

***A Usability Analysis of Video Games:
The Development of Assessment Standards***

A THESIS

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BY

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ABSTRACT

THESIS: A Usability Analysis of Video Games: The Development of Assessment Standards

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Video games, as the fastest growing media, need set usability design standards. In this context, this study was motivated by the following kinds of questions: What makes a standard console game good? What makes it too frustrating to play? Each company has developed its own standards which can vary greatly. Game producers learn from experience what to do and what not to do. However, smaller companies that may have only produced a few games are left to chance. Moreover, startup game companies may fail at a game that would have otherwise succeeded if they had only had a set of standards to follow. Companies like Microsoft, Capcom and Electronic Arts rule the gaming industry mainly due to the fact that they have discovered what works. This study employs *usability analysis* to identify standards for assessing video game effectiveness, efficiency and player satisfaction. Experienced video game players participated in an online questionnaire. Conclusions about effective, efficient, and satisfying video games are derived from questionnaire results. Of several major findings presented in this

analysis, this study reveals that the beginning of the game is an imperative experience that can determine if a player continues the game.

Chapter 1: Introduction

This chapter is organized into three parts. In part one, the significance of video games as an object of study is highlighted. Video games are identified as an activity that can create a community and create and integrate a communication system worthy of examination. In part two, the research questions governing this analysis are identified, focusing on the responses of video game players as a central dimension for understanding what determines what is an effective, efficient, and satisfying video game. And, in the final third part of this chapter, the balance of this study is previewed by identifying the essential function of each of the four remaining chapters in this study. In this regard, our first undertaking is to identify the significance of video games as community and communication systems.

The Importance of Games

Video games have become a major electronic entertainment and educational medium (Squire, 2006). Several computer-mediated games were developed in the 1960s and the early 1970s--such as Steve Russell's 1962 *Spacewar* and Nolan Bushnell's 1970 *Computer Space* (Malliet & Meyer, 2005, pp. 24-25). In 1972, *Pong* was one of the first video games to reach midstream

popularity in the American culture. A tennis game, *Pong* provided a floating ball that could be hit back and forth between two video game players. This game appealed to people of all ages, but far more importantly, it seemed to create a sense of a community among its players. *Pong* seemed to link together a select group of people who shared a common form of entertainment, sought to develop commonly recognized competences, and ultimately seemed to constitute a unique sociocultural system. While seldom recognized at the time, the game also suggested that virtually anyone might manipulate and control a computer program, and that people made the difference in how computer programs were controlled and manipulated. In this sense, computers became part of everyday life for many people. For others, of course, a new industry was emerging, an industry that could be dominated by the games of just a few companies. For example, Malliet and Meyer (2005, p. 26) report that, "By the end of 1977, Atari controlled about 70 percent of the coin-operated market in the United States".

Now video games barely resemble the simple computer programs they once were. They have since grown into a thriving industry. Video games have become so complex that blockbuster games are planned similarly to a large production movie and require a similar budget and timeline (Tito, 2010). In 2008 alone in the U.S. the industry reached revenues of \$11.7 billion dollars (Entertainment software association, 2009). That year the movie industry only brought in \$9.6 billion (National Association of Theater Owners, 2009). On average children 8- to 18-years old spend one hour and 13 minutes playing video

games per day (Kaiser Family, 2010). 67% of American homes own a video game console and/or a PC used to run video games (Entertainment software association, 2010) and more than half of American adults play video games (Lenhart, 2008).

Video games have quickly become a form of communication. Similar to television, video games reach a vast majority of people of all ages. They have been used in the past as a way to convey political messages such as video games created to promote a US Presidential Candidate (Bogost, 2007). Video games can also teach morals and inform people of things like the dangers of smoking (Bogost, 2007). Aneesh Chopra, the United State's first Chief Technology Officer, has stated that the administration intends to use video games as part of a strategy to improve science, technology, engineering, and math (STEM) education (Bogost, 2010). Many fields, such as education, business and government, have begun to use video games as tools to enhancing decision-making and learning (Penn State, 2008). In classrooms they are being used as tools to educate where students would otherwise find the topic boring (Hoppock, 2008). Students using video games are drawn in and learn while having fun Video games used as tools are also called *serious games* (Corbett, 2010). Students aren't just playing video games as a creative way of learning; they are also designing them. Since video game design combines many different fields to create one game it is being used as a practical means of teaching those elements and how they can work together. Katie Salen, a game designer, is the

director for an organization called Institute of Play which researches games and learning. Salen believes that “game design can be an interdisciplinary exercise involving math, writing, art, computer programming, deductive reasoning and critical thinking skills.” (Corbett, 2010).

In a more literal sense of the term *communication*, video games are one of the most widely used tools for online socialization and interaction (Moverley, 2009). First, for example, video games have begun to create communities or sociocultural systems in which the games themselves are just the medium employed that defines and determines how video game players interact. Online games, such as *World of Warcraft*, create virtual environments for players to gather and interact with each other. The increasing popularity of online games suggests that many communicate more eagerly through a virtual world than through more conventional means such as the telephone (Wolf & Perron, 2003). Additionally, video games now allow people to construct conceptions of themselves (e.g., avatars) that can influence and affect how they interact in subsequent face-to-face interactions (Yee, Bailenson, & Ducheneaut, 2009). Players choose who they want to be, without the many limitations set on people in the “real world” (Wolf & Perron, 2003).

Video games have also been accepted as a form of digital storytelling. Video games are new to this area of interactive storytelling, but are striving towards a goal where the player has control of the overarching story of a game.

At this point there is some control, many with the use of branching story trees, where the player controls minor changes in the story (Wolf & Perron, 2003). The increasing ability to allow more choices and options in a game now allows the players to control the story of the game more than ever before. In the game *Heavy Rain*, the player's decisions affect the game play throughout the story. The loss of a character takes away the use of that character in the plot and therefore changes the storyline of the game (Birmingham, 2010). Although there are many who debate whether a video game is considered more a part of the computer world or not many acquiesce that video games do indeed tell a story. The ESA's recent statement describes video games as "a form of expression as rich in content as books and movies." (Entertainment software association, 2010).

Doing it Right

So many companies become so engrossed in what they *can* do that they sometimes don't see what they *shouldn't* do. For some companies, usability is a key component to the advancement of their games. Microsoft has a lab completely devoted to videogame studies (Microsoft). They focus on usability, trying to find out what works and what doesn't in their games. This may be why they are one of the top three game companies in the United States (Consumer reports, 2010). Microsoft enjoys great success on games such as *Halo* (Yarrow, 2010). There are other companies that do usability studies, but usually smaller

companies can't afford it. What little they may do is typically focused on the functionality of the game they are currently developing. This may be a reason why so many small companies make so many crucial mistakes and don't seem to get off of the ground. The industry is still risky for the smaller companies with a 90% failure rate (Grimaldi & Marcelo, 2010). They are never given the chance to learn what to do and what not to do due to insufficient resources (Greenwood-Ericksen, Preisz, & Stafford, 2010). There are no set standards in the industry to warn companies away from key mistakes. Some have attempted to adapt generic usability studies to fit video games but usually comment that there are differences and the studies just don't completely fit (Barendregt & Bekker, 2006; Federoff, 2002).

As already indicated prior usability studies are proprietary and designed to maximize the profits of video game companies such as Microsoft. Beyond these proprietary explorations, usability standards designed to assess video games from public, cultural and societal perspectives are additionally required, and it is intended that this study can contribute to a more public dialogue about how users interact with video games. Hence, I seek to establish a set of standards that can be widely used. Since a full game has too many aspects for this project this thesis focuses on the beginning of a game, everything up to and including the first level of the game. The beginning is the most crucial part of a game. First impressions can make a huge impact on a player. One article proclaims "If the

player doesn't understand the basics . . . in two minutes, they'll stop playing” (Greenwood-Ericksen, Preisz, & Stafford, 2010).

In this sense, this analysis should be viewed as heuristic, exploring and seeking to devise a set of standards for judging and evaluating the crucial initial portions of video games. In chapter 5, some of these standards are formally articulated.

Video games are complex objects for analysis. On a technical level you there is the programming of the game itself, tying all of the elements together in an interactive medium controlled by the player. The art and animation provides the visual aspect essential to building the setting and atmosphere of the game. Sound gives the player a more immersed sensation while playing the game. Even such elements as vibration during key points add extra sensory input for the player. These are just the main sensory elements that form a game. Within this structure are the ingredients that make up the content of the game itself. Challenge, strategy, pace, consistency, goals, variety, humor and immersion are just a fraction of the elements combined to form a video game. The object of this study is to begin defining those that are potentially detrimental to the success of the game. For this reason war games are the most instructive for this study. War games have provided researchers with ample data in the past (Suellentrop, 2010). They have been used in the study of the uses of video games to increase hand-eye coordination and also the development of strategic thinking (Raessens

& Goldstein, 2005). War games are often considered the “blockbusters” of the industry (Suellentrop, 2010).

Preview of the Balance of this Study

In the second chapter a review of the studies conducted in the video game industry is provided, detailing the diverse nature of the research and demonstrating the lack of available research on game usability standards. Chapter three describes the mixed quantitative and qualitative methods of observation and questionnaires used in the study. The fourth chapter reveals the findings of the study. Six research questions were created in an attempt to find standards based on the three main principles of usability; efficiency, effectiveness and satisfaction (Tullis & Albert, 2008), to impose on the beginning of video games;

R1. Does the ability to choose the level of difficulty affect gamers' preferences for a game and/or the ability to learn that game?

R2. Do graphics have an impact on if someone chooses to play a game?

R3. Are tutorials and game manuals helpful in learning how to play a game?

R4. Does frustration from task failure affect the continuation of the gamers to play a game?

R5. Do gamers prefer games that openly direct each goal?

R6. How often do gamers complete the games they play and do they replay them later?

The final chapter notes the limitations of the study and states the heuristic propositions for the future.

Conclusion and Summary of Chapter One

Video games have become a sizable industry and therefore require a set of standards publicly available to aid in its development in the future. Because of the many elements combined in games this study needs to just focus on the beginning of the game as a starting point for future research.

Chapter 2: Literature Review

Focusing on research findings regarding the social uses of video games, this chapter is divided into three parts. Recognizing that video games have been with us for some thirty years, in part one, 'Video Games Past', an analyses of the social uses of earlier video games are considered. This chapter provides a history of video games from their inception to the newest generations of systems. In part two, 'Video Games Present', existing findings about the social uses of video games are summarized. And, finally, in part three, 'Implications and Conclusions,' generalizes are provided about the current state of video game research and how the analysis in this study contributes to the omissions and gaps in this research. Specifically, this chapter examines the evolution of video games, which leads to a discussion of how research analyses—based upon usability analyses--might focus on how video games can be improved.

Video games, although having been around for over thirty years, are still evolving in new ways. These ways are so dramatic that video games barely resemble the first games. The newest of the advances include adult video games and 3D technology (Gerrior, 2010; Parker, 2010). The primary focus and orientation of academic research is revealed, in part, in Raessens and Goldstein's 2005 451 page volume entitled the *Handbook of Computer Game*

Studies. Designed—in the words of the editors of the volume—to provide a “history of computer games, studies of their design, reception, aesthetics, cultural meanings, and social effects and uses” (p. xi), this volume predominantly focuses the reception, aesthetics, cultural, and social dimensions of video games. Only two of the 27 essays in this volume focus on evolution of computer game designs. Malliet and Meyer’s (2005, pp. 23-45) essay focuses on historical evolution of video game genres (e.g., military, maze, and climbing games) while Salen and Zimmerman’s (2005, pp. 59-79) essay examines how signs and structures within games can become meaningful to video game players. However, the evolution of video games in terms of usability—focusing on effectiveness, efficiency, and user satisfaction—is simply not provided in this volume. More broadly stated this is also a reflection of the final implication and conclusion reached at the end of this chapter.

Video Games Past

After a few developments in computer science, the first hit video game was made. While other video games introduced video games as detailed in chapter one of this analysis, *Pong* became made video games part of the American culture. *Pong* was an arcade game which was coin operated and sat in roller rinks and other gathering places, drawing people in like flies. It was a novel idea that was quickly expanded on, leading to the creation of the first hit home video game system in 1975, the *Atari* (Time, 2005). The game was comprised of

essentially two rectangles used as movable “paddles” controlled by the players with a square “ball” that was battered back and forth in the attempt to get it past the other player’s paddle. Although it was a novel approach to computer programs, which had until then been solely used for more practical applications, the game was simple and led to people becoming bored with it after a time. The recognition that video games can, indeed, become boring to users is one of the factors that contributes to the emerging significance of video game usability studies, for a usability analysis directly asks if and for how long a user is satisfied with a game (i.e., user satisfaction). However, during the end of the 1970s, the recognition of this boredom factor served to create a call for further development of entertainment programs.

By 1985, the invention had crossed the ocean and taken root in Japan. Nintendo, a company that had been struggling trying to find its niche, decided to try its luck with video games (Butler, 2007). The first system produced by the Japanese company was the *Nintendo Entertainment System* or *NES* (Nintendo). Now, a little over 25 years later, it is one of the biggest video game companies in the world. Their *Wii* system has sold 70 million consoles worldwide, which is more than the combined sales of the Sony’s *Playstation 3* and Microsoft’s *XBOX 360* (Daltorio, 2010).

Several other video game companies popped up over the following years. Nintendo released its next system, the *Super Nintendo Entertainment System* or

SNES and other companies released their own systems (Time, 2005). With better graphic abilities and more storage available on the cartridges the SNES changed what had previously been simple two-dimensional side-scroller games such as *Super Mario Bros.* to more visually in-depth games such as *Donkey Kong Country* (Time, 2005). Sega released its first system and then later the *Sega Genesis* (Sega corporation profile, 2010). Sega is predominately known for its *Sonic the Hedgehog* games. By the next generation another big company joined the stage when Sony released its first system, the *Playstation* (Sony Computer Entertainment America). The *Playstation* was the first system that utilized CD-ROM technology to be able to have better graphics and speed. It also introduced memory cards, in which players could save their progress. Previously the progress of the game was stored on the game cartridge itself, which limited how much could be saved and therefore how big the game was. The next generation introduced Microsoft's *Xbox*. The *XBOX* was Microsoft's first foray into the video gaming world but they quickly sold units and solidified their place in the industry. Now the video game industry is lead by the "Big 3": Nintendo with the *Wii*, Sony with the *Playstation 3* and Microsoft with the *Xbox 360* (Consumer reports, 2010). The cost of video games has increased through the years and now the usual price for a new game is \$59 (Snow, 2007).

The evolution of video games is characterized by three shifts. First, the design of the games became more elaborate, colorful, and detailed in ways that appeared to create user involvement. The first games were little more than

squares and rectangles manipulated for entertainment. Second, three dimensional games and high definition resolution have allowed games to become a major entertainment industry to rival the movie industry. Third, the games evolved from everyday reality to the creation of internal, dynamic, and relatively complete virtual realities. Video games keep evolving in ways no one could have ever dreamed about. Now, with Microsoft's newest achievement, the *Kinect*, an almost virtual involvement between the player and the game is possible (Xbox360, 2010). The *Kinect* allows the player to control games and other features such as cinema play without using a controller. Everything is controlled by hand gestures which are seen by a motion sensor. Along with the development of the technology of video games they have developed into different genres. The more traditional games where players jump and run toward a specific goal became the Action genre. These games included titles such as *Prince of Persia* and *Tomb Raider*. Survival Horror games like *Resident Evil* satisfy the players who like the thrill of being scared. Fantasy and RPGs (role-playing games) like *The Legend of Zelda* involve wonder and the impossible. Lastly First-person Shooters like *Call of Duty* and *Medal of Honor* gives the player the ability to become a soldier.

First-person Shooter games took off with games such as *Doom* and *Wolfenstein 3D* where the character travels through different corridors and rooms killing enemies. In the years following they shifted to the fantastic such as *Half-Life* and *Halo*. In the past ten years war games have joined the First-person

Shooter stage and have become the stars of the genre. The realism of these games draws people in more than almost any other game type. These games offer both the realism of reality and the story of fiction. Ian Bogost stated in an article concerning war games: “War is horrible *and* badass.” (Suellentrop, 2010).

Most of the changes in video games in the last thirty years have predominantly been based on “user satisfaction” based upon sales and apparently boredom of various games. The major game companies competed against each other in order to put out games and systems that were better than their competitors. This relied heavily on making sure their systems and games were adequately satisfying to their buyers.

Video Games Present

We seem to be shifting from “user satisfaction” to “effectiveness” as a standard for assessing video games, especially effectiveness in terms of social interaction and societal concerns for the safety of its citizens. The dominant research theme in video games centers on the belief that violence in videogames promotes aggressiveness and overt violent behavior in video game players. These researchers strive to test whether video games are harmful media that have a negative effect on the younger generation (Anderson, Gentile, & Buckley, 2006). Still others claim video games are more helpful than harmful and that they can actually help with violence issues such as being a relief for stress and anger (Raessens & Goldstein, 2005). Jung Kim has ascertained that the degree of

violence in video games has less of an impact on aggression than the immersion, or “flow experience” of the player (Kim, 2007). Another view touched on by many is the ability of video games to addict children (Clark & Scott, 2009).

More positive research regarding the beneficial effectiveness of video games has emerged in recent years. Bogost (2007) shifted attention to what can be learned and gained from various uses of video games from artistic to emotional, and society’s manipulation of them as an outlet for suppressed expression. He focused his attention on how video games change us and how society changes video games. He argued that society and culture are reflected in games, revealing what it is to be human (Bogost, 2007). While profoundly philosophical, Bogost’s perspective almost ignores the main purpose of games, which is to entertain. Bogost focuses on the fact that, due to influences on the creators, video games reflect our more immediate culture, society, and everyday reality. A game that is set in present time in a big city, when done by an American, would probably look closer to Los Angeles or New York, even if it does not hold any distinguishing landmarks. However, a game set in the same time but created by the Japanese would probably look closer to Tokyo. They are almost the same, but there would be differences in everything from the architecture of the buildings to which side of the street the cars are driving on. From the most realistic to the most fantastic game there will always be influences from reality. The realism of the game adds to the ability of the game to immerse the player and thus also affects the player’s satisfaction (Bogost, 2008). Everything is as the

player expects it to be. If something is amiss, then the player almost stutters mentally and behaviorally and the game play becomes unnatural.

Implicitly and perhaps unconsciously reflecting a concern for the standards for effectiveness and efficiency that can dominate a usability perspective, Vorderer and Bryant (2006) offered an alternative line of research, specifically focusing on the interactivity of games. They assert all games in which the player actively interacts serve to educate (Vorderer & Bryant, 2006). For this reason interactive games have a large impact on a person because aspects of society are injected into the learning. The social implications are great, especially for the younger generation who are learning many of their social skills in a virtual environment. The focus of studies which are centered on education focus more on what the player gains from playing the game than the actual act of playing it (Squire, 2006). The social aspects can contribute greatly to the satisfaction of the players, allowing them to get something more out of a game than just the enjoyment playing it.

Likewise McGonigal (2010) a leading voice for video game influence, argued that games can teach us how to be more positive. In games nothing is impossible. Players are forced to think creatively to complete difficult tasks. Just knowing that it is a game instills a sense that there must be a way to accomplish something, no matter how difficult it is, and you have only to find the right way to do it. She insisted that if more people brought that level of determination into

reality then there is nothing that we cannot accomplish. If games are designed well, they can instill such benefits in the players (McGonigal, 2010). Jane McGonigal, asserts that video games can inspire many aspects in life. (McGonigal, 2011) She believes that with the influence of video games we can change the world and make it a better place. She breaks her suggestions down to fifteen “fixes” that can help to fix the world

Others, such as Noveck and Balkin (2006) explore the interaction of virtual worlds and reality and how reality reacts to and affects video games. Noveck and Balkin (2006) maintained virtual environments are as real to the players as “real life”. The friends they know online are just as close to them as their friends in “real life” with the exception they probably have never met face to face. Every social interaction is treated as if it were happening in reality as opposed to in a simulation. However, in a virtual world there seems to be fewer repercussions for mistakes. This makes virtual reality and online games the perfect place for people to establish their unique identity and personality without having to worry about mistakes (Noveck & Balkin, 2006). With this focus on interactivity, the foundation for usability analyses of video games is explicitly established. Usability analyses presume that this customization of personality endears players to these games due to the satisfaction they derive from being in control of their identity.

Raessens and Goldstein (2005) have extended the research exploring the relationship between virtual reality and video games. They pointed out that the more video games advance, the more they mirror reality. In other words, we strive to create a world similar enough to our own as to be believable. Online games are no longer just mere games; they are whole societies and cultures.

Finally, in terms of efficiency and effectiveness, video games may also have practical uses in health care. They have been used as aids to help with various illnesses from mental disabilities such as Attention Deficit Hyperactive Disorder (ADHD) to physical therapy. The more developed video games become, the more they are used as positive aids for people. However, for games to be of any use to people they must first succeed in their production.

Some companies research video games to try to improve them, but they are usually the same ones who produce them and therefore their findings are proprietary and not available for other game designers (Greenwood-Ericksen, Preisz, & Stafford, 2010). This leads small companies to struggle to get things right the first time since one chance is usually all a new video game company gets due to the 90% failure rate (Grimaldi & Marcelo, 2010). Many game companies have had to close their doors due to the failure of a game. Two such instances are the companies Realtime Worlds, who were forced to file bankruptcy after the failure of its game *APB: All Points Bulletin*, and Clover

Studios, disbanded by parent company Capcom after low sales of the game *Okami* (Curtis, 2010; Jenkins, 2006).

There have been recent studies of usability. Pinelle, Wong and Stach use genres to customize usability studies. They found that although video games defer greatly “most games from the same genre still have many similarities.” (Pinelle, Wong, & Stach, 2008). They identified six top genres, or types of games; these genres are role playing, action, sports, strategy, shooter and adventure. Cornett from Indiana University focused on massively multiplayer online role-playing games, which are an online offshoot of the traditional genre of role-playing games (Cornett, 2004). Others try to adapt usability studies from other areas, such as for task-based products, knowing that there are key differences that make those methods not completely compatible for video games (Barendregt & Bekker, 2006). Some studies have even attempted to use Nielsen’s heuristics for software and web sites (Federoff, 2002). Although these studies are important they do not address the games themselves. This study focuses solely on the gamer’s experience playing video games and not the psychological, economic or other such effects they may have on the world at large. There are several non-proprietary usability studies on video games. Heather Desurvire et al developed a series of evaluation principles--HEP and PLAY--for increasing playability in video games (Desurvire, Caplan, & Toth, 2004; Desurvire & Wilberg, 2009).

The evolution of video games has brought them from fledgling entertainment to a major media. With each advance more research is brought forth, everything from negative and positive impacts on humans to comparisons of real and simulated society and reality. However, little available research has addressed the topic of how to improve video games. That research has been reserved for the actual game companies themselves and is not available for small start-up companies looking to break into the business. But it is those small companies who are the most in need of accurate research to help them produce their first games without making mistakes that others have already resolved through trial and error. Gamasutra, a website devoted to video game development, asked several companies what they think “game play” is. They found that no one could come up with a satisfactory definition. It changes from person to person, company to company (Collins, 1997). So too do the opinions of what are the key elements to good game design (Aycock, 1992).

Other studies look at video games from many different angles. McAllister points out that Richard Ohmann and Donal Carbaugh study them from the point of view of mass culture (Carbaugh, 1988; Ohmann, 1996). Cornelia Brunner, Dorothy Bennett and Margaret Honey insist that games are mostly designed for the male gender, which is supported by the machoistic goals set by Andrew Rollings and David Morris (McAllister, 2004). Diana Carr uses Jeremy Bentham’s “deep play” theory of immersion and applies it to video games (Wolf & Perron, 2003).

With the lack of agreement from experts of the industry it is no wonder that no definitive design standards have yet emerged. While everyone is still trying to define terms and determine what is and isn't important when designing video games the industry continues to advance.

The method outlined in chapter 3 seeks to provide the kind of evidence that fills in the gap in existing video game research by answering the research questions in this study.

R1. Does the ability to choose the level of difficulty affect gamers' preferences for a game and/or the ability to learn that game?

R2. Do graphics have an impact on if someone chooses to play a game?

R3. Are tutorials and game manuals helpful in learning how to play a game?

R4. Does frustration from task failure affect the continuation of the gamers to play a game?

R5. Do gamers prefer games that openly direct each goal?

R6. How often do gamers complete the games they play and do they replay them later?

Chapter 3: Method

This chapter is organized into four parts. First, the methodological motivations for this mixed-method study are identified (Tashakkori & Teddlie, 1998; Cresswell & Clark, 2007). Second, the questionnaire employed in this study is described in terms of usability dimensions and the games players were asked to react to are identified. Third, the nature of the subjects initially sought as participants in the study are characterized and then the actual subjects who participated are described. Fourth, the role of participant observation in this study is detailed.

A Mixed Methods Approach – Quantitative and Qualitative Inspirations

Through the combined methods of questionnaires and observation this study sought to focus both on the behaviors of video game players and their personal opinions. The quantitative questionnaire was used to identify players' self-description of their behavior. Participant observation, combined with personal experience served as the foundation for the qualitative framework. This framework sought to review what video game playing means to the players.

The Questionnaire and the Video Games

A questionnaire was completed by participants to gain information to help interpret the findings of the observation studies. Morgan, Gliner and Harmon define what a questionnaire is. "Questionnaires are any group of written questions to which participants are asked to respond in writing, often by clicking or circling responses." (Morgan, Gliner, & Harmon, 2006). The questions are usually close-ended, open-ended or a mixture. The purpose of surveys is simple; ". . . to make inferences describing the whole population" (Morgan, Gliner, & Harmon, 2006). The participants were self-selected, choosing whether or not to participate on their own. Unfortunately there was no way to track the amount of people who viewed the links and chose not to participate.

Two first-person shooter games were chosen by the researcher. In a first-person shooter the player controls a single character at a time, viewing the game world from the perspective of that character. Another characteristic of the first-person shooter is that the main form of combat is done with firearms.

Call of Duty: Modern Warfare 2 is a first-person shooter game developed by Infinity Ward and published by Activision. It was developed for play on the *Xbox 360* and *PlayStation 3* video game consoles and Microsoft Windows operating systems. This sixth installment of the *Call of Duty* series was released on November 10, 2009. Within 24 hours of its release it sold over 20 million copies worldwide (Activision/Blizzard, 2009). This game is the best-selling game of the year in the US for 2009 (Entertainment software association, 2010). It is

also the second best-selling game of all time in the U.S. (Orry, 2010). The game is a realistic war game with precise visual details. *Call of Duty: Modern Warfare 2 (CoD)* also has the highest ratings of all first person shooters for that year. The ratings were obtained from Metacritic.com, which combines the scores from all the major game critic sites and magazines and creates a meta-score (Metacritic). Similar games include the *Medal of Honor* games and *Battlefield 2*.

Killzone 2 (KZ2) was developed by Guerilla Games and published by Sony Computer Entertainment exclusively for the *PlayStation 3* video game console. This is a sci-fi type of first-person shooter, based on another planet in a war with an alien humanoid race. *Killzone 2* was ranked the second highest first person shooter of 2009 in ratings. Since the primary design of this study is to determine standards for the industry the top games of one of the top genres was used. If lesser games, either in rating or sales, were used then the focus would change to more simple usability issues. In order to set standards for games it was important to use games that are perceived by all to be the best in their genre. It is not surprising these games are both sequels produced by companies with considerable experience in the genre.

The observational sessions were centered on the three aspects of usability as defined by Tullis and Albert:

A usability metric reveals something about the interaction between the user and the thing: some aspect of *effectiveness* (being able to complete a

task), *efficiency* (the amount of effort required to complete the task), or *satisfaction* (the degree to which the user was happy with his or her experience while performing the task) (Tullis & Albert, 2008).

Those aspects molded the questions asked during the sessions and the elements looked for while observing. Usability metrics measure the behavior and attitude of people, and therefore are a challenge since people are diverse and adaptable (Tullis & Albert, 2008). The questions asked during the observation were designed to answer three main questions; is the game satisfying, is the game effective, and is the game efficient. All three areas overlap and are presumed to be interdependent.

Satisfaction

This element deals directly with the satisfaction of the gamer. Such questions as how fun it is and if the gamer would play it again fall into this category. Other aspects include if the game is challenging enough without being too frustrating. This depends heavily on the efficiency of the difficulty settings. This is one of the most vital determining factors in a game since the entire principle of game play is about the ability to challenge without excessive frustration (Rosebaugh-Nordan, 2010; Game-ism.com, 2008). The questions geared toward this element reflected three aspects of games. The first aspect was task completion. Questions 14 and 15 asked how many times a player would fail at a task before temporarily putting it down and if any of the games they have

begun but never finished were a result of being unable to succeed at a certain task. Questions 19 and 20 focused on game completion and replay, asking how often players beat a game and do they ever replay it. Finally questions 20 and 21 revolve around goals within games, asking how players feel about games where the goals are not openly directed and if they prefer to be rewarded when certain goals are reached.

Effectiveness

The effectiveness of the game centers on the small details. Is it too hard to get to the in-game menu? Are the pop-up captions too small or go unnoticed when needed? If done right these elements go virtually unnoticed. When done wrong they can be anything from a minor inconvenience to a major irritation. Effectiveness can also deal with larger elements, such as the length of a task or level, and the key details to success within those levels. The questions for this element also focused on three different aspects; game graphics, tutorials and manuals. The game graphics refer to the detail of the game. This includes everything from the depth of detail of skin, whether it is smooth and unrealistic or if there are the impurities that are found and expected on faces in reality, to the movement of grass in the wind. Question 9 asks the players if the graphics ever influence if they play a game or not.

The tutorial is the primary way in which games teach the player how to play. Tutorials can be formatted in a number of ways. They can be broken up and

“taught” by different teacher characters in the game. Sometimes you can read a journal or instruction book in the game detailing how to do something. Tutorials are conducted in the game itself and center on learning by doing. Questions 12 and 16 ask the players’ opinion on the length of tutorials and if they find them helpful or not.

Game manuals are very similar to tutorials in that they are designed to teach. The manual usually describes the configuration of the controls, the different weapons and maybe some back-story to the game. Questions 13 and 17 ask how often players read the manual and how helpful they find it to be when playing a new game.

Efficiency

The efficiency of the game relies on how well the game is put together. Many of the things that determine the satisfaction of the game rely on efficiency, or the ability to accomplish something with minimal effort. The main purpose of a video game is to play. Logically this means using as little effort to have as much fun as possible. Working to have fun is as tedious as having to force a smile; it may look real, but it takes too much effort to feel real. However with video games there needs to be effort in order to succeed. An efficient game should have challenges that can be satisfactorily achieved. The only acceptable effort should be in the completion of game tasks and not in how to use control the game in order to do so. The game play must be challenging but not overly frustrating in

order for it to be efficient. In this way the efficiency of video games overlaps with the element of game play. These elements cannot be completely separated and both have an effect on the other. Csikszentmihalyi Flow theory is commonly used throughout the video game industry (Sankalia, 2010). Csikszentmihalyi argued that in order for someone to be in a state of flow where they are the happiest when the challenges of the activity increase along with the skills of the user (Csikszentmihalyi, 1991). Using this model, the purpose of efficiency in a game is to make sure that both are sufficiently balanced to optimize the player's experience.

Questions 6 and 7 focus on the efficiency of the difficulty settings of games. It asks how players feel about games that allow them to choose the difficulty level on a game and if they prefer having that option. Question 8 asks if the players think selection of difficulty allows them to learn the game more easily. Questions 14 and 15 also have a connection with the efficiency focusing on whether certain tasks are too hard for a player.

Subjects

This questionnaire ignored the usual demographics of age and gender and specifically focused on the amount of game play of the subjects. The reason for this is that game players come in all ages, ranging from children to over 50 years old (Entertainment Software association, 2010). This questionnaire was posted on different gaming websites (teamxbox.com, gamefaqs.com,

gamespy.com, gamepro.com, xboxlive.com and gamespot.com) and sent to candidates (from suggestions from the observation subjects) through email to people with different degrees of video game experience. These sites were chosen to get a specific sample of the gaming population. In this way it was able to get as wide and varied opinion as possible while still targeting people who play video games. The questionnaire was used in order to reveal typical feelings of video game players. In this area, experience in playing is more important than the age of the player. For this reason field research would not have been a valid choice unless the number of participants was on a larger scale. The size of the field observation sample verses online survey sample is the basis for the determination that this study should be viewed as heuristic. The questionnaire results should support the participant observations in their likes and dislikes and also reveal motives and other things which can only be revealed through personal experiences. The questionnaire focused on games in general, which can then be compared to the game-specific observations. The content of the questions, as noted above, centered on the three main aspects of usability: effectiveness, efficiency and satisfaction.

One hundred participants answered the online questionnaire. The questionnaire consisted of 24 questions, primarily focused on the usability of games. The questions were generated by adapting general usability questions from the Ball State University Center for Media Design for use in this study. Participants are experienced players (with most playing video games 3 or more

hours a day or 1 to 3 hours a day) who self-described themselves as “moderate” to “expert” video game players with a preference for first person shooter and role playing games. Table 1 provides details about the study participants.

Table 1. Participant self-report of game player profile.

Frequency of Play	Percentage of respondents
3 or more hours a day	46%
1-3 hours a day	38
Less than an hour a day	6
Once a week	6
Once a month	4
Expertise Level	
Moderate	39%
Expert	38
Beginner	12
Inexperienced	11
Favorite Genre	
First Person Shooter	52%
Role Playing Game	40
Action Adventure	3
Other	5

Effectiveness, efficiency and satisfaction are the foundation for all basic usability studies (Tullis & Albert, 2008). A four-person focus group with varying video game experience pre-tested the survey to determine if the questions were understood as intended. Several questions were open ended to allow gamers to answer in their own words and the rest were limited response option questions. An understanding of gamers' general opinions of games may yield insight to what is important in creating a usable game.

The twenty-four subjects recruited to participate in the observation ranged from three different levels of expertise in gaming experience and fall into two different groups. One is formed of amateurs, herein called New Gamers, and has players with little to no gaming experience or who usually don't play this type of game. This group makes up one quarter of the sample population having six participants in the group. The second group, one half of the sample with twelve participants, consists of moderate gamers who spend one to three hours a day playing games. This group represents the average gamer. The third level, making up the final quarter of the sample with six participants, contains heavy gamers, some of whom already knew the target games. These gamers typically spend three or more hours a day playing video games. Average and heavy gamers will be called Gamers in this report.

Due to the fact that an immense amount of details go into a full game I have focused my research on the beginning of the story-based part of the game.

Many first person shooters, including the two I have chosen, have multiplayer and online aspects as well as short challenges, however most games are centered on the game's story. The beginning of the story is the crux of the game. First impressions are important in video games. The beginning of the story can entice players or turn them away from the game. The beginning eases the players into the game and gives them a sample of what is to come. If the players do not like that sample they figure they will not like the rest of the game. Usability is crucial at this point. Everything needs to be done as well as it can. The effectiveness of the game mechanics must be good, the efficiency of the settings must be spot on and the overall experience must be satisfactory. If the usability of the game at the beginning isn't of passing quality then players perceive little chance for the rest of the game to be any better.

Participant Observation

Being a study on the usability of video games, the observation of actual play of multiple games was essential. Game company studies have the success of their own games in mind so the learning cannot be easily transferred to other games, even those within the same genre.

What this thesis seeks is a generalized concept of usability for a specific genre; first person shooters. Towards that end participants were sought out to observe during game play. The observation was centered on the experiences of participants as they played two different games.

These twenty-four subjects can be viewed as a focus group for a closer look at the responses of players while interacting with video games. My experience as a self described moderate video game player allows me to understand these participants at least as much as a focus group researcher understands his or her subjects. My own experience raised the questions that shaped the quantitative methodological choices. The drive to understand if my own desires were mirrored in the desires of the general population of gamers helped to spurn the questions.

The purpose of the observations was to observe firsthand the reactions and opinions of the players as they experience two games which have been acclaimed in both sales and ratings as the top in the genre. This data is supported by the one hundred participant questionnaire, confirming the findings of the observations. These mixed results were combined and applied to the usability definitions laid down by Albert and Tullis to establish the standards that should be used for the beginning of games in general and first person shooters specifically.

This study sought to combine the data obtained from the online surveys with the data from the observations to discover if there are set usability standards for video games. To that end Albert and Tullis' formula of *efficiency*, *effectiveness* and *satisfaction* are the primary tools used to ascertain this.

Chapter 4: Results and Findings

Several key findings were discovered during the study. These factors are important characteristics of a game and contribute to whether it is well received or not. In this chapter they are presented and labeled with the category for usability it falls under and which specific research question it answers. The online questionnaire and observations support these findings.

Standards

First, the overall perception of game expertise of the players who participated in this study was very high. Almost half of the subjects played for three or more hours a day and considered themselves to be moderate or expert players. These players know what they like and what they want out of a game. They have logged enough time that they can confidently give their opinions of the workings of the games they play. Of those games the highest favored game genre is the FPS genre (Table 1).

Table 1. Participant self-report of game player profile.

Frequency of Play	Percentage of respondents
3 or more hours a day	46%
1-3 hours a day	38
Less than an hour a day	6

Once a week	6
Once a month	4
Expertise Level	
Moderate	39%
Expert	38
Beginner	12
Inexperienced	11
Favorite Genre	
First Person Shooter	52%
Role Playing Game	40
Action Adventure	3
Other	5

R1. Does the ability to choose the level of difficulty affect gamers' preferences for a game and/or the ability to learn that game?

Difficulty mattered a lot to the subjects of both the online survey and the observations. It was one of the key things that this group of players keyed in on while playing. Almost all participants within this group agreed that being allowed to choose their own difficulty level allows them to learn the game easier. In the observations the gamers usually chose either the normal or hard difficulty. When asked why most of these respondents stated that it was what they usually chose.

The ones who chose the harder setting all said normal was too easy for them. All of the New Gamers chose easy, saying that since they didn't know how to play the game it would be the best choice. No one stated that their frustration stemmed from not being able to complete a task due to the difficulty of it.

On the online survey 70% of the sample admitted that they like the option to choose their own difficulty level. Although these respondents like having the option to control the difficulty this does not create a preference of games that allow this. Within this group players will not choose to play or not play a game based on if the game allows them to choose the level of difficulty. This is in spite of them admitting that the majority feels that by choosing the difficulty they are able to learn the game easier (Table 2). The efficiency of the game's difficulty affects these perspectives. If a game's difficulty level is well balanced then there would be no strong desire to be able to change it, just the overall fondness to be able to control all aspects of the gaming environment.

Table 2. Perceived Difficulty.

Fondness for Difficulty Control	Percentage of respondents
Extremely Likes	37%
Likes	33
Neutral	30
Dislikes	0

**Preference for Games that Allow
Difficulty Selection**

Neutral	37%
Extremely Prefers	35
Doesn't Prefer	20
Prefers	8

Perception of Ability to Aid in Learning a Game

Agrees	45%
Extremely Agrees	37
Neutral	11
Disagree	7

R2. Do graphics have an impact on if someone chooses to play a game?

One of the enduring principles of video game construction is that graphics require extensive time, and energy and attention to detail. At the same time, in terms of experiences with various video games, there seems to be no over-riding style that works for all games, and indeed, it seems that virtually any clear set of graphics conveys what video games players need. In this study, a majority of the subjects reported that graphics played a relatively insignificant influence on their assessment of the effectiveness of a video game.

Table 3. Influence of Graphics.

Influence on Gamers Play Preference	Percentage of respondents
Undetermined	28%
Sometimes Influences	26
Never Influences	26
Always Influences	20

A little more than half of the survey participants stated either that graphics never influence if they play a game or they were neutral on the subject (Table 3). However the amount of people within this group it does influence, being just a little under half, means that it does matter to more than just a few people. This may mean that the graphics might be a way to draw people in. It may not make them buy a particular game, but they may be more inclined to notice it if it has better graphics. The observation participants were unanimous in that they all thought the graphics for both games were very good and that the majority of gaming companies utilize graphic technology's capabilities to the best of their current abilities. The graphics appeal to the effectiveness of a game to draw in people and make them want to play the game. If done correctly the graphics should entice a perspective player long enough that the game can advertise what it has to offer.

R3. Are tutorials and game manuals helpful in learning how to play a game?

More gamers in this study stated that the tutorials were helpful when learning how to play a game than stated that they were not helpful at all (Table 4).

Table 4. Perception of Learning Tools.

Perception of Length of Tutorials	Percentage of respondents
Adequate	60%
Usually too long	40
Usually not long enough	0
Perception of Helpfulness of Tutorials in Learning	
Undetermined	37%
Helpful	34
Not Helpful	29
Perception of Ability to Aid in Learning a Game	
Sometimes	43%
Never	31
Frequently	13
Half of the Time	11
Always	2

Perception of Helpfulness of Game Manuals	Percentage of respondents
Not Helpful	52%
Undetermined	25
Helpful	23

Again if the effectiveness of the element is correctly balanced, in this case the tutorials, then that would probably lead to a similar situation where more than a third of the sample either thought that tutorials are helpful or at least didn't think that they weren't. The gamers in this study did have a strong opinion of about the length of the average tutorial, thinking that most are of an adequate length and aren't too long.

The observation participants were similar in their results. The New Gamers in this study did not find the tutorial in *CoD* to be too long and two out of the six replayed one section of the tutorial "just to be sure". The Gamers in the study however had little patience for the tutorial since they already knew how to play FPS games in general, if not that game specifically. One expressed a wish that he could just skip the tutorial all together and jump right to the action. In *KZ2* the frustration was reversed. In this game there is no tutorial and only a few popup captions to tell you how to control your character. The Gamers within the group usually loved the lack of a tutorial and liked getting thrown right into the fighting. However the New Gamers in the group were all frustrated to the point

that all of them said that they would not continue the game if left to their own devices and would not recommend the game to anyone else based on their experience. They all expressed that they didn't know what they were doing and that the game didn't give them the chance to learn without dying while trying to figure it out. One participant commented that "It's like someone knocking a book out of your hand as you're trying to read. You can't get anywhere." Although the New Gamers in the group all died during the first mission of both games, they died more in *KZ2*. With *CoD* they attributed most of their failings with natural trial and succession, where they knew what they were doing and it was just a matter of implementing it and died an average of 6 times. In *KZ2* they attributed almost all of their failings to not having a clue as to what to do or how to go about it and died an average of 11 times. This caused four of them to quit the game altogether.

The effectiveness of the game manuals attests to the fact that gamers within this group know when they do not like something (Table 4). Almost 75% of the sample population either said that they only sometimes read the manual or they never look at the manual. This is probably due to the fact that less than a quarter of the sample population felt that they are helpful. The solution for this is that games need tutorials since they are an effective means of teaching the player to play and the manuals are not effective. In order to satisfy more gamers the option to skip such tutorials can be made available but is not necessary.

R4. Does frustration from task failure affect the continuation of the gamers to play a game?

The efficiency comes into play when discussing task completion. Almost half of the subject population will give a game over ten tries at the same task before they finally put it. That is a moderate amount of tries so gamers are at least patient enough to continue to try at a task. However almost half of the population said they sometimes will put down a game when they are unable to complete a task (Table 5). The gamers within the group are giving the games ample opportunities, assuming that the tasks are efficient in that they require challenge to overcome them but not excessive effort on the part of the gamer.

Table 5. Task Completion.

# of Failed Attempts Before Temporarily Stop Playing	Percentage of respondents
15 or more	30%
7-10	30
10-15	17
4-6	23
1-3	0

Frequency for Completely Quitting a Game Due to Failure to Complete a Task	Percentage of respondents
Sometimes	48%
Never	30

Half of the Time	19
Frequently	3

The New Gamers in the group were the only observation participants that repeatedly failed at a task. In *CoD* none of them failed at the same task more than three times. However in *KZ2* all of them died at the same task, the first one, seven to ten times. At this point there was an obvious increase of frustration and many were ready to put the game down before the session time was done. They were on the easiest difficulty for that game. When asked if they failed because the game was too hard at that level most expressed that they didn't think that was the main reason. "I just don't know what to do" most of them commented. This leads to the conclusion that if a player cannot learn the game and fails trying, after a certain amount of failures they will just put the game down.

R5. Do gamers prefer games that openly direct each goal?

Table 6. Goals.

Attitude of Gamers Towards In-game Hints	Percentage of respondents
Likes	37%
Neutral	26
Dislikes	19
Likes	18

**Attitude Toward Games Where Goals
are not Openly Directed**

Neutral	47%
Likes	31
Dislikes	22

**Preference for Rewards When Goals
are Achieved**

Extremely Prefers	60%
Prefers	25
Neutral	15
Doesn't Prefer	0

More than half of the online survey sample liked in-game hints. Also a large majority within this group prefers when they are rewarded for achieving goals. The satisfaction of the gamer with the individual goals of the game contributes to the overall satisfaction of the game. In the observation all of the players were fine with not getting rewarded for success but stated they would have liked to have gotten something.

Out of those who did not remain neutral, the majority liked it better when the goals weren't openly directed. This would add to the overall feeling of being in control when the gamer is not forced to follow commands every step of the way. This is probably why more people in the study liked having in-game hints,

that way if they were confused about where to go they still would have a means of finding out what was expected of them next.

R6. How often do gamers complete the games they play and do they replay them later?

Table 7. Participant self-report of completion and replay.

Frequency of Game Completion	Percentage of respondents
Frequently	70%
Half of the Time	21
Sometimes	6
Always	3
Never	0
Frequency of Replay after Completion	
Sometimes	33%
Frequently	30
Half of the Time	25
Always	12
Never	0
Perception of Gamers on if Games Entice Gamers to Complete the Game	
Agrees	62%

Neutral	28
Disagrees	10
Perception of Gamers on if Games Entice Gamers to Replay the Game	
	Percentage of respondents
Agrees	53%
Neutral	31
Disagrees	16

If all elements of a game are balanced then within this group the games are usually completed (Table 7). Also by these respondents there is even a better than 50% chance that a gamer will replay the game. The majority of the population agreed that the gaming companies do a good job of enticing people to both complete the game and to replay it. In the observations, out of the Gamers, eight out of the twelve of that particular group had already played at least one of the games before and had replayed the game after completion. One player had beaten *CoD* six times and stated "I never get tired of this game. It's great!"

Summary and Conclusion

These factors encompass the major usability standards for the whole of the game in general and specifically the beginning of the game. These are just the first primary standards since the beginning is just a part of the whole. All three categories- effectiveness, efficiency and satisfaction- combine to determine

if the usability standard for a video game is sufficient enough to entice the player to continue playing the game. If done well then there is little effort on the player's part to play the game, allowing them to enjoy the experience more.

Chapter 5: Discussion

This chapter is divided in four parts. In part one, “Implications” of this study are identified. In part two, the “Limitations” of this study are provided. In part three, “Recommendations for Future Research” are provided based upon the standards derived in chapter four. Fourth and finally, “Summary and Conclusions” are provided. Accordingly, as a point of departure, we first consider in this chapter the implications that can be derived from this study.

Implications

Usability encompasses many different aspects of a video game. A usability analysis, for example, might raise the following kinds of questions: How well it entertains us. Does it challenge us? Do we understand it? Do we know how to play? Ultimately it is how much fun do we have? Is it a balance of all these aspects as to allow the player to become immersed in the game and not have to deal with the technicalities? Or are there parts that stand out, forcing the player to focus too much on the rules of the game and not the *play* of it. What is the purpose of playing a game if there is no fun in it? How many consumers will come back and purchase later games after having been disappointed with a game. As much money as is invested in each game, averaging between 18 and

28 million per title (Tito 2010), can companies really afford a mistake that could end up in fewer sales?

A mistake made in the later stages of the play of the game is probably not as detrimental as one occurring within the first few minutes of a game. By the time a player gets to a serious problem later on they should already be immersed in the game and therefore less likely to quit due to one mistake. They are more tolerant of issues after they are given some of the entertainment. Although a few subjects commented that if a serious issue prevents them from continuing, like a puzzle that is extremely difficult or a boss that they just cannot defeat, then that can be cause for them putting down the game permanently. Some games, such as *God of War* avoid this by first allowing the player to choose their difficulty, which fewer games are allowing and second by giving the player the option to decrease their difficulty during the game if they fail at a task a certain number of times. This allows the player to continue through the game at the difficulty level that fits their abilities better.

This study produced six standards of video games that should become used by most video game companies.

1. The ability to choose the difficulty of a game helps new players to learn how to play it.
2. Graphics may not influence if someone chooses to play a game, but it is something that is noticed and adds to the appeal of the game.

3. Players primarily depend on tutorials in order to learn the basics of the game.
4. Players are patient and will attempt a task repeatedly, but will put the game down if they fail excessively.
5. Players prefer not to be openly directed to their goals but also prefer a reference if needed.
6. Players will usually complete a game and are very likely to replay it.

From the results of this study it is apparent that the video game industry, for the most part, adheres to these standards. Many first person shooters, such as *Halo*, allow you to set the difficulty that you feel is best for you. Companies have also realized that graphics are appealing, but not an influential in a player's decision to play the game. If graphics were that important to the success of games then retro games such as *New Super Mario Bros. Wii* would never be attempted since the graphics are comparable to the original *Super Mario Bros*, "without all of that razzle dazzle you see in newer games" (Views & Hartman, 2009). Similarly, the tutorials in the games are the main instructors on how to play the game and therefore are usually found in most games. There may be a few exceptions to this with the justifiable cause that the game is a sequel it may rely on the belief that the majority of the game's players have already played the first game and therefore already know how to play the second. The fact that most players will usually complete a game supports that most games have a decent balance of frustration and completion when it comes to their tasks. If it were otherwise, the

amount of player's that usually complete the games they play would be lower. The video game industry seems to have taken these lessons to heart and developed a form of unspoken standard that most abide by, creating a successful industry in the space of just 30 short years.

The success of the industry can be determined by three main points: the money it generates, the loyalty of its followers, and its expansion. As reported by the Entertainment Software Association and the NPD Group, the industry has grown from 2.6 billion dollars in 1996 to over 10 billion in 2009 (Entertainment software association, 2010). The average number of years adult gamers have been playing is 12 years, with the average age being 34. These gamers are devoted and aren't likely to change. They have been playing since they were teens and young adults and continue to play even now when they are grown adults.

Limitations and Directions for Future Research

Due to the large scale of video games, many aspects of game design were not covered. This thesis focused primarily on the beginning of the game. There are outside influences that may also affect if a person continues to play a game. For instance, if someone is new to playing a type of game and may be frustrated, the presence of someone who knows how to play the game may make it more tolerable. What the game lacks in teaching the player may gain from that person. Even if the player dies frequently the situation may become more of a

joke when in the company of other people than it would be if that person was playing alone. Also if the other person has already played through the game and likes it the assurance that “it gets better” might be enough to keep a new player from putting it down long enough for them to get their bearings and learn enough of the game to play it.

A primary limitation in the study was the number of subjects used. Due to the lack of incentive or other such reasons only 24 subjects agreed to participate in the observation. The online questionnaire, with its 100 subjects, was created with the intention of supporting the small observation sample group. Any future research should first and foremost seek to expand both the observation and online sample size to sufficiently represent the gaming population. It would also be advised that any online questionnaires have the ability to track how many people decline participating. This would partly justify the problem of self-selection of the online participants.

Since the study focused on only two games in a genre there may be variations if compared on a wider scale. For instance, the introduction to the game and the opening cinema may be interesting enough to draw people in and keep them through what may otherwise be considered a tedious beginning to a game. The thought that since the opening is good the game can't be bad may sustain players long enough to learn how to play the game sufficiently. Future research should look to increase the number of games used and strive to

broaden the type of games by including games from different genres. Games that are considered the worst should also be used to counter the top games and likewise games that aren't a part of a series should be used.

Ratings and reviews may also have an impact on the determination of a person to learn to play a game. Similar to having a friend convince you that the time spent is worth it, reviews can convince people to give a game a chance. A review source, such as G4TV's *X-Play* may state "the game is a bit frustrating at first, but worth it after you pass the first mission". This would convince many players to at least give the game a chance beyond the first mission where otherwise they may have put the game down.

Another factor may be if the player rents or buys the game. Someone who pays sixty dollars for a game would probably have more tolerance than someone who rented it for a few dollars. If someone spends a lot of money on an item they would give it more of a chance since their investment is higher. A game that is borrowed from a friend, having no investment and no risk, would be one of the only ways to minimize outside influence on the commitment to the game. That is why the study was designed where the subjects had nothing to lose or gain from playing the game through.

Held to the specifications of the study, the limitations are primarily from outside influences on the player. It mainly comes down to their tolerance of the game countered against the influences of the real world. When the usability is

lacking, the tolerance for the game decreases and the chance of a player putting down the game increases.

Recommendations for Future Research

For future studies I would recommend perhaps expanding the observation to include one hundred subjects to match the online questionnaire. Doing so may yield more opinions on the game examples. However, I believe there is a very good chance that the outcome would be the same. Changing the genre of the game may present different outcomes than the ones from this study. For instance a player might be more patient with a long tutorial when playing an RPG where the story line is expected to be long and the game play complex. Likewise with a Casual game players may have even less patience with tutorials than with FPS games since they are supposed to be something you can typically “pick up and play”. For that reason one of the primary goals of future research should be to study the other genres of video games and compare them to find any similarities or differences. Maybe by doing this we can also tell if there are aspects that one genre does that may benefit another.

Another goal for future consideration would be to analyze the entire game as a whole instead of just the beginning. When taking the whole into account there may be issues of greater import when determining the overall usability. From the questionnaires many have said that places in a game that a player has overwhelming difficulties passing may be a cause for them to put down a game.

There may be other such problems that need special consideration when developing a video game. For the time being focusing on the beginning of the game is a start toward what should lead to more research conducted to determine how to improve this swiftly growing industry.

This study emphasizes the fact that games are efficient in their design. In what some consider a short amount of time the industry has evolved to producing games that satisfy users. The next step the industry needs to take is to become more active in society. Video games need to use their influence on the people who play them in order to inspire positive outcomes.

Summary and Conclusions

Although unexpected, this study proved what the gaming industry is doing right. Although there are deviations most companies seem to follow an unspoken list of standards. Their efforts have contributed to the success of the industry in a relatively short amount of time. Therefore it is now time to look towards the benefits that can be derived from the industry. What positive influences can be had on our society? Some voices, such as McGonigal, have begun to speak out for more influence from the industry on the world around us. Up to this point video games have been influenced by the real world. Now it is time for the real world to be influenced by video games and the positive social ramifications that can be had.

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Appendix A: Observation Task List Protocol

Usability Analysis of Video Games

Task List

*Indicate observation question, not to be said to the subject.

Part 1

Call of Duty: Modern Warfare 2

Have you ever played this game before?

What do you think about the “Disturbing Content Notice?”

Do you like that it gives you the option to skip a potentially disturbing or offensive mission?

What are your first impressions of the game?

Main Screen

What do you think about the main screen?

Does everything make sense?

Is there anything else you were expecting to see here?

Campaign

Choose Campaign

What are your first thoughts about the intro?

Does it give enough of a background story if you have not played the first game?

If you have never played the first game do you feel like you should have in order to understand the second?

What do you think about the graphics so far?

Does the intro make you interested in the story?

Prep scene

What do you think about the first scene?

Menu

Get to the menu.

Did you know what button to push? Do you think something should have told you prior what to press?

Does the menu make sense?

Go to options

What are your thoughts on the menu?

Does everything make sense?

Going into the stick and button layout does everything make sense?

Are you left handed?

If so what do you think about the left-handed options?

Resume game

Do the assigned task

Did the onscreen instructions help you complete the task?

What do you think about the option to change the configuration while learning?

Shooting tutorial

What did you think about that part of the tutorial?

Did it explain what to do adequately?

Was there any confusion?

The pit

Was it hard finding where to go next?

*Did the subject pass the pit the first time?

*If not how many times does it take to beat it?

What did you think of the pit?

Was there anything you feel should have been explained before having to do it in the course?

Do you like the way the game teaches you to play by doing?

What do you think of being given the choice to select your difficulty after the course?

Is this a good spot for the difficulty selection?

*Did the subject choose to run the pit again after completing it? If yes ask why.

*What difficulty did the subject select?

Why did you pick that difficulty level?

What do you think about the length of the tutorial?

Do you feel prepared to continue with the game?

What do you think about the transition between missions?

Summary

*How far did the subject get in the game in half an hour?

*How many times did they die/fail?

*Were there signs of frustration in the player?

What did you think of the overall gameplay?

Would you keep playing on your own?

Would you suggest it to a friend?

Do you think this is a good game? Why or why not?

Part 2

Killzone 2

Have you ever played this game before?

What are your first impressions of the game?

Introduction

What are your first thoughts about the intro?

Does it give enough of a background story if you have not played the first game?

If you have never played the first game do you feel like you should have in order to understand the second?

What do you think about the graphics so far?

Does the intro make you interested in the story?

Main Screen

What do you think about the main screen?

Does everything make sense?

Is there anything else you were expecting to see here?

Campaign

Choose Campaign

Pick your difficulty level

*What difficulty did the subject select?

Why did you pick that difficulty level?

What do you think about the in between information?

In game Pause Menu

*after instruction onscreen on how to get to it

Get to the menu.

Did you know what button to push prior to the caption on the screen?

Does the menu make sense?

Go to options

What are your thoughts on the menu?

Does everything make sense?

Tutorial

- *Did the subject try to sprint when the caption appeared telling them how?
- *Did the subject try to use the destination marker when the caption appeared telling them how?
- *Did the player stop and watch the conversation?
- *Did they get bored and move away?
- *If they stayed through the whole conversation ask about their thoughts on it. Was it confusing or helpful?
- *Is it clear to the player on what the player is supposed to do next?

First Mission

- *Did the player get through on the first try?
- What do you think of the tutorial?
- Do you like the no traditional style of learn as you go?
- Is it clear what your objective is?
- *Does the player need to check every time to see what the next objective is or is the game clear enough?

Summary

- *How far did the subject get in the game in half an hour?
 - *How many times did they die/fail?
 - *Were there signs of frustration in the player?
- What did you think of the overall gameplay?
- Would you keep playing on your own?
- Would you suggest it to a friend?
- Do you think this is a good game? Why or why not?

What are your overall thoughts about the two games?

Do you feel both games were done to the best of modern gaming technologies' ability?

Would you change anything in either game?

Appendix C: Online Questionnaire Protocol

Usability Analysis of Video Games

Online Questionnaire

1. How often to you play video games?

Never

Once a month

Once a week

Less than an hour a day

1-3 hours a day

3 or more hours a day

2. What kind of gamer do you consider yourself?

Inexperienced

Beginner

Moderate

Expert

3. What is your favorite genre?

First Person Shooter

Role Playing Game

Action Adventure

Sports

Family

Other _____

4. What is the thing you like the most about video games?
5. What is the thing you like the least about video games?
6. How do you feel about games that allow you to choose the difficulty level on a game?
- Extremely dislike Extremely Like
7. Do you prefer games that allow you to choose the difficulty level on a game?
- Don't Prefer Extremely Prefer
8. Do you think games that allow you to choose the difficulty level on a game allow you to learn the game easier?
- Extremely Disagree Extremely Agree
9. Do the graphics of a game influence if you play it or not?
- Never Always
10. What do you find the most frustrating when playing a video game?

Answer these next four questions in terms of the favorite types of games you like to play

11. What do you find the least frustrating when playing a video game?

12. What is your opinion on the average length of tutorials when playing a new game?

Usually not long enough

Adequate

Usually too long

13. How often do you read the game manual when you first play a game?

Never

Sometimes

Half of the time

Frequently

Always

14. How many times do you fail at a task in a game before you put it down (temporarily)?

1-3

4-6

7-10

10-15

15 or more

15. Out of the games that you have never finished, have you ever completely quit a game due to being unable to complete a task?

Never

Sometimes

Half of the time

Frequently

Always

16. How helpful do you find tutorials when playing a new game?

Not helpful Very helpful

17. How helpful do you find game manuals when playing a new game?

Not helpful Very helpful

18. Do you like in game hints and tips when you get stuck?

Extremely Dislike Extremely Like
N/A

19. How often do you beat a game that you play?

