
enjoyment in the moment, they provide an emotional reward. Gamers are not playing
games to escape their real lives, they are actively making their real lives more rewarding.
A balance can be found between playing a favorite video game and making the most of
our real lives (McGonigal, 2011).

**Children and Video Games: Health Impact**

Compared with radio, books, film, and other media, a surprising number of emotional,
intellectual, and social needs of children are being met by electronic games. The personal
habits, quirks, and situations, both physical and social, in which children play video
games influence how they interact with the games and those experiences may impact the
adults they become (Olson, 2010).

Children explore everything they encounter from found and natural objects to
man-made or living things (Smidt, 2011). Children learn what they can from the stories
and images that are familiar to them, and doing this by using existing cultural materials
that are available to them, such as video games, allows them to hone their skills, master
their craft and communicate their ideas (Jenkins, 2006). “Children who play video games
develop sophisticated problem-solving and communication skills in virtual worlds
beyond the experience of many parents” (Collins & Halverson, 2009). Different children
have a passion for many different things, and whatever their interests may be, allowing
them to pursue these interests can develop capabilities that may be highly useful later in
their lives.
**Children and Video Games: Social Impact**

“Games form a central element of people’s lives. Participating in games provides the individual with the opportunity to experiment, develop initiative, learn social skills, and perform at one’s personal best” (Westland & Knight, 1982, p. 51). According to the PEW Internet Study, 59% of video games are played in multiple ways: 42% are played with friends in person, 15% are played with friends online and 42% are played alone. The study goes on to say that 47% of online gamers play with people they know from their school or neighborhood and offline friends (PEW Internet & America Life Study, 2009).

Children actively make connections between in-game events and events in their everyday lives. They create an incredible mixture of learning arrangements among themselves while playing video games, and collaborate with each other across a gaming system rather than having solo interactions with it (Salen, Stevens, 2008). By playing freely with other children, both online and off, children master social skills, learn how to solve problems and be self-confident. Prosocial, or feel-good emotions such as compassion, love, devotion and admiration are usually directed toward others, and are important for our long-term happiness as they foster lasting social bonds. “Most of the prosocial emotions that we get from gaming today are not built into the game design, they are a side effect of spending more time playing together” (McGonigal, 2011, p. 82).

**Children and Video Games: Control**

“Games help put people back in control. Real gameplay is always by definition voluntary; it is always an exercise of our own freedom. Progressing toward goals and
getting better at a game instills a sense of power and mastery” (McGonigal, 2011, p. 149). An important aspect of game play is the idea of ownership and the ability of children to take control over finding the answer to a question or problem that interests them. Game play is self-chosen and allows children to stay deeply involved and interact with the play for as long as they deem necessary (Smidt, 2011). “We need to rethink the goals of media education so that young people can come to think of themselves as cultural producers and participants and not simply as consumers, critical or otherwise” (Jenkins, 2006, p. 259). To achieve this goal, parents, who receive lots of advice on whether their children should have a television in their room or how much media they should consume in a week, need to learn to help their children build a meaningful relationship with digital media instead of limiting its use. “It is important that children, somehow, be involved as active participants in the decision-making processes relative to the matters that affect them” (Westland & Knight, 1982, p. 4-5).

**Parent’s Involvement: Spend More Time Playing with Children**

In this modern world, children are experts in areas where parents are only novices. Many children have mastered the domain of computers because of video game play, while, in some cases, the adults at home are intimidated by them (Gee, 2003). Children need adults who understand the connection between boredom and creativity, ones who are willing to spend time with them both outdoors and in, but are also willing to set the stage so that their children can create their own play experiences (Louv, 2008).
Parents who share unscheduled time with their children and who play with their children are supportive, nurturing and productive (Ginsburg, 2011). With video games, it is easy to organize games with others because you do not have to be online playing at the same time, and it does not matter where you are or how busy you are. Video games make it possible to keep up with the game by playing only a few minutes a day. “By keeping running games going with your real-life friends and family, you’re ensuring daily opportunities to actively connect with the people you care most about” (McGonigal, 2011, p. 78).

**Parent’s Involvement: Letting Kids Go**

Boredom is a natural state that motivates children to find something to do and arouses their growing curiosity. Unfortunately, over-supervised children tend to be unable to think of anything to do on their own. “Our parental duty from the moment our children are born is to prepare them to function without us” (Marano, 2011, p. 442). Play not only does amazing things for the development of the brain, it is also important in providing children with the social skills used in many types of situations that help shape an entire generation (Marano, 2011). A balance must be found between adult supervision and direction and natural childhood boredom. Too much can lead to trouble, and too much adult supervision can hurt constructive boredom and the creativity that accompanies it (Louv, 2008). When children gather without the presence of an adult, they need to decide what to play, learn to negotiate, agree on an activity and how play will proceed. They must work together while taking into consideration their feelings for each other in a scenario that they create on their own.
Parent’s Involvement: Motivation Through Reward

Free choice and minimal adult intervention go hand-in-hand, and they are necessary conditions for children being intrinsically motivated (Lancy & Grove, 2011). “A good video game adapts to the level of the player, rewards different players differently (but rewards them all) and often stays at the edge of the players’ regime of competence” (Gee, 2003, p. 121). There are four categories of intrinsic rewards which include:

- Craving satisfying work
- Craving the experience or the hope of being successful
- Craving social connections
- Craving the opportunity to be a part of something bigger than ourselves.

These intrinsic rewards are the basis for optimal human experience. They are ways of interacting with the world around us, with our environment and with other people. With video games, positive emotions can be induced for everyone who plays, and feelings of satisfaction, pride and social connection become renewable resources. With video games, you can reward more people more often when the goal is an intrinsic reward (McGonigal, 2011).

Parent’s Involvement: Being Aware

According to the PEW Internet & America Life Study, 90% of parents say they always or sometimes know what games their children play, and 46% say they always or sometimes stop their kids from playing a game (2010). When parents impose general media restrictions, children spend less time with media. Some parents do not allow television in their child’s bedroom, or do not allow the television during meals. “Parents make numerous decisions about their children’s media environment: how many TVs,
computers and video games they buy for the home; whether their kids have cell phones and iPods; and whether they establish rules about their children’s media use” (Rideout, et al., 2010, p. 35). These decisions create a certain type of media environment in the home which help to form behaviors and habits for children, and the amount of time children spend with media is strongly related to the media environment in which they grow.

In her book, Reality is Broken, Jane McGonigal writes, “We clearly need more social conjunctions in our lives. As numerous economists and positive psychologists have observed, globally we make the mistake of becoming less social the richer we become as individuals, and as a society” (2011, p. 80). She goes on to say that, “The greatest source of happiness is other people.” Games are purposefully designed to reinforce the connections within our social networks.

Chapter V: Primary Research

Personas

Physical as well as online surveys, were conducted and given to 54 participants, including boys and girls between the ages of 6- and 13-years-old, in order to discover how much time they spend indoors using digital media, as well as how much time they spend outdoors in unstructured, outdoor play activities. A second online survey was completed by 20 parent participants in order to develop secondary personas based on the parent’s role in fostering or inhibiting their child’s unstructured, outdoor play experiences.

Data from the surveys was analyzed and placed into affinity diagrams in order to create primary personas which would be used to create working scenarios. Three primary
personas were developed and represent children who are always playing video games and do not spend time outdoors (figure 1), children who play video games but also spend time outdoors (figure 2), and children who do not play video games at all and love to be outside (figure 3).

**FIGURE 1: Primary persona 1, Victor**

**Victor/Always wants to stay inside**

- **Age:** 11
- **Grade:** 5th
- **School:** Private School
- **Hobbies:** Video games, reading, building avatars
- **Favorite Movie:** Star Wars series
- **Favorite Sport:** I don’t really have one

“Video games are addictive!”

Ever since he could remember, Victor has been playing with digital media; from his first Leap Pad to his Nintendo DS to his current XBox where he plays complex games such as Halo and Call of Duty online with his friends. He will spend all day playing some type of video game unless his parents initiate him going outside and set limits on his electronic use. He loves the graphics of video games and the fact that you can play sports via the XBox and not get “hurt”, which can happen when you play in real-life. He also doesn’t like to get, “all hot and sweaty.” He would agree that video games are addictive, and sometimes has trouble separating himself from his games and focusing on schoolwork. His parents wish that he would go outside more and interact with his friends “off-line”.

**Goal:** To find the motivation to want to spend more time outdoors
Jeremy / Equal time spent indoors and outdoors
Age: 12  
Grade: 6th  
School: Public School  
Hobbies: Playing basketball, video games  
Favorite Movie: Captain America  
Favorite Sport: Basketball

“I love hanging out with my friends.”

Jeremy can’t remember a time where there wasn’t some form of digital media in his home. He received a Nintendo DS from Santa when he was 6, and since then has moved up to a PlayStation3 videogame console. He is very active and involved in sports and loves going outside to shoot hoops or ride his bike. When his friends come over they often choose to stay indoors and play Halo or NBA 2011, even if the weather is nice outside. Sometimes Jeremy would rather be playing with his friends outdoors, but succumbs to their wishes and doesn’t mind being the one to compromise and stay inside. He thinks video games are really fun and they often consume his free time during the winter months when it’s cold out. Jeremy also enjoys watching TV and listening to music on his iPod.

Goal: To balance his love for being outdoors with his love of playing video games

FIGURE 2: Primary persona 2, Jeremy

Rebecca / Always wants to be outside
Age: 9  
Grade: 3rd  
School: Private School  
Hobbies: Reading, making jewelry, drawing  
Favorite Movie: Harry Potter movies  
Favorite Sport: Basketball

“Being outside is awesome. I don’t know why kids spend so much time playing video games.”

Rebecca is proud to call herself a “tom-boy”. With 3 older brothers it’s hard not to be. She loves doing anything outside at any time of the day. She is often the last one to come inside, and that’s only after her parents ask her more than once. She is very active and likes to play all kinds of sports, but especially enjoys playing soccer. She often asks her older brothers to come out and play but finds them too busy playing their Xbox to pay any attention to her. Her friend Amanda, who goes to the same school and lives two-doors down, comes over to play outside but often tries to get Rebecca to play video games inside with her instead. Rebecca really doesn’t like video games and often chooses to play by herself.

Goal: To find a way to connect with her friends who love to play video games

FIGURE 3: Primary persona 3, Rebecca
Three secondary personas were developed from the parent surveys and represent parents who are over protective and do not prefer letting their children play unsupervised (figure 4), parents who let their children play unsupervised but still want to be able to check-in on them (figure 5), and parents who are worried about the amount of time their children spend using digital media (figure 6).

**FIGURE 4:** Secondary persona 1, David

David / Over-protective

*Age:* 45  
*Children:* Sarah, age 10  
*Occupation:* Sales Manager

“The world is a scary place. I want to know where my daughter is at all times.”

David has always been career oriented and never expected to have children. He was in his mid-30s when his daughter was born, and now that he’s a single father he knows Sarah will be his only child. He is very busy with work and taking care of the house and doesn’t always make time to play with Sarah. He is also very over-protective and is worried about stranger-danger and feels that the world is a scarier place than it was when he was growing up, especially for girls. Sarah often asks to play at her friends’ houses after school but David does not feel comfortable letting her do that while he is at work. One of Sarah’s friends only lives two blocks away and Sarah often gets upset with her dad because her other friends are allowed to walk over by themselves.

**Goal:** To spend more time playing with Sarah outdoors and learning to give her some freedom.
Vanessa / Modern & Flexible
Age: 38
Children: Jeremy, age 10 & Megan, age 7
Occupation: Account Executive

“I want to give my children their freedom, but still like to reach them for my own peace of mind.”

Vanessa is very laid back and carefree and allows her son to walk to his friends’ house or the local park whenever he wants. He has a cell phone, so she can reach him at all times, but she doesn’t like interrupting his play. She trusts her children and from a very early age taught them to be aware that there are dangers in the world, but lets them, especially her son, learn to use his own good judgement with the decisions that he makes.

Goal: To find a way to monitor her kids while not interrupting their free play.

FIGURE 5: Secondary persona 2, Vanessa

Julia / Concerned
Age: 37
Children: Victor, age 11 & Matthew, age 5
Occupation: Homemaker

“My son spends way too much time playing video games on his Xbox.”

Julia is happy to be able to provide her children with the things that they desire, but is regretting buying Victor an Xbox for his 11th birthday. It has consumed his life and besides school and homework it’s all he spends his time doing. Her 5-year-old is always playing outside and she wishes that Victor would go outside and play as well, whether with his brother or with his friends in the neighborhood. She doesn’t think Victor realizes how much he plays and would like him to find a balance between the two.

Goal: To get her son away from the Xbox and outdoors to be more active and social with his friends.

FIGURE 6: Secondary persona 3, Julia
Scenarios

Three scenarios were created in order to develop wireframes around the three sub-problems discussed along with the researchable question. User testing was conducted by using a method called paper prototyping. Based on the results, interface prototypes were designed following a personas intended trajectory through the interface, considering goals, function, context and motivation.

Scenario 1

Goal: To get Victor away from his Xbox and outside to play with his friends.

Motivation: It is Saturday afternoon and Victor is playing his Xbox. He has been playing all morning, and his mom, Julia, is trying to persuade him to go outside and play. He decides to grab his iPod and see if any of his friends are playing nearby. He opens the OhSnap! app and sees that his friends Jeremy and Scott are playing in the park 2 blocks from his house. He sends them a message through the app to tell them that he is on his way. Victor then tells his mom where he is going and she asks him to check-in in one hour. Julia logs in to the OhSnap! app on her iPad to see that Victor has reached the park safely and is with his friends.

Context: Victor, Jeremy and Scott decide to message three more friends who live close by to see if they want to play Hoops Word Challenge with their iPods. In a few minutes the three boys show up and Victor shakes his iPods to pick a word. They play the first word, HORSE, mark Jeremy as the winner and decide to shake for another word. After an hour of play Victor gets an alert on his phone to check-in with his mom. Julia
thanks him for checking in and tells him that he can play for one more hour. At this point he is having so much fun he has forgotten about his Xbox at home.

*Study #1:* Create an interface design for the iPod app that will get the kids motivated to play outdoors (figure 7).

**FIGURE 7:** Scenario 1 interface designs, iPod version
**Scenario 2**

**Goal:** To empower parents to become more involved with their children’s outdoor play experience.

**Motivation:** It is a beautiful Saturday and David is busy cleaning the house. He notices Rebecca is moping around and decides to ask her if she wants to do something fun. Sarah happily says yes, pulls out her iPod and asks if they can go to the park and play “Treasure Hunt”. David grabs his iPhone and they head to the park which is only 3 blocks from their home.

**Context:** “Treasure Hunt” is a game in the OhSnap! app that uses the camera on the iPod and iPhone in order to create a log of the items that you find according to the map the game gives you. In this case, David and Rebecca login to the app, choose the game “Treasure Hunt” and specify that they are in a local park. There are many other categories including in the house, at the beach, in a forest, etc. Once they get their list, they both rush to find the most items first in the allotted amount of time. When the time is up they run back to each other and compare lists. Rebecca won the game this time, by collecting images of 8 out of the 10 items on the list. She will receive points that she can use to purchase items for her avatar, and build up her Nature Badge. As they decide to return home so that David can get back to his housework two of Rebecca’s classmates enter the park and walk over to say hello. They have their iPods and were going to play another game on the app. Rebecca looks at her dad with a pleading look, and he decides to let her stay and play for 30 minutes, and he will be back to walk Sarah home. As David
walks home by himself he logs back into the app in order to locate Rebecca on the map and make sure that she remains safe in the park.

Study #2: Create an interface design for the iPhone that parents use to get involved with their kids’ activities and to monitor where they are when they go outside.

FIGURE 8: Scenario 2 interface designs, iPhone version
Scenario 3

Goal: Create a section in the app where parents can monitor and be mindful of the time their children spend indoors with digital media.

Motivation: Jeremy often struggles to balance his video game time with time spent outdoors. His friends are “gamers” and he tends to give in and play inside rather than going outside and playing basketball, football or riding bikes. He is excited to use the time tracking part of the OhSnap! app so that he can really see how much time he spends playing video games indoors. Vanessa, his mom, also likes the fact that Jeremy can use the app for time logging purposes and plans to do so herself in order to help Jeremy and track his time as well.

Context: Jeremy wakes up, eats breakfast and sits down to play Halo on his Playstation. Before he begins he logs his start-time on his iPod using the OhSnap! app. His mom sees him start to play and logs in to the app on her iPhone. After an hour or so, Jeremy gets a message telling him that Victor and Scott are at Scott’s house playing basketball. He shuts down his Playstation, logs his time and asks his mom if he can go over to his friend’s house. She agrees, and tells him to check-in in an hour. She also records his stop time on her iPhone. Jeremy, Scott and Victor play “Shoot The Word”, and record their wins and losses in their iPod apps. The points earned go toward badges and rewards in which they can purchase items for their avatars. Jeremy ends up playing at Scott’s house for most of the afternoon, and at the end of the day earns bonus points on the app for spending more time outdoors than indoors. This further encourages Jeremy to
keep logging his time, both indoors and out. Vanessa notices that Jeremy spent more time outdoors than in, and decides to reward him with an extra helping of dessert after dinner.

*Study #3 Wireframe:* Create a wireframe for the iPod/iPhone/iPad that parents and kids can use to monitor their digital media use as well as check their progress in their profile and enter their information to use their points and awards, etc (figure 9).

**FIGURE 9:** Scenario 3 wireframes, iPhone version
Chapter VI: Design Rationale

Bringing Children’s Digital World and Outside World Together

Following primary and secondary research it was determined that the deliverable would be a mobile application that is be utilized on the iPod, iPhone and iPad, called “OhSnap!”

Adventure is an important part of growing up and by adding aspects of adventure to their play, children learn to explore, experiment and test the world in which they live (Westland & Knight, 1982). Outdoor play activities help relieve boredom and stress and fulfills a child’s natural urge for adventure. The most successful outdoor play experiences occur when children have free choice, are on their own terms, and occur without adult supervision or guidance (Clemens, 2004). OhSnap! (figure 10) is an open world virtual adventure game in which the players choose the games they want to play in an outside environment, with the aid of their mobile device. Games include Treasure Hunt, in which children choose their location and a time limit, and the app automatically chooses items for the children to find. They race to locate the object, take a picture of it, and try to be the first to find all of the objects to win the game. This game can be played and enjoyed by children of all ages, including adults. Other games revolve around objects that children may already be used to playing

FIGURE 10: OhSnap! home screen, iPod version
with such as basketballs, jump ropes and hula-hoops (figure 11). OhSnap! brings an interactive element to game play that fosters healthy competition which motivates children to potentially play outdoors more, and for longer periods of time.

Play is a natural means of making friends, and the current decline in play is a cause and consequence of increased social isolation in today’s culture (Gray, 2011). “Studies suggest that children who spend more time playing outdoors have more friends” (Louv, 2008, p. 79). Shared experiences bring about the deepest friendships, particularly in environments in which all of the senses are stimulated. Children by nature want to play with other children. Social play makes children happy, and teaches them to get along with others as equals (Gray, 2011). Play has become a means for the development of a sense of neighborhood and a feeling of belonging. “When kids look outside and there is no-one to play with, they often opt to stay indoors. This causes a vicious cycle of children being indoors watching TV, texting and playing video games” (Skenazy, 2011, p. 427). OhSnap! is a location-based game that instigates successful outdoor play by enabling children to see when their friends are playing nearby so that they can join in and invite other friends to play (figure 12). It gives children the ability to improve their

FIGURE 11: OhSnap! game screen, iPod version
outdoor play experience which, in turn, helps to improve their quality of life in the future (McGonigal, 2011). “A good location-based game can transform any space into sites of intrinsic reward” (McGonigal, 2011, p. 152).

An added benefit to playing outdoors with technology is that it allows the children to add virtual game objects and characters to the game to enhance their experience. OhSnap! has an avatar, or character building element in which players can make a character out of themselves and earn rewards in order to buy new outfits or accessories for their character (figure 13). Parents can motivate and reward their children for time spent outdoors by giving them reward points that they can use with their

FIGURE 12: OhSnap! find a friend screen, iPod version  
FIGURE 13: OhSnap! avatar screen, iPod version  
FIGURE 14: OhSnap! time tracker, iPod version
avatars. Children also earn rewards by winning games and successfully monitoring the time they spend both indoors and out using the Time Tracker section in the mobile application (figure 14).

An added benefit for parents is the application’s ability to let them see where their children are playing, and who they are playing with, so they can have peace of mind knowing that their children are safe, while still allowing them the freedom they need to participate in unstructured, outdoor activities. The Time Tracker gives parents the opportunity to monitor how much time their children are spending both indoors and out, and it fosters communication between parent and child as they compare time logs and become more involved in their child’s day-to-day activities.

Chapter VII: Future Goals and Conclusion

In order to continue my research in using digital media to foster healthy childhood experiences, continued development of the OhSnap! mobile application will be explored as well as the possibility of transforming it from a working prototype to an existing app that will be available in the Apple App Store. Further research and investigations are needed to bring the mobile app to its true potential, including:

1. Further develop and build out the time tracking aspect of the app, including how time is entered and logged, how time logs are compared between parent and child as well as how they monitor time spent during a longer period of time.
2. Further develop and build out the rewards system and dig deeper into the motivation that reward plays in getting children to voluntarily get up and go outside to play.

3. Design a version of the app for the iPad that would be for in-home use by the parents.

4. Design and build a website that would act as a sales and marketing tool for the app. The url [www.ohsnapgameapp.com](http://www.ohsnapgameapp.com) has been purchased in preparation for this to become a reality.

“Video games are a new form of art. They will not replace books; they will sit beside them and change them and their role in society in various ways, as, indeed, they are already doing strongly with movies” (Gee, 2003, p. 204). There are two distinct sides in the video game debate: one labeling them as anti-social and mind-numbing, the other as a bountiful source of new cultural production, positive identity shaping and learning (Salen, Stevens, 2008). The reality is that children of this generation play video games and have thoroughly integrated them with all aspects of their lives. “Televisions, computers, cell phones and more are here to stay. They have created a new virtual world that requires a new form of adaptation. But that adaptation is strongest and healthiest when it is built on a firm foundation of knowledge about the real world. And that solid foundation of knowledge about the real world can only be acquired through spontaneous, self-initiated outdoor play” (Elkind, 2006, p. 9).

Small, portable devices, such as the iPod or iPhone, are easily incorporated into outdoor game play for children. The design of OhSnap! encourages outdoor, physical
activity, social interaction, and the ability for children to choose and modify their game play at any time. A mobile application such as OhSnap! will work to encourage social interaction and motivate children to be involved in physical, outdoor activities that are unstructured and self-initiated. It will create an overall fun experience that children will freely and readily participate in over and over again, while at the same time fostering an appreciation for the outside world and giving children the opportunity to develop into well-rounded adults.
Appendix 1

Surveys

The following survey was given to 6- to 13-year-olds who attended a Game Design Camp at Kent State University on July 5, 2011. Since only 20 surveys were completed at the camp, it was also placed online using Qualtrics.com to reach more children through the use of their parent’s email addresses. The survey results were analyzed and used to create primary personas.

Research Survey Child:

Study Title: Digital Media and Outdoor Play

Principal Investigator: Amy Peck

Please fill out each question as best as you can.

1. How old are you? _____ years

2. Are you a boy or a girl? _____ boy _____ girl

3. What grade are you in? ______ grade

4. What grades do you usually get in school? (Check one)
   ______ Mostly A’s
   ______ Mostly A’s and B’s
   ______ Mostly B’s
   ______ Mostly B’s and C’s
   ______ Lower than C’s
   ______ My school doesn’t use grades
   ______ I am not in school yet
5. Add a check mark if you have the following items in your home:

_____ Television
_____ Cell phone
_____ Video game console: _____ Xbox _____ Playstation _____ Wii _____
   Other: ______________________
_____ Digital Camera
_____ Computer
_____ iPod / mp3 music player
_____ Video camera
_____ Handheld game device: ____ iPod touch ____ PSP ____ Nintendo DS ____
   Other: ______________________

6. Do you have the internet in your home? _____ yes   _____ no

7. Thinking about just yesterday, how much time did you spend (your closest guess is fine):
   A. Playing video games? _____ hours _____ minutes
   B. Watching TV? _____ hours _____ minutes
   C. Playing outside? _____ hours _____ minutes

8. Do your parents tell you how long you can spend playing video games during the day?
   _____ yes _____ no _____ I don’t have any video games in my home

9. If you play video games, what are your favorites? (Please list)

10. Do your parents tell you how long you can spend watching television during the day?
    _____ yes _____ no _____ I don’t have a television in my home

11. Do your parents tell you how long you can spend playing on the computer during the
day?
    _____ yes _____ no _____ I don’t have a computer in my home

12. What types of activities/games do you play on the computer? Are they educational
games, RPG type games, or something else? (Please list)
13. Do you like to play outside? ______ yes ______ no
   – If yes, what do you like to do while outside?

14. If you had a choice, would you stay inside and play video games or would you go outside and play with friends? ______ inside ______ outside

**Research Survey Child: Results**

If your child had a choice, would they stay inside and play video games or go outside and play with friends?

Do you tell your child how long they can spend watching television during the day?

Do you tell your child how long they can spend playing video games during the day?
Research Survey Parent:

Study Title: Digital Media and Outdoor Play

Principal Investigator: Amy Peck

Please fill out each question as best as you can.

1. How old is your child? ______ years

2. Does your child enjoy playing outdoors? _____ yes _____ no

3. Do you let your child play outdoors unsupervised? _____ yes _____ no
   If answered no, why not? ____________________________________________

4. Does your child have friends who live within walking distance of your home
   _____ yes _____ no _____ not sure

5. If you knew your child was playing with other children, would you be more apt to let
   them play outside unsupervised?
   _____ yes _____ no _____ not sure

6. Recall back to when you were a child. Did you often play outdoors unsupervised by
   your parents? _____ yes _____ no

7. Do you think that the world is a more dangerous place than it was when you were your
   child’s age? _____ yes _____ no
Research Survey Parent: Results

Do you let your child play outdoors unsupervised?
- 19% No
- 81% Yes

What factors prevent you from letting your child play outdoors without adult supervision?
- 33% Worried about strangers
- 67% Children are too young

Does your child have friends who live within walking distance of your home?
- 31% No
- 69% Yes

Do you let your child walk by themselves to their friends’ house?
- 9% No
- 91% Yes

If you knew your child was playing with other children, would you be more apt to let them play outside unsupervised?
- 19% Not Sure
- 6% No
- 75% Yes

Do you think that the world is a more dangerous place than it was when you were your child’s age?
- 25% No
- 75% Yes
Appendix 2

Process sketches for wireframe development
Appendix 3

Wireframes for the iPod/child version of the mobile app
Appendix 4

Wireframes for the iPhone/parent version of the mobile app
Appendix 5

User testing/paper prototypes:

Once personas and scenarios were created, wireframes of the interface were designed and made into a paper prototypes of both the iPod (child) and iPhone (parent) versions in order to perform user testing. Five children between the ages of 9 and 11 and five parents between the ages of 35 and 51 were asked to walk through the paper prototype and answer questions about how they would navigate the app. Results for the iPod version showed that the children understood all of the buttons for the navigation as well as what each section represented and how to go from one part of the app to another. There were no revisions that needed to be made. For the adult version, some adults didn’t know what an “avatar” was so I changed the name of that section to “My Character”. Otherwise there were no other questions or concerns about the interface and it’s flow.
Appendix 6
Annotated interface designs

1. Clock to check the time
2. Quick call or text message to primary parent
3. Button leads to “My Profile”
4. Button leads to “My Friends”
5. Button leads to “Games”
6. Button brings you back “Home”
Appendix 7

Interface designs for the iPod/child version of the mobile app
Appendix 8

Interface designs for the iPhone/parent version of the mobile app
Appendix 9

Research concept map

healthy child development:
- child needs to negotiate life on their own
- play is important for healthy brain development
- through play children become socially adept
- Confidence is built through play with others

outdoors (nature)
- senses, learning, creativity
- stimulate all the senses
- freedom, fantasy, privacy
- direct experience
- sense of community

physical & mental health

imagination + healthy child development

play + kids

digital media

essential for

digital media:
- 97% of kids have played video games
- 70% play online with others
- experience the world in new ways
- encompasses today's culture

play:
- teaches life-long skills
- encourages imagination
- teaches gameplay
- wholesome child development

video games

integrate with

balance between
Appendix 10

Thesis poster: Research

The Design Problem:
How can digital media and unstructured, outdoor play can be integrated in order to foster healthy child development?

Concept Map (see next page)

Using highlights from my secondary research, I formulated a research plan in order to better understand the problem and how a fixed connection, that would help me create a successful intervention, that could solve the design problem and move toward achieving my goals.

Surveys
As part of my primary research, surveys were conducted on both children and their parents to get more information about children's habits when it comes to the digital media use in their lives and how they balance it with outdoor play.

A separate round of surveys went out to parents to further investigate how they manage their child's outdoor play experiences and whether they see their (child's) play outdoors unstructured or not, and why.

After analyzing the survey results, I came up with the three primary and three secondary personas below.

Primary Personas

Victor / Apprentice wants to stay inside

Junior / Good time spent indoors and outdoors

Delilah / Always wants to be outside

“Video games are addictive!”

“I love hanging out with my friends.”

“Being outside is awesome. I don’t know why kids spend so much time playing video games.”

Secondary Personas

David / Overprotective

Wences / Modern Fathers

Julia / Concerned

“Right now I want to know where my daughter is all times!”

“I want to give my children their freedom, but still like to watch them for my own peace of mind.”

“Mus spends way too much time playing video games on his Zbox.”

Scenarios

The following scenarios (informed from original) will be used to create scenarios for usability testing as well as for animated walkthroughs in the deliverable concepts and further developed. The scenarios utilize the personas and put them into context.

Scenario 1:
Goal: To get Victor away from his Zbox and motivate to play with his friends.
Study: Increase scenario that will get the kids motivated to play outdoors.

Scenario 2:
Goal: To encourage parents to become more involved with their children’s outdoor play experiences.
Study: Create a storyline for the phone that the parents will use to get involved with their kids’ outdoor activities and also help guide parents and children understanding how they are outside playing.

Scenario 3:
Goal: To encourage parents to become more aware of the time their child spends with digital media.
Study: Create a storyline for the phone app that parents can use to monitor and be more aware of the time their children spend with digital media.

Bibliography


Appendix 11
Thesis poster: Wireframes

Wireframes and Paper Prototyping for User Testing:

- Wireframes for my Oh SNAP! mobile application were created based on my thesis studies.
- In order to help me develop the mobile app, I decided to make paper prototypes of both a child version with the iPod and parent versions with the iPhone and test the interface to find any inconsistencies or problem areas.
- Users were chosen based on the 3 primary child personas and 3 secondary adult personas.
- After the results of the user testing were analyzed, I will be able to refine any problems areas and begin working on design concepts for the final product, and perform a second round of user testing with working prototypes of the app on actual Pods and iPhones.

User Testing Participants:

- Max: Age 11
- Emma: Age 11
- Bob: Age 55
- John: Age 42
- Gary: Age 15
- Mary: Age 50
- Olivia: Age 10
- Nicole: Age 40

Proposed Thesis Studies:

- Utilize children's interests in current digital media to create a safe environment where children can play by their own free will.

![Diagram of wireframes and paper prototypes for user testing.](image-url)
Appendix 12
Thesis poster: Design Interface

Final prototype design:
- Based on results from user testing, the wireframe designs, appropriate revisions were made and interface concepts were developed and finalized.
- Using Keynote, the concepts will be developed into working prototypes that will be loaded onto iPads and iPhones for a second round of user testing.
- The interface designs will also be used to create walk-through videos which will run through each of my three scenarios.
- Examples of the interface designs are shown below.

iPod Kids’ Interface:
The following screens show some examples of what the kid’s main interface screens will look like. Other games include Hide & Seek, Capture the Flag and Hula Hoop.

iPod Game Interface:
The following screens show some examples of how the Treasure Hunt game will work. Other games include Hide & Seek, Capture the Flag and Hula Hoop.

iPhone Parent Interface:
The following screens show some examples of what the parent’s main interface screens will look like. Parents also have access to the games that are on the kids’ interface.

Future Projects:
• Further develop and build out the time tracking aspect of the app.
• Further build out and develop the rewards system and dig deeper into the motivation piece around play and getting children to voluntarily get up and get outside to play.
• Design a version for the iPad that would be used by the parents, in-office use.
• Further design and develop the app and move it from prototype to an actual working app that could be downloaded from the app store.
• Build a website that would act as a sales and marketing tool for the app.
References


