VIDEO GAMING IN THE CLASSROOM: INSIGHTS AND IDEAS

FROM TEENAGE STUDENTS

by

Peter You Li Halim

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Abstract

For this research, four high school aged teenagers participated in an intensive one week video gaming camp, at which time they articulated their attitudes and ideas about mainstream video games and their place in education. The purpose was to explore strategies for utilizing mainstream commercial video games for educative purposes in the classroom. The participants' insights along with observations made on their interaction with video games were analyzed through Rogers' Diffusion of Innovation and the General Aggression Model. In summary, the participants, more or less experts in gaming, enjoyed video games and described them as one of their favourite activities. Furthermore, it was found that video games played both a positive and negative role in the participants' lives. For example, all participants seemed to have developed healthy values and relationships directly through playing video games during their pre-adolescent years. Conversely, their responses also indicated that they experienced limits to video games and did *not* see innovation from market and home to school as a smooth, trivial process. Rather, they provided key insights into aligning specific games with specific content, curriculum, and courses. The participants' insights suggest that the use of mainstream video games for learning will most likely continue to be a fringe strategy implemented by individual teachers who actively discern the educational uses of video games. Game and gaming literacies are among the most recent entries into new literacies research. This thesis contributes to this research by exploring teenagers' ideas about gaming in the classroom. In conclusion, this study finds that mainstream video games have potential to be effectively used as learning strategies in the classroom in the future pending on continued progress and interest in this endeavor.

Preface

The research presented in this thesis has been approved by the University of British Columbia Behavioural Research Ethics Board (Certificate Number H06-80670). This research has been ongoing for the past two years and is part of a larger project and lab mobilized around How We Learn (Media and Technology Across the Lifespan) (http://blogs.ubc.ca/howwelearn) within the Department of Curriculum and Pedagogy at UBC (Petrina, 2010; Petrina, Feng & Kim, 2008). The HWL lab, funded through various agencies, including the Social Sciences and Research Council of Canada (SSHRC), sponsors and supports a range of undergraduate, MA, MEd, and PhD research theses.

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I would also like to express my deepest appreciation to the Liu family for "adopting" me especially when my family left Vancouver.

I thank Lesley for inspiring (and tolerating) me on my quest to pursue my ever-fluctuating interests and dreams.

Lastly, I would like to thank my four research study participants who gave me their time and opened up to me about their feelings, opinions, and insights concerning video gaming on many levels.

Dedication

This research and thesis is dedicated to my mother and father who endured, enlightened, and embraced the eight of us

Chapter 1: Introduction

Given its pervasiveness in Canadian teenagers' lives, video gaming presents a significant challenge to educators. Analyzing teenagers' insights into gaming can give us a greater understanding of how or educators might implement games-based learning strategies within the classroom. This thesis is a contribution to this process. This first chapter has three main objectives. The first is to establish my experiences and insights regarding video gaming. The second is to state the problem and specific research questions. Finally, the third objective is to state the limitations and scope of this research.

1.1 Background

Video games are an increasingly important aspect of students' lives. This is supported by the fact that current high school students in North America are the major consumers of video games. For example, according to the Nielsen report on console and PC-based gaming, over 80 percent of youth aged 11-17 have access to video games (Nielsen Company, 2007). More specifically, in British Columbia (BC) in the late 1990s, over 80 percent of teenagers already owned at least one video game console and on average spent five hours per week playing video games (Media Analysis Laboratory, 1998). In more recent studies, it was found that over 86 percent of Canadian teenagers play internet-based video games (Media Awareness Network, 2005). Popularity of video game play is growing and series such as *Call of Duty* and *World of Warcraft* epitomize this by becoming the fastest selling and highest grossing forms of entertainment, beating out Hollywood movies like *Titanic, Avatar,* and *Harry Potter* (the series). Scholars such as Squire, Gee, Krug, and Prensky have indicated the potential of video gaming in schools along with the currency of game and gaming literacies, yet development and introduction

of video gaming into our classrooms is far from the norm. There are many viable reasons why video gaming has not gained a stronger foothold in the classrooms some reasons are the lack of funding, video gaming inexperience of educators, novelty, and social issues.

Through my own experiences and those of my close friends, I have discovered that playing entertainment video games have benefited us in more than just ways of passing time in a leisurely way. Being very much a tactical and visual learner, playing video games as a high school student often helped me grasp concepts or spark interest in topics I would have otherwise glossed over. I would like to take this further and compare my views regarding video gaming against the current generation of high school aged students. Furthermore, I want to take these insights and use them as a framework to determine how we could effectively implement video gaming as a learning method in our classrooms.

1.1.1   Gaming and I

My own experiences have brought me to studying video gaming in relation to education. I grew up playing on the streets with fellow neighborhood kids in a smaller city in The Netherlands. I was not allowed to watch television except for Saturday morning cartoons; most of my early childhood was surrounded by Lego and the outdoors. My early childhood was also primarily violence free; guns were not welcome in our household. Most of this changed when my older brother got his Commodore 64, in came the amazing 5.25" floppy disk and games such as *Elite*, *Boulderdash*, and *PitStop*. I was amazed when my brother developed a very rudimentary game that featured dodge-able dinosaurs running across the screen.

Things changed drastically when our family immigrated to Canada. In hopes to pacify me on the long flight my mother (to her detriment) finally allowed me to purchase my first video gaming device, the Nintendo Gameboy. My first Gameboy games, *Tetris* and the *Flintstones* were absolutely amazing and kept me busy for hours at a time. My first Christmas in Canada commenced a lifelong continuing professional relationship with video games. My family received our very first gaming console, the Nintendo Entertainment System (NES). It felt absolutely glorious body slamming my siblings in *Tag Team*. Remarkably, the NES was not enough to distract me from my Lego addiction. The NES was fun but it did not instill that stomach-churning desire to play. This strong feeling of love for games did not surface until we received our Super NES (SNES). This new system had some of the most engrossing roleplaying (RPGS) games that I have played to date, *Chrono Trigger*, *Final Fantasy 3* (6 in Japan), and *Earthbound* (all produced by Squaresoft, now known as SquareEnix) were some of the games that I still own and occasionally play. The only other game that I really loved was *Super Mario Kart*, another game that I still own and play on the SNES. The consoles leading up to the Xbox 360 and PlayStation 3 sucked many hours of my time, yet they did not epitomize my game playing habits. At most, time spent with the PlayStation 1 and 2, SNES, and Dreamcast led my average school marks to drop from high 80 percentiles to low 70 percentiles.

The personal computer and, more importantly, the internet helped turn this around. Video gaming's main attracting features to me were the socializing, creation and destruction, and competition. The PC and internet allowed me to dominate other real life gamers in multiplayer games such as *Quake*, *Unreal*, and most importantly, *CounterStrike*. *Counterstrike* is a first person shooter (FPS) game that pits two teams against each other. There are terrorists and counter-terrorists (CT), the objectives are succinct:

Hostage Maps: CT's have to infiltrate an area held by terrorists, find the hostages and

guide them back to the safe site (usually the beginning area of the CT's).

Bombing Map: Terrorists have to plant a bomb at a designated spot on the map, after the

bomb is planted the CT's have a set amount of time to defuse the bomb.

The goals and objectives were clear yet the game still allowed for many interesting tactics such

as Terrorists killing all the hostages and hiding out (camping) in areas waiting for the match to

end. Playing the game for hours upon hours taught me to play the game with tact, guess where

the enemy would go based on patterns of the opposing team. Once I figured out patterns of the

opposition I could guess when to throw a grenade in a specific area and it would teach me to

shoot through certain spots to kill hiding players. This type of knowledge can really only be

cultivated through constant playing and practice. Counterstrike was the game that epitomized my

long lasting and "time-wasting" relationship with video games

The proliferation of the internet has promoted the growth of video gaming; this growth is

especially evident in hugely popular games such as *Sims Online*, *Farmville*, and *World of

Warcraft*. The ability to connect and play with other gamers across the continent is one of the

greatest strengths of video games. Children do not have to go over to their friends' homes to play

together anymore; it is just as convenient to just play together online. For example, playing

Super Mario Kart was really only fun while playing with friends, which meant that I had to visit

my friends' home to play. *Mario Kart* on the Nintendo Wii now allows me to play with my

friends despite the fact that some of them live thousands of kilometers away. Webcams and

microphones have made the socializing nearly as easy and rewarding as being physically

together.

1.2 Rationale

My personal experiences are shared amongst many of my generational friends and peers. More importantly, my experiences seem to be only amplified in many of my students' lives, their lives seemingly orbit the release date of the latest mainstream games. I consider myself to be extremely lucky to have experienced the proliferation of the internet and video gaming as a student, but I am now perplexed as to how I would describe myself in relation to the internet and video gaming. If I did not grow up with YouTube, Facebook, or cellphones (smartphones), does emerging into an environment like this separate the new generation from mine? Do these markedly different experiences growing up affect how students want to learn or how they learn?

During my master's program I wanted to accomplish several objectives and goals. My primary objective was to determine how mainstream video games could be implemented as an educational strategy within the classroom. At first, I wanted to conduct quasi-experimental research study analyzing the effectiveness of teaching architecture and design through the *Sims*. However, upon further investigation I found that I was primarily designing this research study based on my own and other educators' views and opinions about teaching with video games. Therefore, I decided that before I conduct such research I should first determine what students' insights are regarding video gaming in education. Students are the focus of my research; I want my research to benefit their learning experiences in the classroom. Therefore, this thesis focuses on the following:

1.3 Problem

The problem of this research study is to document, analyse, and synthesise a group of teenagers' insights into the viability of gaming in the classroom.

1.3.1 Research Questions

1. What are current students' opinions and values regarding video games?

2. How do these students like to learn?

3. How do these students envision themselves learning through video games?

1.4 Purpose

The main purpose of this study is to investigate the viability of mainstream entertainment video games in the classroom:

1. Should mainstream video games be used for educational use?

2. What would be the optimal educational strategy involving video games?

3. How should and can video games be incorporated into a classroom?

1.5 Limitations

There are several shortcomings pertaining to this thesis' research design that could affect the internal validity of this study.

1. The participants were a sample of convenience chosen from the school where I teach.

2. The participants were primarily highly in favour of playing video games and not so much in favour of participating in interviews and discussion. Participant observations allowed me to discern and address these attitudes. Three of the participants were students at various times in alternative education programs and this influenced their views on gaming and education. Yet this also worked toward an advantage in addressing the research problem in that these students demonstrated expertise in gaming and had passionate views of conventional curriculum and instruction.

3. I was involved with all of the data collection and was an active, interested researcher throughout the data collection phase. As indicated, I have a bias in favour of video gaming; however, I remained open to listening to the participants' views on what extent video gaming should be used within the classroom. I hoped to find advantages to utilizing video games in the classroom but was also very much interested in the possible disadvantages that arose from this study.

4. Finally, there are thousands of commercial video games available; therefore this study cannot be generalized to all video games. This study is a precursor for further research, possibly design-based research to theorize the use of commercial video games in the classroom. In addition, the outcomes of this study are not generalizable due to the number of participants; however, I found resonance between my findings and those of researchers in other parts of the world.

1.6   Acronyms

Within this thesis there are several key terms that are derived from the gaming community. Below in alphabetical order is a list of acronyms and terms pertinent to this thesis. These terms are explained in the next chapter.

RPG	Role-Playing Game
FPS	First Person Shooter
MMO	Massive Multiplayer Online
RTS	Real Time Strategy
PS, PS2, PS3	PlayStation 1,2, or 3 respectively
NES	Nintendo Entertainment System
SNES	Super Nintendo Entertainment System
K-12	Kindergarten to Grade 12
GAM	General Aggression Model

Table 1: Gaming Acronyms

1.7   Organization of Thesis

This thesis is organized into five chapters. The first chapter established personal insights regarding video gaming in the context of the classroom. The first chapter also stated the research questions, and briefly described the limitations of the study.

The second chapter, a review of literature, is separated into four sections; the first explores and classifies video games. The second section focuses on current video game issues in relationship to adolescents and education. The third section focuses on the student in relation to current and past learning strategies designed to engage and promote learning. The last section

focuses on reviewing current and past attempts of incorporating video games into the classroom for learning. The third chapter describes the design of the thesis' venue for data collection, a gaming research camp. It establishes the methods and theory used to analyze the data. Furthermore, the chapter details participant selection. The fourth chapter describes and discusses the findings of the research, primarily through Rogers' theory of Diffusion of Innovation and the General Aggression Model. Finally, the fifth chapter discusses the findings of the study, conclusions drawn from analysis, and recommendations for both academic and practical applications.

Chapter 2: Literature Review

This chapter is divided into four sections; the first explores and classifies video games. The second focuses on current video game issues in relationship to adolescents and education. The third focuses on students in relation to current and past learning strategies designed to engage and promote learning. The last section focuses on reviewing projects and studies focused on video games used for learning.

2.1 History of the Video Game

Etymologically, video game can be broken down into the words "video" and "game." Video is based on the Latin term *videō*, which means, "I see". Video as a term can be traced to the adoption of the word video to describe the visual aspect of broadcasting images electronically through media such as television. Game on the other hand is derived from old the English word *gamen* to mean, "joy, fun, amusement" and is also linked to the idea of participation and communion. Video games presently are one of the several terms to describe a set of game rules written in code and then translated onto a screen through means of microcircuits. Computer games and console games are also often used in lieu of video games. Video games essentially encompass all terms describing the interfacing of human input with digitally coded electronically operated games. Video games can be played on portable handheld devices, personal computers (desktop or laptop), or dedicated game consoles. Considering devices such as the Nintendo Wii and Gameboy (DS), PlayStation 3 and Vita (PSP), Xbox 360, tablets, and smartphones, we can infer that essentially we do not anymore produce pure video game devices. Essentially, I would argue that the hardware is somewhat inconsequential to the conversation about classifying and defining video games; instead we need to classify the software.

2.1.1   Classification of the Video Game

Video games can be dichotomized into two main schools of gaming; educational and entertainment. Educational games are designed to develop skills that transferable from the game to real life, examples of this are flight simulators and games such as *MathBlaster*. Games for entertainment are primarily designed to be fun and do not have objectives of educating or specific real life related training. Examples of games for entertainment would include *Halo*, *StarCraft*, and *Super Mario Bros*. There is, however, an exception to this dichotomy known as the serious game. Serious games are often designed to not only be entertaining but also to address real life issues. Some of these serious games are *Darfur is Dying* by mtvU, *Food Force* by the UN's World Food Programme, and *Amnesty* the game by Amnesty International. Game genres like movie genres are useful to classify video games. Kirriemuir and McFarlane (2004) employed a classification system from J.C. Herz`s book *Joystick Nation: How Videogames Ate Our Quarters, Won Our Hearts, and Rewired Our Minds* to categorize video games in their literature review focusing on games and learning. They classified the eight entertainment video game categories as: Action, Adventure, Fighting, Puzzle, Role-playing, Simulations, sports, and Strategy. This classification system was designed more than a decade ago and due to the evolving video gaming landscape is not as applicable anymore. The Academy of Interactive Arts and Sciences (AIAS) in 2012 listed the following video game categories: Action, Adventure, Downloadable, Family, Fighting, Handheld, Mobile, Racing, RPG/MMO, Sports, Strategy/Simulation, Casual and Social Networking. These categories reflect several recent advancements in video gaming; however, AIAS's classification systems only pertain to entertainment video games. These genres could be analyzed in the scope of their educational viability in the classroom.

2.1.2 Video Game Trends

Based on analyzing ESA's *Essential Facts About The Computer and Video Game Industry*[1] as seen in Figures 1 and 2, we can see that traditionally the PC has been the platform of choice for RPG and Strategy games whereas the console has been the choice for Action, Shooter, and Sports games (Entertainment Software Association, 2006-2012). From personal experience the reason for strategy games being played on PC is due to the fact that *StarCraft*, *Warcraft*, *Civilization*, *Age of Empires*, *Total War*, *Command and Conquer*, and several other series have all been generally been only produced for PC[2]. Strategy games generally require keyboards and mice; keyboards are for
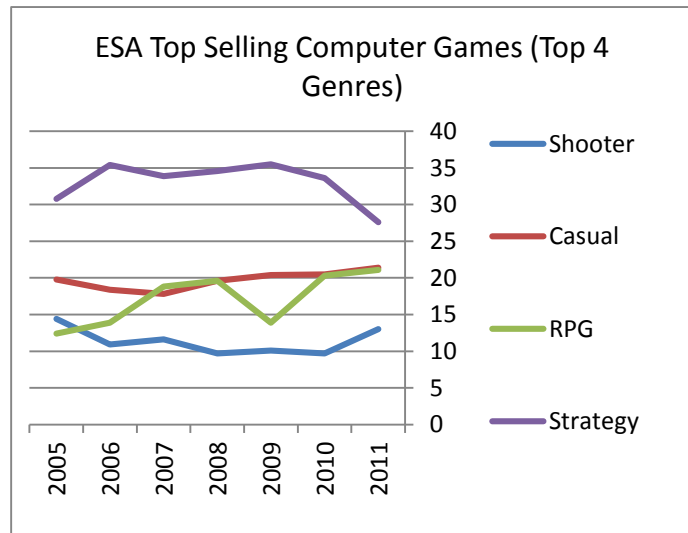
Figure 1: ESA Top Selling Computer Games

hot-keying and mice are used for quick and precise selection and direction, essentially enabling players to both effectively micro and macro control their units. Role-Playing Games have a more interesting history; generally speaking in the 1990's era there was a distinct dichotomy in RPGs. North America featured most of its RPGs on the PC and predominantly based their RPGs on the *Dungeons and Dragons* rules and mechanics. Japan, on the other hand, developed most of its popular RPGs on consoles; these were and are often labeled as jRPGs (Japanese RPG). Ultimately, RPG's have seen a huge increase in play on PC versus console because of MMORPGs, the prime example of this is *World of Warcraft*. *World of Warcraft* was the first

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[1] The ESA has been publishing these annual reports through their website since 2006.
[2] *StarCraft* was published on Nintendo 64; Command and Conquer had several variant titles published on consoles, however, these variants were never as popular as the PC versions.

MMORPGS to truly mainstream the genre. It did this by making the game widely more accessible to casual video game players than the traditional MMORPGs. Traditionally, MMORPGs were mainly played by hardcore gamers as these games often had harsh repercussion for failure or death.

Action and Sports games are predominantly played on console; the reason for this is that both these games are arguably best played with a joystick or game controller. Action games are more reaction based and do not require a multitude of inputs. Sports games are based more on reaction skills and also do not require more than a few inputs. Furthermore, Sports games are often enjoyed in groups, consoles are
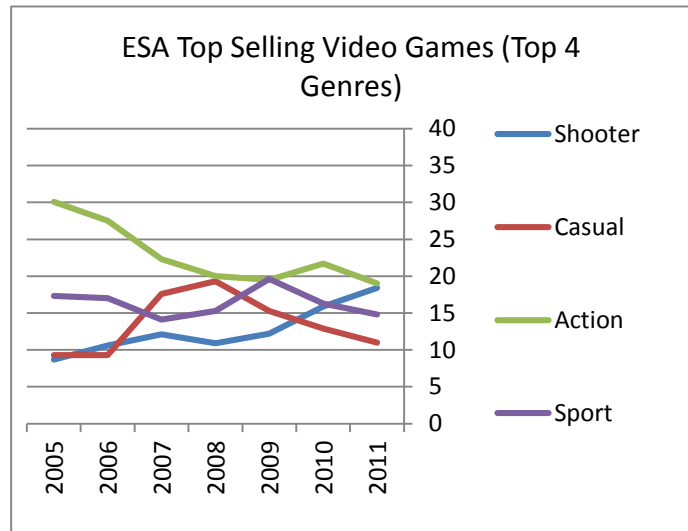
Figure 2: ESA Top Selling Video Games

most often located in family or living rooms and connected to a larger screen. This setup is more conducive to social gaming, reflecting the social nature of sports.

Lastly, another dramatic trend has been the growth of casual gaming, which in terms of Figures 1 and 2 is vague as these figures do not address Apple's or Android's app stores which came into effect in 2008. Despite, the fact that these figures do not highlight the most important aspect of casual gaming, Figure 1 does indicate a significant spike in Family Entertainment or casual video games from 2007 to 2009. The release and popularity of Nintendo Wii was a primary catalyst for this spike. Additionally, the *Rock Band* and *Guitar Hero* were also huge successes from 2007 to 2012 (Entertainment Software Association, 2006-2009). Casual and family-friendly gaming has grown significantly as a gaming genre. This growth is somewhat due

to the evolution of gaming devices; for example, the Wii wireless pointing remotes are laden

with physics sensors, the Xbox 360 offers the Kinect which negates the use of any physical

controller in many games, and the multitude of *RockBand* or *Guitar Hero* paraphernalia which

enables users to interact with music games. These new methods of interacting with video games

have also made them more attractive to people who were not adept at using either keyboard and
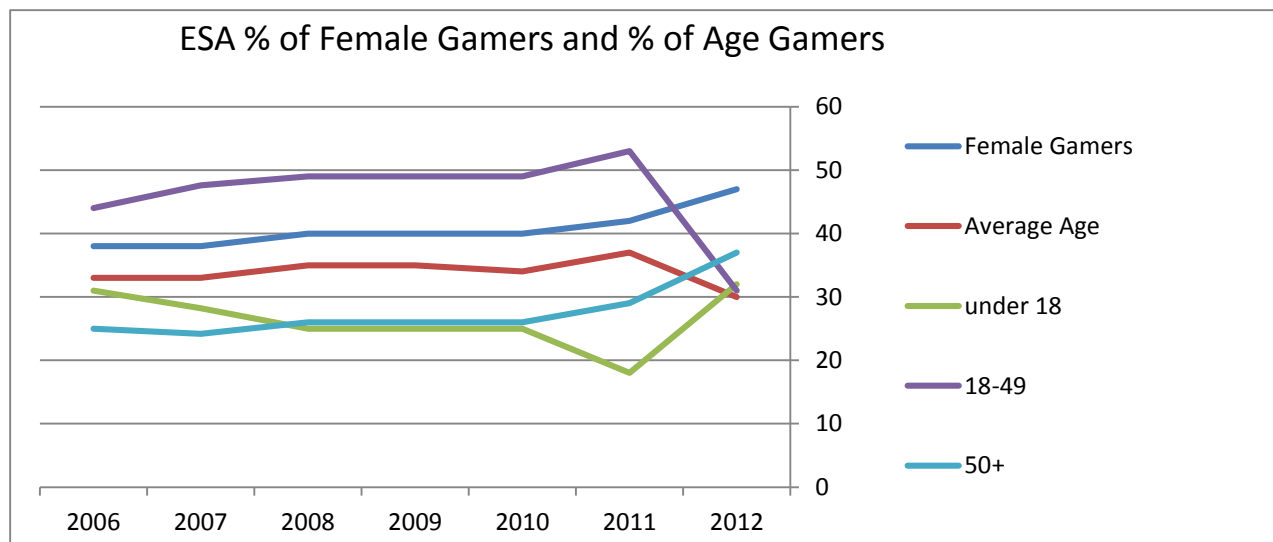
Figure 3: ESA Female and Age Gamer Graph

mouse or traditional game controllers. The introduction of these new technologies in which

gamers interact with games can also be correlated with the growing female gaming user base and

the increasing percentage of gamers over fifty years old.

2.1.3   Entertainment versus Educational

In this section I focus on games made for entertainment, which are often alternately

described as, "Off the Shelf" (OTS) games or mainstream video games. Serious and educational

games have traditionally been used in studies on video gaming in the classroom; mainstream

video games, however, seem to be less popular in regards to being integrated into formal

education (Connolly et. all, 2012). There are many good reasons to distance mainstream video

gaming in relation to the classroom. For example, mainstream video games often contain gratuitous amounts of violence (Smith, 2008), which more importantly has been linked to increase in aggressive behavior. Mainstream video games are also not designed with formal education as an objective, thus assessment and learning outcomes are hard to identify (Kirriemuir & McFarlane, 2004). Mainstream video games also are implicated in sexism, racism, and illicit substance consumption and distribution. Many of the messages and ideas in mainstream video games are of satirical nature and, unfortunately, not all youth are able to dissect and understand these satirical messages which results in them misjudging representations in video games for real life. Despite all of these negative consequences, effects, and attributes of video games the majority of adolescents, our students, play entertainment based video games. Interestingly, if entertainment video games are repurposed for learning in the classroom then depending on the view or stance of what a *video game is* students could be learning with 'educational' video games.

2.2   Current Video Gaming Issues

Several scholars, educators, and researchers have investigated both serious and entertainment video games coming to conclusions that both these types of video games can be educative (Brown, 2002; Gee, 2003; Prensky, 2006; Squire, 2008a). I am specifically interested in exploring entertainment video games for several reasons. First, entertainment video games are the video games that most youth voluntarily enjoy. Secondly, entertainment video games are abundant and are universally available. Thirdly, many students own their own copies of entertainment video games. The problem with entertainment video games is that many popular titles deal with issues such as violence, sexism, drug use, profanity, and racism. Despite this

setback, as educators we have to recognize that the majority of our youth are engaged with these games whether we approve or not. Instead I propose that educators embrace these video games albeit with a critical focus and attempt to educate their students to recognize difficult issues such as sexism, racism, and violence. Doing this effectively requires that we incorporate video gaming into the classroom.

2.2.1   Violence

Much of the negative associations that video games have garnered are associated with violence, sex, drugs and gaming addictiveness. By far the emphasis of the critique and controversy that would impede the idea of utilizing mainstream video games for educative purposes is the fact that the majority of video games are violent (Smith, 2008). The prevalence and pervasiveness of violence in video games runs contrary to the messages of zero-violence policies in schools and educational institutions. The concern regarding the level of violence in video games is reasonable in face of many studies' findings.

Kwan Min Lee and Wei Peng analyzed how violence in video games can have negative effects on students through an amalgamation of several theoretical perspectives used in media theory. Social cognitive theory, excitation transfer theory and priming effects are combined to create a theoretical framework known as general aggression model (GAM) (Lee & Peng, 2008; Weber, Ritterfeld & Kostygina, 2006). Employing GAM to analyses aggressive affects, behaviours, and thoughts they came to support the notion that, violent video games make it easier for many individuals to access aggressive thoughts (Lee & Peng, 2008). Lee and Peng concluded that GAM and other social theories are not enough to determine social consequences of playing video games, instead to come to a better understanding of playing video games

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researchers need to focus on, "what users actually experience while they are playing games" (p. 340).

Weber, Ritterfeld and Kostygina (2006) completed an extensive review of literature and research studies used to analyze the negative effects of violence in video games. After reviewing both empirical and qualitative research they came to conclude that none of the studies provided enough evidence to argue causality between playing violent video games and real life violence. However, studies do show evidence linking violent video games and violent behavior. In addition, they state that, "no study has ever investigated how players *understand* the video games they play" (p. 357).

More recently, Vieira and Krcmar (2011) investigated the effects of violent video games on children's moral reasoning about violence with an online questionnaire. They hypothesized that,

1. "Exposure to violent video games will be positively associated with perceptions that justified violence is correct."
2. "There will be a negative effect of violent game play on children's perspective taking."
3. "Decreased perspective taking will lead to the perception of justified violence as correct."
4. "Violent game play will be negatively associated with sympathy."
5. "There will be a negative relationship between sympathy and perceptions of violence such that less sympathy will be associated with perceptions of violence as more correct."
6. "There will be a positive relationship between children's perspective taking and their ability to sympathize."
7. "There will be a positive relationship between age and perspective taking."
8. "Girls will see unjustified and justified violence as more wrong than boys." (pp. 115-118)

Vieira and Krcmar (2011) found that the results of their questionnaires were generally consistent with many of the theories outlined in the GAM. The results of their online questionnaires provided evidence that supported that violent video games negatively influenced children's abilities to sympathize.

However, Vieira and Krcmar (2011) also drew correlations between age and perspective taking, older children showed improved perspective taking over the younger children:

> In the case of justified violence (violence in retaliation to harm done or for protection), older children saw this as less right. Their increased ability to see both the point of view of the perpetrator and the victim may have encouraged them to understand that retaliation may not be correct because aggressive interactions are often complex, with blame difficult to clearly assign. (p. 127)

Despite the age factor, Vieira and Krcmar (2011) still noted that violent video game play was equally a strong predictor on negative effects. In addition, Vieira and Krcmar (2011) discovered that, "Girls had greater perspective taking and ability to sympathize. Perhaps this occurred because girls' gaming habits contribute to these cognitive and affective variations" (p. 126). Ultimately, the study indicated a correlation between playing violent video games and negative effects on children's reasoning regarding violence.

Gentile and Gentile conducted a large scale longitudinal study on violence; they mainly focused on how video games use pedagogical techniques to teach gamers both violent and educational content (Gentile & Gentile, 2008). They found that adolescents who played mainly violent video games were more likely to display increased aggressive behavior, however, they were also quick to add that the data collected could only be correlational not causal. Interestingly, Gentile and Gentile also determined that because their study was longitudal they were able to determine that not only aggressive adolescents play violent video games (Gentile & Gentile, 2008). This is an interesting insight because many studies pertaining to violence in video games often fail to determine whether violent video games *attract* aggressive adolescents or *if* violent video games *make* adolescents more aggressive.

2.2.2   Addiction

In addition to concerns about video games making our youth violent I am also concerned with addiction. The gamer stereotype is often depicted as the anti-social teenage male with glazed eyes sitting behind a glowing screen in his basement for hours upon hours. However, despite the fact that video games are often depicted as addictive; there is currently no concrete evidence in forms of generalizable research supporting this stereotype (Lee & Peng, 2008).

Instead of addiction, Shotton (cited in Lee & Peng, 2008) indicates that researchers consider dependency a much better attribute of video gaming opposed to addiction. Dependency on video gaming is described as "not simply a preoccupation, but also serves special social and psychological functions in their lives" (cited in Lee & Peng, 2008, p. 332).

Gentile et. al (2011) conducted a two year longitudinal study of pathological gaming, which is the scientific term for video game addiction. This study tracked approximately 3000 Singaporean youths for two years, measuring weekly amounts of gameplay and number of pathological gaming symptoms. They found that,

> Although these data provide evidence that pathological gaming can influence other mental health issues, we expect that many of the relationships between variables are in fact reciprocal, given that many mental health disorders tend to be comorbid and mutually reinforcing. That is, although children who are depressed may retreat into gaming, the gaming increases the depression, and vice versa. (p. 326)

Despite this the study also indicated that throughout the duration of the study, "only 1% of children became pathological gamers" (Gentile et al., 2011, p. 326). This indicates that playing video games doesn't necessarily cause pathological gaming. Unfortunately, in line with the stereotype of the pathological gamer, the study found that, "Youths who are more impulsive, have lower social competence and empathy, and have poorer emotional regulation skills are more likely to become pathological gamers" (p. e325). Despite evidence indicating a link

between violence and video gaming, from a psychological or clinical standpoint, video game addiction has not yet been classified as a unique disorder in the *DSM*.

2.2.3   Stereotyping, Sexuality, and Drugs

The negative effects of video games on gender stereotyping and perceptions are often topics of discussion amongst educators and parents. Many video games are criticized of hyper sexualizing and under representing female video game characters (Smith, 2008). Gender stereotyping is often a negative aspect of popular media in general describing women as nurturing, damsels in distress (Princess Peach in the *Mario* series), and helpless (Smith, 2008).

Despite efforts by a select few developers, many video games continue to misrepresent females and males in video games either through distorted body images, e.g. *Gears of War*, *Tomb Raider*, *Street Fighter* series, and *Bayonetta* or through misrepresenting women and men in stereotypical or sexist manners (Gauntlett, 2008; Martins et. al., 2009). Furthermore, according to Bryce and Rutter (2003) there is also a general lack of female video game characters in video gaming, which may affect the level of video game participation of females. However, having extensive experience playing a wide variety of video games I find that there are some exceptions to this rule. For example, *Mass Effect 2* (released in 2010) allows players to choose either a female or male avatar that can explore heterosexual, bisexual, or homosexual relationships with various non-player characters (NPCs) in the game. *Mass Effect 2* puts the same amount of power and importance on the player regardless of gender.

Another good example of a strong female video game character is a Samus Aran in Nintendo's *Metroid* series. Interestingly, Samus' gender was never revealed until the end of *Metroid* on the NES. Furthermore, the armor that Samus wears is sensible unlike many other

video games e.g. *World of Warcraft* (*WoW*) that often dress female characters in underwear like armor.

Additionally, the video game industry has generally been a male dominated and male cultured industry, which in turn could have led to many issues of female misrepresentation due to a lack of female input in the design and representation of females in video games (Bryce & Rutter, 2003; Williams, 2006). Female misrepresentation can also affect the frequency and skill of female gamers. Hartmann and Klimmt (2006) argue that self-efficacy plays a large role in determining why females, "display less interest in computer games, devote less time to playing, and on average achieve lower levels of mastery in computer games" (Klimmt & Hartmann, 2006, p. 146). They determine that a possible reason for this conundrum is that females are less inclined to play due to the design and content of the available video games.

There has been progress in the gaming industry; for example, according to the Entertainment Software Association (ESA) of Canada 38% of gamers in Canada are females (ESA, 2011). In the United States, according to the ESA 42% of gamers are female. Westecott (2009) found that in UK the gender gap between game play was very small, however, the representation of females in the games industry was very small at 12%. Most recently, the *2012 Essential Facts About The Computer and Video Game Industry* report states that 47% of gamers are female, this constitutes a 5% shift in gender gap compared to 2011 (Figure 3). This closing of gender gap in regards to video gamers could partially be explained by analyzing the recent trends in video game development as discussed in 2.1.2.

2.2.4   Positive Effects of Video Gaming

For all the negative effects and consequences of playing video games there are conversely positive effects and consequences. Some notable positive impacts of video gaming are improved hand and eye coordination, strong engagement, critical thinking, and improved problem solving skills (Gee, 2003; Krug, 2007; Lee & Peng, 2006; Raney, Smith, & Baker, 2008). More importantly, research theorizes that video games can facilitate transfer of skills and knowledge learned from within the video game environment to other aspects of life (Gee, 2005). Furthermore, video gaming can potentially also help break down intercultural and intergenerational barriers, through multiplayer game experiences. (Lieberman, 2008; Raney, 2008; Krug, 2007). There is a longstanding tradition in investigating the transfer of simulation and hand-eye coordination skills to other activities (Granek, Gorbet, & Sergio, 2010; Rosenberg, Landsittel, & Averch, 2005). These recent research studies found correlation between participants who video games and improved hand-eye coordination in non-video gaming tasks. Video gaming is incredibly engaging; arguably much more than television due to its interactive nature. Like many researchers, educators, and analysts have stated that video games require a high level of cognitive engagement; therefore, students may actually be learning more from the video game that they play than from their homework (Beck & Wade, 2006; Gee, 2008; Krug, 2007; Squire, 2008b). More importantly, Prensky and several other experts in the field of 21st century education identify video games as methods to teach student critical thinking and problem solving (Beck & Wade, 2006; Gee, 2005; Krug, 2007; Prensky, 2010b; Squire, 2008c). Squire (2004) has noted many cases in which students engaged and learned more from video games than they would have in the classroom.

Considering all the positives and negatives of video gaming we have to focus on the fact that despite the negative effects of video games, students in our classrooms are heavily invested into gaming. Studying gameplay data and statistics we can see that a growing amount of people are playing video games; in fact the majority of people in North America will have played a video game, if not habitually play video games (Entertainment Software Association, 2011; Media Awareness Network, 2005; Nielsen Company, 2007). The rise in gaming can be contributed to several revolutions in video gaming. Firstly, connectivity and the internet have made it increasingly simple to market and distribute video games. For example, the app stores on mobile platforms such as iOS, Android, Windows Phone 7, and Blackberry have sold billions of apps, many of which are games. There are a lot more video game genre choices compared to a decade ago, especially in the casual gaming realm. Lastly, video gaming has emerged from subculture to pop culture, in other words, video gaming has become more socially acceptable, no longer are video games associated with "nerds" and "geeks".

2.3   Students and Schools

Current students in North American K-12 school systems are often associated with the idea of 21st century learning and individualized learning (Prensky, 2010b). There seems to be a heavy emphasize on defining how the 21st century student learns and copes with the ever changing economic, political, and technological landscape. Generally speaking, one of the key complaints with today's educational system has been the lack of engagement of students in the classroom. This lack of engagement has been correlated with students' poor academic performance in schools and a general sense of disconnect between students and their schools. (Hallden, 1999; McGraw, 2011; Reilly & Mitchell, 2010; Prensky, 2011). To battle this sense of

disconnect and poor performance many educators and analysts have theorized about how to define our new audience in the today's schools, what should be taught in schools to enable our students to thrive in the 21st century, and how educators and schools should reconceptualize the pedagogical techniques used in the 21st century classroom (Beck, 2006; Prensky, 2010a; Robinson, 2006). More importantly, several notable scholars and analysts have taken these theories and applied them in real world settings to provide evidence and support for their case that students in the 21st century thrive based on these new pedagogical techniques.

2.3.1   Digital Natives and Immigrants

Initially, Marc Prensky coined the term 'digital natives' to describe the radically different and digitally immersed 21st century learner, also known as the current student (Prensky, 2006). Digital Natives are individuals who are born and raised in the age of internet and digital technologies. Conversely, individuals who were born in times devoid of e-mail, YouTube, Google, and the internet are categorized and generalized as 'Digital Immigrants' (Prensky, 2001). Overlooking its generalities, this notion means that the majority of professional teachers in North America are Digital Immigrants ("The College", 2010, pp. 6-10; Feistritzer, Griffin, & Linnajarvi, 2011). With few professional teachers being digital natives, the notions of a significant disconnect between the teachers and the student in regards to life experience is supported. However, the definitions of the coined terms 'digital immigrant' and 'digital native' have been contended by several researchers on the assertion that there is not enough evidence to support such a distinct generalized polarization of the two groups (Bennett, Maton, Kervin, 2008; Guo, Dobson & Petrina, 2008). Interestingly, in Prensky's book *Teaching Digital Natives: Partnering for Real Learning* the term 'digital native' is used only once, perhaps in

acknowledgement that these terms are too polarized. Regardless, the two terms are still useful to classify an individual's level of immersion and experience with digital technologies; especially in light of several statistics in BC and Canada supporting this divide based on technology use (Sciadas, 2002).

Digital Natives and Immigrants are one of many theories attempting to explicate the radically different 21st century learner. Some of the other terms to describe the 21st learner are, Generation M (M for Millennial), Net Geners, and Digital Age Students (Barnes, Marateo, & Ferris, 2007; Lackie, LeMansey, Pierce, 2009; Tapscott, 1998). Most research in the past was guided by a dichotomy of technological haves and have not's. However, more recently Prensky (2009) in response to the criticisms of his dichotomous approach to the issue of humans' relationship with digital technology has made the case for *Digital Wisdom*. Prensky believes that we are now entering a time at which humans are generally accepted as having grown up with digital technology. Specifically, *Digital Wisdom* as Prensky (2009) states, can be summed up as, "a twofold concept, referring both to wisdom arising *from* the use of digital technology to access cognitive power beyond our innate capacity and to wisdom *in* the prudent use of technology to enhance our capabilities" (Introduction, para. 2).

2.3.2   21st Century Education

The shift in education from a 20th century education system to a 21st century education system can be generally described as movement from learning information to learning how to learn with emphasize on personalized learning through digital pedagogical techniques (Brown, 2002; Premier's Technology Council, 2010; Prensky, 2011). Several notable researchers and educators have noted the importance of evolving our current educational system to incorporate

the exponentially advancing technologies of the present and future (Gee, 2003; Prensky, 2010b; Squire, 2008c). Some of these techniques and technologies include or incorporate E-Learning, Blended Learning, Simulation, Partnering (Prensky, 2010a), Personalized Learning (Khan Academy), and the use of digital devices in a myriad of ways. I would argue that the unifying element of all these techniques is student engagement. In BC, the Premier's Technology Council's (2010) *A Vision for 21st Century Education* report focuses on several of the above mentioned pedagogical techniques in reference to the province's desire to shift to 21st century education. They focus on designing an educational system that provides flexible educational paths, blended systems, access to learning object and teaching tools, open access to information systems, and constant feedback and assessment (Premier's Technology Council, 2010). All these techniques are shifting away from the initial 19th century education system that focused on creating a homogenous blue-collar and pink-collar worker base, which was required throughout the industrial age (Banathy, 2001). Considering the current climate of drastic shifting of focus in education systems, determining whether or not the application of mainstream video games in classrooms is beneficial is imperative. If mainstream video games are found to be overall beneficial to student learned then they could pose a learning strategy that incorporates blended learning, constant feedback and assessment, and access to learning objects or teaching tools (Krug, 2007).

2.4   Current Educational Video Gaming Projects

There have been several qualitative and quantitative research camps and studies completed exploring the viability of employing video games for learning and teaching (Anderson & Barnett 2011; Squire, 2004; Watson, Mong, & Harris, 2011). In addition, there are a handful

of schools that have begun to adopt video gaming as a method of curriculum delivery (Quest2Learn being a great example). Squire (2004), focused on teaching high school history through *Civilization III* to mainly inner-city students not engaging within the classroom; Anderson and Barnett focused on teaching physics to pre-service elementary school teachers through *Supercharged.* Watson, Mong and Harris (2011) reviewed another teachers' use of *Making History* to teach World War II history to his students. All three of these studies primarily focused on the effects of playing video games within a learning focused environment or setting (classroom or research lab). In addition, all three studies used video games that were most likely not students' favourite video games that they would naturally play at home. Quest2learn does seem to utilize many popular video games that students would play at home; their school however is highly specialized and has limited reach to the thousands of students in North America.

Connolly et al. (2012) produced an extensive and comprehensive literature review of empirical computer game studies. Through their data selection they extrapolated seventy high quality empirical research studies. Some of the notable studies in their discussion that referenced mainstream video gaming included Green and Bavelier's (2006) study which provided evidence that playing mainstream video games, "informally leads to improvements in attentional and visual perceptual skills" (Connolly et al., 2012). More importantly, they suggested that these improvements in skills directly affect students' success in Science, Technology, Engineering, and Mathematics (STEM) subjects. The literature review also suggested that there were few extensive empirical research studies regarding formal classroom use of entertainment games as these games do not focus on curricular knowledge acquisition (Connolly et al., 2012). Finally, in conclusion to the review the researchers stated: "As with other educational interventions, it will

also be important to consider the detail of how games are integrated into the student's learning experience" (Connolly et al., 2012, p. 672). This concluding statement is fundamentally the focal prerogative of this research study.

Conclusion

This chapter is explored classifications of video games, current game issues in relationship to adolescents and education, and students in relation to current and past learning strategies designed to engage and promote learning. The final section focused on reviewing projects and studies focused on video games used for learning. The next chapter provides details of the methods used for the research.

Chapter 3: Methodology

In this chapter I will describe and detail the design of the studies' gaming research camp, which was the venue for data collection. The first section will address the design of the gaming research camp. The second section will introduce and detail methods that were used to collect data for the gaming research camp. The third section will detail how the participant sample was selected and formed for the research study. The fourth section addresses how the participants' insights were analyzed through theoretical frameworks and used to relate to the study's findings.

3.1 How We Learn Gaming Camp Design

With my Supervisor and a peer graduate student, I designed this research camp to be exploratory as we were very interested in determining what students' insights are regarding video gaming in the classroom (for background, see Petrina, Feng & Kim, 2008). Furthermore, as I was employing ethnographic techniques to obtain data, I felt compelled to design this research study to be as naturalistic as possible. Naturalistic in relation to this research study refers to the gaming camp environment being as close to an average students' gaming experience as possible. The camp was designed to be five days long spanning from Monday to Friday. In terms of participant observation this would be deemed brief as most classical ethnographic studies tend to range between six and twenty four months (Fetterman, 2010). We worked with this limitation of time and took advantage of the summer camp setting and the participants' schedules. Observing and interacting with a small set of participants within an intensive camp setting for six or more hours per day was sufficient to gather enough rich and detailed data for the purposes of this microlevel study (Fetterman, 2010). Pre and post interviews allowed me to compare and analyze the validity of participant responses. Some participants were past students

of mine and this helped facilitate the research as we were able to quickly bond as a group. After a day or so of gaming camp these past students were quick to understand that this was a research setting, not a classroom.

The physical setting of the camp was designed after a room that many teenagers find familiar. We tried to make the environment more like a comfortable living or game room (couches). My Supervisor, peer, and I attempted to make the participants feel like they were in a typical gaming environment, and used colloquial gamer levels of language. The reason for this design was to reduce the impact of the researcher and setting on the participants' behavior and responses throughout the duration of this research camp (Fetterman, 2010). The participants' insights were used in amalgamation with my own insights as an educator and researcher to answer the following research questions:

1. What are current students' opinions and values regarding video games?

2. How do these students like to learn?

3. How do these students envision themselves learning through video games?

Data collection also focused on questions related to curriculum and schools:

1. Should mainstream video games be used for educational use?

2. What would be the optimal educational strategy involving video games?

3. How should and can video games be incorporated into a classroom?

In summary, I set out to determine potentially viable methods or models of implementing mainstream video gaming as a learning strategy in a BC high school, guided primarily by the insights of its respective key audience, the students.

3.1.1   Facilities

The gaming camp facility was located at the University of British Columbia campus in Vancouver, British Columbia. All interviews were conducted in one building; however, participants received portable video cameras (Flip Cameras) and were free to use them throughout the time they were attending the camp to document thoughts and ideas regarding video gaming and education.

The gaming camp was setup to provide the participants with a comfortable gaming space. The gaming room itself contained a projector and SMART board which were used as displays for the video game consoles. A couch and comfortable chairs were setup to allow participants to have a naturalistic video gaming experience; essentially mimicking an average environment in which an adolescent would play video games. In addition, a PC was setup for PC gaming (See figure 5).

3.1.2   Equipment

Participants had full access to an Xbox 360, Wii, Playstation3, and a PC to play a variety of video games. Participants were told that they were welcome to bring in their own video games or gaming devices. In addition, we also had

Figure 4: Photo of Gaming Room

RockBand equipment available. All games were played on either the SMART board projector screen or on the regular projector screen. Both screens were standard definition (480p). All interviews sessions were recorded on a Hard Disk Video Camera and videos were promptly transferred to a password protected Mac located in a secure office.

3.1.3   Justification of Methods Used to Gather Data

Students' insights are imperative to the formation of learning environments and strategies as students are the singular most important aspect of education. The most rudimentary axiom of education is that there can be students with no educators whereas there can be no educators without students. Hence, we need to focus on how the student wants to learn based on their insights. Therefore, for this research study ethnographic research techniques were used to obtain data. Qualitative research methods were used as opposed to quantitative data collection because the goal of this study was to gain a rich detailed account of students` insights on the topic of video gaming in formal classrooms (Fetterman, 2010). Again, I was intending to collect data to affirm or deny my insights regarding video gaming in the classroom. Quantitative data collection techniques would have been more convergent on a specific goal, whereas this research study attempted to form an idea of how or if video gaming should be integrated into the average North American high school classroom.

3.2   Data Collection

Prior to joining the video game research camp participants were told that they would be video recorded and that their insights would be used as data for this research study. Participants` legal guardians completed permission forms which also specifically stated that participation in

this video game camp would include video interviews amongst other forms of data collection for the purpose of informing this research camp. In addition to consent forms participants and their guardians also received informational material regarding the goals of the SSHRC funded How We Learn project under which this research camp was conducted (See Appendix 3.2). Participants were informed of the schedule for the 5 day camp on the first day (See Appendix 3.1).

In order to address the research questions, research techniques used included informal interviews, participant observations, participation within the culture, collective discussion, and peer to peer video recordings (Fetterman, 2010). Specifically, participants were knowingly filmed during video game play sessions, one-on-one interviews, group discussions, and peer to peer interviews (on portable Flip cameras). Data were also collected during interviews through the use of a portable audio recorder in order to ensure that the audio of the interviews was clear. Furthermore, pen and paper were used to record notes during interviews and generally throughout the research camps' duration. Lastly, I used my smartphone to research video game titles that participants discussed and to take photographs. The purpose of the data collection was to obtain participants' insights on video gaming as a viable method for education.

3.2.1   Interviews

Participants all completed pre- and post- interviews. The pre-interviews conducted throughout the first day of the video gaming camp were designed to gather data regarding the participants' background and their insights about video gaming in the context of learning in the classroom. The post-interviews conducted on the last day of the video gaming camp focused on the same questions as the pre-interviews regarding participants' insights concerning video

gaming the context of learning in the classroom. The interviews were conducted in a quiet area of a hallway in the same building containing the video gaming camp and also in an empty room of the same building. The variance in interviewing environments was due to constraint of space and time. All the pre-interviews addressed the same interview questions in the same order; a total of sixteen questions were asked (See Appendix 3.3). The post-interviews were not designed to address the background questions; instead they focus mainly on the learning strategy questions. Post-interviews were conducted to increase the reliability of the data collected. In essence, a goal was to make sure that the insights from participants were not overly influenced by the interviewer's teacher-student relationship. All interviews were recorded on a digital camcorder in order to document the interviews for later recollection and also to document body language which is often very important in contextualizing insights of the interviewee (Fetterman, 2010).

3.2.1.1   Peer Video Interviews

In addition to individual pre- and post- interviews, participants were also paired up and given Flip Cameras. Flip cameras are portable and intuitive personal video recorders. Participants were asked to think about and discuss several questions relating to video gaming in the context of the classroom. They had the option of recording the discussions during the video game camp or afterwards during their own time. The four questions asked were:

1. How have video games been used in class?
2. Should video games play a bigger role in the classroom? Yes, why? No, why?
3. What are the limitations of using video games in the classroom?
4. Which video games would be good for students to learn with in the classroom?

Peer recorded video interviews were included in this study in order to supplement data collection in the context of the gaming camp. Another goal of utilizing peer video interviews was to gain a greater insight into the participants' interaction with each other. Finally, peer interviews were also included to analyse variance between peer interviews and researcher led interviews, essentially, it would be helpful in determining if researcher led interviews were affected by the researcher's bias (Fetterman, 2010).

3.2.2   Observations

Observations were documented with a hard drive storage based camcorder stationed in various locations of the gaming room. Observations were also made by saving images and written work on the SMART board to PDF files. In addition, participants also wrote on flip chart paper which was also stored in a locked file cabinet in a secure office. Participant observations were made in order to document participant behaviour and interaction in relation to each other, myself as a participant-observer, and video games.

3.2.3   Group Discussions

Group discussions were conducted around a table in the gaming room. The group discussions were recorded with a hard drive storage video camera. Conducting the group discussion in the gaming room was in hope of circumventing some of the effects that environment may have had on participants' responses. During the discussions, participants wrote notes down on flip chart paper and they also created diagrams on the SMART board. Group discussions were used as a data collection technique to determine whether or not the participants'

individual views would be projected or if the participants would mold themselves to a collective idea or 'group think' (Boateng, 2012).

3.3   Participants

The average adolescents aged between 13 and 19 in British Columbia plays video games on a regular basis and owns at least one electronic device that has a video game function (Media Awareness Network, 2005). Therefore, for this study participants between the age of 14 and 18 from an urban high school were recruited. All participants were part of a single gaming group. Three of the four participants were friends enrolled in an alternate school based inside of the school at which I taught. The fourth participant attended the mainstream school.

3.3.1   Sampling and Selection Process

The participants were selected as a sample of convenience. These participants in particular were available for a full week period during their summer vacation. The benefit of working with participants that were former students of mine was that we already had a trustful relationship, which according to Fetterman means that the participants would not hesitate to work with me (Fetterman, 2010). On the other hand, having previously been a teacher, essentially a role of power or authority over the participants could have affected the nature of their responses or behavior around me (Fetterman, 2010).

3.3.2   Sample Description

The actual age range of the students was 14 to 18. There were four participants, one female and three males. All four participants had past experiences or knowledge pertaining to

video gaming. This participant sample cannot be representative of the population of interest since this is a small sample of convenience.

3.4 Data Analysis

Data collected from the research study was primarily analysed through two lenses. The first lens was guided by the General Aggression Model (GAM) (Anderson & Bushman, 2002). GAM can be used to analyze participants' aggressive behavior as affected by video games, through this lens I hoped to address issues that often arise in video game discourse.

The second lens was the theory of Diffusion of Innovations (DOI), which is used to determine how an innovation (in this case mainstream video gaming utilized as a learning strategy in the classroom) is spread or diffused throughout a social system (in this case a high school, perhaps school board) (Rogers, 2003).

3.4.1 Diffusion of Innovation

Diffusion of Innovation (DOI) theorizes how an innovation is spread or adopted. DOI was generally best described and detailed by Everett Rogers in *Diffusion of Innovations*. This book was first published in 1962, but is currently available in its fifth edition. Rogers described four elements of DOI that affected how an innovation is adopted. The four elements are

1. Innovation
2. Communication channels
3. Time
4. Social systems.

In regards to this research study, these four elements were used to determine how and if mainstreaming video gaming can fit into the mainstream North American classrooms (Rogers, 2003). The data collected from participants was used to address each of these four elements.

3.4.1.1   Innovation

To determine if video gaming is an applicable learning innovation, I used Rogers' five factors to analyse the responses of the research studies participants. The five factors include:

1. Relative Advantage - refers to how much of an advantage the innovation has over the current design. For this study this would refer to the advantage of video gaming as a learning strategy over other current learning strategies already implemented in the classroom.

2. Compatibility – refers to how compatible an innovation is with current individuals within the social system. This would mean, how compatible would educators, parents, and students are with video gaming as a learning strategy in the classroom.

3. Complexity – refers to how hard or easy it would be to implement an innovation. Determining how complex or simple it would be to implement video gaming in the classroom is extremely important to this research study.

4. Trialability – refers to how the innovation can be experimented, tested, or even marketed to individuals who would have to adopt it.

5. Observability – refers to how the innovation can be observed by others, the more visible the innovation the more likely it will receive positive reactions.

3.4.1.2 Communication Channels

The Communication channel element from Rogers' DOI refers to "the means by which messages get from one individual to another" (Rogers, 2003, EBOOK p. 59). In relation to the diffusion of an innovation across a social system, Rogers (2003) wrote that:

> Diffusion investigations show that most individuals do not evaluate an innovation on the basis of scientific studies …instead most people depend mainly upon a subjective evaluation of an innovation that is conveyed to them from other individuals like themselves who have already adopted the innovation. (p. 59 EBOOK)

Therefore, the adoption of video gaming in the mainstream classroom must first be accepted by students and educators and then critical mass has to be gained to popularize and socially spread the use of video gaming in the classroom.

3.4.1.3 Time

Time is another element of DOI. Time essentially refers to the rate of adoption of an innovation by members in a social system. Rogers (2003) breaks Time down into three dimensions:

1. The innovation-decision process, the process in which an individual passes knowledge of innovation into an acceptance or implementation of an innovation.

2. Innovativeness of an individual compared to other members of a system.

3. Rate of adoption, the speed at which an innovation is adopted by members of a social system.

Time, while crucial to DOI, is not one of the factors that I have placed much emphasize on in terms of data collection, although time does affect the adoption of innovations in real world applications.

3.4.1.4 Social System

The Social system, as defined in DOI by Rogers (2003) is, "a set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (p. 24 EBOOK). In relation to this research study the social system refers to the education system, the interrelated units would include the parents, ministry of education, administrator, teacher, and student. The data collected from participants are mainly applicable to the teacher, student, parent and administrator. Rogers (2003) also introduces the Adopter Categories under the Social system element of DOI. Adopter Categories are five distinct categories describing the individuals' rate of adopting an innovation within a social system:

1. Innovators, individuals who first adopt an innovation.

2. Early Adopters, second fastest individuals who adopt an innovation

3. Early Majority, individuals who adopt an innovation after a significantly longer time than the two previous categories.

4. Late Majority, individuals who adopt an innovation after the average member of the social system.

5. Laggards, individuals that are the slowest or last to adopt an innovation, these individuals may be against the innovation.

Some students may categorize themselves as Innovators, while others may categorize themselves as laggards. I hope to collect data to determine where the average students fit within the social

systems category of adopters based on observations of participants interactions within a gaming atmosphere.

3.4.2   General Aggression Model

The GAM framework has been significantly used to analyse correlation between violence in video games and human aggressive behaviour in video gaming discourse (Anderson & Bushman, 2002; Carnagey, Anderson & Bushman, 2007; DeWall & Anderson, 2011). GAM is a theoretical framework designed to address the development of aggression and individuals' susceptibility to violence resulting in aggression. GAM is firmly rooted in social cognition theory and development theory (Anderson & Bushman, 2002). Since it employs a variety of existing mini-theories as a basis, I find that it tends to address violence and aggressive behaviour with a more holistic approach. GAM focuses on aggression as an episodic event and breaks it down into three processes: Inputs, Routes, and Outcomes (Anderson & Bushman, 2002).

Input focuses on what factors influence aggressive behavior. Anderson and Bushman (2002) categorized these factors as either Person Factors or Situational Factors. Person Factors include traits, sex, beliefs, attitudes, values, long-term goals, and scripts. Situational Factors include aggressive cues, provocation, frustration, pain and discomfort, drugs, and incentives. Concerning this research study, I hoped to narrow in on both the
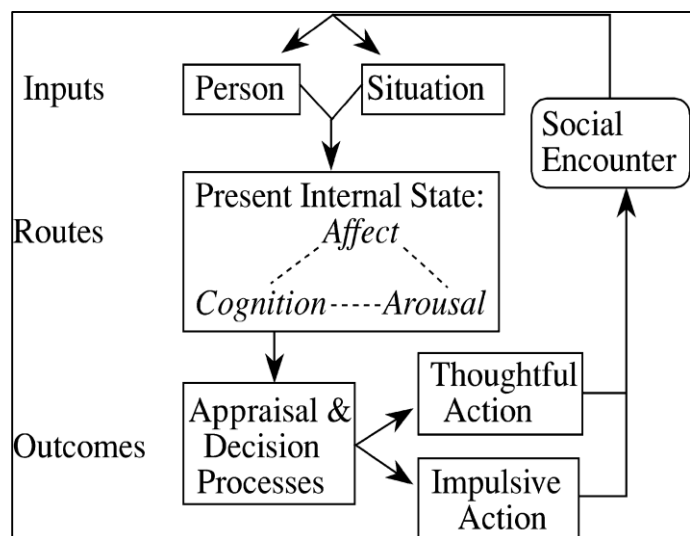
Figure 5: Single episode general aggression model.
SOURCE: Anderson and Bushman (2002), with permission from the Annual Review of Psychology, Volume 53 ©2002 by Annual Reviews, www.annualreviews.org

person factors and situational factors through observations. Through these observations I attempted to extrapolate important themes that affect video gaming as a learning strategy in the classroom.

Routes, according to Anderson and Bushman (2002), refer to how the "Input variables influence the final outcome behaviour through the *present internal state* that they create" (p. 38). Routes are divided into three internal states, cognition, affect, and arousal. Cognition is also described as hostile thoughts; having hostile thoughts increases the individuals' accessibility to aggressive behaviour and this is often referred to as priming (Anderson & Bushman, 2002; McGloin, 2012). Affect relates to mood and emotion, for example, according to Anderson and Bushman (2002), "Uncomfortable temperatures produce a small increase in general negative affect and a larger increase in aggressive affect" (p. 39). Finally, describing Arousal in the scope of GAM Anderson and Bushman (2002) identify three ways that Arousal affects aggression. The first way that arousal can influence aggression is when arousal from an irrelevant source strengthens an aggressively minded individual. A second way that arousal affects aggression is through Zillmann's excitation transfer theory (Anderson & Bushman, 2002). This theory determined through several studies that when participants watched frightening media they were induced to elevated levels of physiological arousal. After watching the frightening media the participants of these studies often experienced a sense of relief well long after the actual viewing (Sparks & Sparks, 2000). Excitation transfer theory is particularly important in determining the role of video gaming in the classroom— if video gaming negatively affects students' behaviour after they are done playing then this would detrimentally affect their ability to engage in other learning activities in the classroom. Conversely, video gaming could also have the exact opposite effect. Through data collection and analysis I hoped to effectively address this issue.

Outcomes refer to what types of actions or decisions are made based on the inputs. The outcomes are best described through two figures that Anderson and Bushman (2002) created. As seen in Figures 6 and 7, the inputs affect the present internal state which then informs the

Figure 6: GAM: expanded appraisal and decision. SOURCE: Anderson and Bushman (2002), with permission from the Annual Review of Psychology, Volume 53 ©2002 by Annual Reviews, www.annualreviews.org

appraisal & decision processes. Actions can then be output as thoughtful or impulsive. These actions as seen in Figures 6 and 7 are then essentially incorporated into the next social encounter and will affect the individuals' personality processes (Anderson & Bushman, 2002).

GAM is extremely useful in determining the likelihood of mainstream video gaming being accepted as an innovation within the school system. Aggression and violence are not accepted in schools, especially with the current zero-policy rules regarding violence, bullying, and aggression in schools. However, through GAM I was able to analyse participant observations and participants' insights regarding the design of interventions to be used in schools to mitigate the effects of violent video games that adolescents are playing outside of school confines. Some of the other issues that I addressed through GAM included if video games lead to frustration which in turn makes video gaming in the classroom frustrating, if video games make participants less sensitive to each other, and if video games decrease prosocial behaviour in participants. If some video games do decrease prosocial behaviour in participants then which type of video games does this? (Lee and Peng, 2006; Sherry et al., 2006)

Conclusion

This chapter addressed the design of the gaming research camp, which was the setting used for data collection. The chapter introduced methods used to collect data and described how the participant sample was selected and formed for the research study. The chapter concluded with how the participants' insights were analyzed through theoretical frameworks. The next chapter presents the data analysis.

Chapter 4: Findings

The findings of the data are presented and analyzed in this chapter. The collected raw data, such as video observations, audio recordings, and flipchart notes were used to develop four chronological stories following the participants throughout the research camp. These four stories in conjunction with the peer to peer interview section were then analyzed through Rogers' Diffusion of Innovations and the General Aggression Model in order to produce a report on the extrapolated themes found in Chapter 5.

4.1 Introduction to Dee

Dee is a sixteen year old female and she was the only female participant in this study. Dee was very quick to respond to my call for participants, and as matter of fact, brought Charlie and Dennis to participate in this study as well. She's extroverted and seems comfortable sharing her thoughts with me and her fellow research study participants. Dee was my student in Physical Education at the alternative school for approximately one month.

4.1.1 Dee's Story

Day 1: Pre-Interview

Dee lives in East Vancouver and describes herself as a musician and avid music listener. Dee's father works in the video game industry and owns a video game company; this association has led Dee and her sister to be exposed to video gaming from an early age. She describes herself as an avid but casual video gamer. Dee currently attends a democratic alternative school and in the past has attended several different schools both alternative and mainstream. Her movement

from school to school can be attributed to several reasons which she touched on throughout the interview.

One of these reasons include that she did not usually get along with other kids or teachers in mainstream schools. Throughout her experiences at mainstream schools she would often challenge her teachers, do things she was not supposed to do, and find ways to get out of doing work at school. She was also quick to point out that she wanted to be treated as an adult at school and wants to choose who she works with, something that mainstream schools lacked.

Dee also switched schools to attend gifted programs; she attended a gifted program because she was ahead in mathematics throughout her primary years. She switched to a mini school in grade eight and then attended a mainstream school in grade ten. Finally, in grade eleven she transferred to her current alternative school. She noted that she feels more connected to her current school. This connectedness she attributes to learning from teachers who are both passionate and experts about the subject they are teaching. An expert is someone who understands what they are teaching and saying, they should be able to explain why and how questions about the subject area. She also enjoys her current school because the students go on a lot of field trips. In effect, the school gives her experiences outside of merely sitting in a classroom.

Dee thinks that school is very important, and specifically states that, learning for learning sake needs to be taught at school. She used the metaphor, "Why do you run? Because you can!" to support the notion that humans are able to learn thus they should (at school), in response to the question, *What do you think about school in general?* (Appendix A.1). Furthermore, she believes that students need an equal balance of learning about personal interests and standardized curriculum, "one makes you functional on an intellectual level (standardized curriculum), and

one makes you functional in the physical world, and one makes you functional as like an emotional spiritual being because you have your passions." She supported this notion by bringing up the fact that she wished that she had taken home economics courses because then she would have been able to sew which is an useful skill that she needs now, it would have made her more functional as a human being even though she wants to be a musician. Some of the notable things or skills she recalls learning at school are, how to play a room (social skills), experienced how to interact with a full spectrum of personalities and behaviors, learned math, formal English composition, and how to comply with being in school.

While Dee enjoys going to school, she prefers learning alone so that she can focus; she prefers online education for learning information as it is more flexible and it allows her to focus alone. She goes on to say that her teachers need to have a good grasp of technology to effectively teach online. In summary, Dee wants her school live to be more about experiential learning and exploring rather than rote learning which she would prefer to complete alone and at home.

Dee embodies the notion that youth are increasingly exposed to digital technologies such as video games and the internet from a young age. She recalled experiences of going to her friends' homes to play violent video games on the Xbox in grade three, as she was not allowed to play violent games at home. She also enjoyed playing video games with her dad and specifically recalled playing a lot of *Mario Kart* with her family when she was younger (primary years). Interestingly, besides playing video games with her friends at their homes she also enjoys playing video games on game stations in retail stores. Dee often goes to stores such as EB Games, Best Buy, and Future Shop with her friends with the intent of playing video games.

While Dee has grown up with video games her entire life she classifies herself as a casual video gamer that enjoys other mediums of entertainment. She stressed that she probably spends

as much time reading as playing video games. She describes herself as on average preferring to read but when she gets bored of reading will switch over to playing video games. In addition, she enjoys playing and listening to music, she often listens to her music while playing video games, "subtitles are a must in video games" [In reference to being able to follow a video game while she listens to music on a secondary source]. In response to the question '*What are your video game playing habits?*' (Appendix A.1), Dee responded that she often plays late at night when she is bored and/or depressed. She enjoys playing for fun while her friends typically are too hardcore (competitive). In response to the question '*Where and with whom do you usually play games?*' (Appendix A.1), Dee stated that about eighty percent of her time playing video games is with her friend (and fellow study participant) Charlie in her living room. Dee plays a variety of video games and states that she prefers cartoony games with fun physics engines; she does not enjoy big level style games such as *Fallout 3*. She does enjoy playing certain types of FPS games, for instance, she enjoys *Call of Duty: World at War* because it explores both sides of the conflict whereas *Call of Duty: Modern Warfare* was too jingoistic, edgy, mildly racists and nationalistic (Appendix A.1). She enjoys playing zombie mode because she does not feel bad about shooting Nazi zombies. In addition, headshots and gore in the game are fun.

Dee had a lot of insightful comments and opinions about video gaming and learning. In response to the question '*Do you think that you would like to learn course material through video games?*' she responded that she would enjoy learning through the use of video gaming (Appendix A.1). However, there were outstanding issues that prevent this from successfully working. These issues include insufficient IT support, class sizes are too large to accommodate all the people, and teachers need to know how to use video games for education. In addition, she

noted that video gaming might be useful in math to teach geometry. Dee revealed that she saw

potential in video games as learning strategies in the classroom.

In response to *'Do video games offer an effective strategy for learning in the context of*

the classroom?' (Appendix A.1), Dee responded that she thought video games are,

> very effective because I know that it such an immersing form of stimulation for people,
> right, because you're getting the visuals, your interacting with it, you're getting the
> stories and the images, and the sound right its very involving and people like to be
> stimulated in that way from what I can tell, especially youth who play video games,
> people who are used to it really like it… (Appendix A.1)

She went on to give an example of how one series of video games did not work in helping her

learn information,

> like I got, computer games that were supposed to teach me when I was little, they were
> all like those *JumpStart* ones and I always got the one … they were supposed to give you
> the one for the grade you were going into but I used to get the one a grade higher than
> that at the end of the school year every year, and like they still weren't teaching me 'cuz
> like if it was stuff I knew I glossed over it, if it was stuff I didn't know I find ways to get
> even better at it through the gameplay but not through the information. (Appendix A.1)

Dee then gave several examples of other video games that did teach her effectively.

> So, which is to say I think it can be very useful. 'Cuz like I was saying I wasn't joking I
> learned a lot about Greek mythology and Egyptian mythology especially, from playing
> *Age of Mythology*, on the computer when I was a little girl, I learned a lot about (Greek
> and Egyptian heroes, life, and myths) … uhm Christian demon mythos from playing
> *Diablo*, right and like as you play those games, when you get older and see the real life
> information you just compare, you have a basis for understanding… (Appendix A.1)

Dee, believes that a secondary skill needs to be taught if video games are to be effectively used

in the classroom, she describes this skill below:

> I think education through video games is a brilliant idea and a very good way of
> capturing peoples information but it has to be taught with a secondary skill, which is
> transferring those skills, if you're going to teach skills in video games then other skill you
> are teaching the kids is that how to transfer the skills they learn in one thing to another,
> and that is an invaluable skill… (Appendix A.1)

She essentially references (without prior knowledge) ideas and theories promoted by scholars such as Gee, Squire, Jenkins, and Steinkuehler around the transferability of skills learned in video games to real life or other facets of life.

> People compartmentalize their lives, so I know girls who can add up a bill at the mall really well and they can't do their math homework right 'cuz they're not seeing how connected world is right? I know people, who are, like I said, I can name 6 people who know every stat they have in *WOW* off hand like of the top of their head, they know every class every piece of information every item, like special like rare quest item, they know everything, but they don't see how the skill that they have at learning those things can be transferred over to their school work to life to their job right everything is interconnected so teaching them to transfer the skills they learn from video games to things that they find less entertaining would be invaluable. (Appendix A.1)

Dee is a proponent of video gaming in education but is also concerned on the implementation of video games as a learning strategy in the classroom. She vocalizes this concern in response to the question *'What requirements do you think your teachers need to meet in order to teach with video games in the classroom?'* with the idea that educators need to be technologically savvy and have intuitive grasp of technological interfaces. She describes this intuition by being "born with a Nintendo controller in my hands." Teachers also need to know how to support the technology that they are using to teach, for instance, they need to know how to plug in cables and hardware. Finally, the actions of the educator need to be clear and defined, meaning that students know WHY they are using the video games to learn content, and HOW they are going to learn.

Day 2: Focus Group

This focus group focused on identifying participants' preferred learning styles, how they like to learn, how they think classroom teachers should teach, ways they have learned in the past, and ways they like being taught organized by subject area. During this focus group we also wrote down participants' and researchers' ideas in different color markers on a flip chart.

Dee was very comfortable in this setting, she was dominant and commanding throughout the conversations, she also actually kept some of her fellow participants on track and clarified terms or ideas for them. She seemed to easily assume a leadership position within this group of participants and recorded most of the notes on the flipchart paper (Figure 8).

During our conversation about group projects, which stemmed from the question about learning styles, Dee replied, "I'm not good at group projects, I'm like a slacker…" (Appendix D.1) Dee confirmed this notion earlier on in her pre-interview when she

Figure 7: Focus Group

explained that she preferred to work alone. She and other participants went on to state that group projects should only be used as a teaching method when the project actually benefits from group work.

During our conversation about how teachers at school should teach, Dee, after finishing texting, commented that, "I think classes should be smaller." She reinforced her statement by noting that, "If someone is telling you about something you're more likely to listen than if you're just telling a room about it, and you're just there" (Appendix D.1).

Dee continued on to comment on the negative aspects of classroom learning that she experienced in response to *how do you like to learn?*

Dennis: One thing I really hated was I had, like in math class or in socials when I had like an actual valid constructive question [pause] and then everyone was just like every single…

Dee: [interrupts] There was like shut up and like whatever, right?

Dennis: Huh?

Dee: Did you get that? Where like if you ask a question in socials, people be like [annoyed sighing sound].

Dennis: I was usually the person face palming because like everyone, just nobody was
             listening to the teacher, because the teacher is so far way, there were so many
             kids, everyone was getting distracted amongst themselves…
Dee: Whenever I asked my teacher to clarify something we just skipped over, everyone
             in the class would be like, "oh my God, shut the fuck up, like you're making him
             take longer."
Charlie: You're gonna be in the class for the same time…
(See Appendix D.1)

Dee revealed her frustrations at her fellow classmates who would often be annoyed at her for

asking questions during class time while the teacher was lecturing. She reinforces the idea that

she wants to be able to have a conversation about the material she is learning, "Learning is easier

when it is a discussion because they ask you what you think" rather than sit through a teacher led

lecture.

        The next question that I presented was how the participants have learned how to do

things in the past from their experiences. Dee suggested that the television (TV) was a source for

learning how to do things.

Peter: So is there other ways you have learned how to do things?
Dee: Television!
             [Television is an important method of learning for Dee; she differentiates learning
             from television as both autonomous and directed learning.]
Peter: So would that (television) be directed or autonomous?
Dee: Autonomous because it wasn't taught… I learned a lot of things by watching
             stuff.
Charlie: The TV can also be directed.
Dee: [interrupts] It can be, like you can watch videos…
Charlie: Like, Bill Nye the Science Guy.
Dee: No No, but that's the thing, that's autonomous.
Charlie: He's teaching us
Dee: Yes, but anything is technically teaching us, if you read a book it is teaching you
             but it's not part of the curriculum. If you go to school to learn something, if you
             pay to go to a class, you're being taught, if you learn on your own you are
             learning autonomously, that's the difference… It's about how you've like found
             the information right, it's autonomous because I chose to watch it, if you have to
             sit down in class and your teacher is like "Watch Bill Nye now!" it's not
             autonomous learning per se because it's directed.
(See Appendix D.1)

Dee is very clear as to what type of learning from the TV she believes to constitute as autonomous and directed learning. Essentially, if the watching of TV is not prescribed by someone then it is autonomous learning, if someone did prescribe the show or channel then it is directed learning.

A couple minutes after discussing learning from the TV, Dee suggested that people learn from watching movies and TV through a concrete example: "People who went to watch *Harry Potter* movies learned about British culture, you learn about their vernacular, and like a little bit about their class system."

Further into the focus group (forty minutes in), we began to discuss how the participants preferred to learn a variety of subjects in the classroom such as, Math, English, and science.

Dee, along with the other participants, unanimously agreed that math needs to be taught concisely, directly, and without gimmicks. They thought that their current textbooks had too many distracting elements, which Dee described as,

> The worst thing that math textbooks ever tried was to have like those fun facts and be engaged with information things… you're just confusing us and distracting us, like its visually distracting. Have you ever tried working from a math textbook where one side is questions and the other side is like a baby seal in a sweater? Like its impossible! (Appendix D.1)

This description leads us to discuss reading and learning in the English classroom.

Dee is very fond of reading, however, from her experiences her classmates not so much. This has affected her enjoyment and engagement in previous English classes, as she was always held back from advancing in her course due to her classmates not having finished reading the book. During this discussion Dee noted that her favourite project in an English class was when she read *Dolphin Song* by Lauren St. John in her grade five elementary school class. The

students were divided into two groups and had to debate several key issues within the book. She believed that the individual work required complemented the teamwork-based debate.

When we approached the subject of science Dee expediently brought forth the opinion that, "we need to do more dissections in school!" (See Appendix D.1) She was very forthcoming with this idea and vocalized that her biology classes would be much more interesting and engaging if there were more hands on learning opportunities such as dissections.

Dee and the other participants were becoming hungry and felt exhausted at this point, thus we ended our focus group (the focus group lasted about one hour) and went out to eat lunch. After lunch the participants wanted to play video games prior to finishing the focus group, thus we reconvened for the focus group at the end of the day.

We continued our discussions about how the participants like to learn within different subject areas. Dee along with her participants stated that physics should be taught similarly to mathematics, meaning no frills and directly, however, they did agree that they wanted to do more experiments in regards to physics.

Social studies was a subject that all the participants agreed needed to be addressed differently, Dee and her fellow participants outlined how social studies seems to be too old fashioned and that the instruction materials such as videos were outdated. Dee also commented on how social studies should be taught differently to increase engagement. She outlined a method to teach social studies that parallels video games.

> Oh my god, you know what would be really fun? Cuz I'm just thinking why we're doing this, imagine if you could play like a video game that was basically like *Assassins Creed* except actual history, and you gotta follow the missions, dude that would be so awesome that would be so fun. Just imagine all the units you'd have done in history! (Appendix D.2).

Dee thought that video games would be an excellent method of teaching social studies; however, she did come up with several implications regarding the use of video games in education.

Dee vocalized the importance of facts and information being accurate in video games used for teaching history. I was interested in what Dee thought about the use of *Civilization* in teaching history as *Civilization* is often referenced as an excellent game to teach social studies (Squire, 2004).

Peter:	How about a game like *Civilization* (in regards of open ended ness video game for learning history/social studies)
Dee:	*Civ* is like really historically inaccurate… you can play a World War II scenario as Germany and win. Like that's the whole point of playing those games… if you had no choice but to win that wouldn't work.
Peter:	What could you learn through from doing things the wrong way? And then finding out that …
Dee:	K' you could for other subjects but for social studies you don't really want to do it the wrong way, and remember that instead of the right way, you don't want to win as the Germans.

(Appendix D.2).

Dee is very concerned about being direct and specific with the knowledge that students need to gain through playing the video game. She also described the difference between allowing students to role-play certain situations in total freedom versus playing a video game with designed parameters to teach specific facts:

> The only problem with role-play in anything that's actual life instead of a video is that you have absolute freedom; I have the freedom to do it historically inaccurately, in a video game you are prompted to make the right choices… If you're doing history it has to be open and shut, if you're doing politics you can have an entire game based entirely on politics and made up politicians and whatever and you can just interact with that. (Appendix D.2).

Dee essentially argues that video games used to teach specific facts such as historical dates and events need to have specific win parameters to make sure that students learn the right facts and do not get confused.

After we exhausted our discussion about social studies we moved on to discuss other informal methods of learning that the participants employ throughout their lives. At this point the participants started to lose focus and began goofing off. Charlie was drawing

Figure 8: Distracting Cup

pictures on his cup and distracting Dee (Figure 9). Dee looked like she was exhausted and exasperated from arguing and discussing how video games should be employed in teaching social studies. I promptly ended our focus group after Dee and Charlie started play fighting in addition to Frank and Dennis zoning out.

Day 2: Observations

Morning

Video observations of gameplay were made in the morning. Dee spent the morning playing *Viva Piñata*[3]; she was sitting on the couch facing the projection screen. Dee demonstrated the typical behavior of a person playing video game, quietly focused and relaxed. She had a short conversation with Charlie when he commented on how silly the *Viva Piñata* mating game was. Throughout this video game playing session Dee did not display any apparent anomaly behavior.

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[3] *Viva Piñata* is a sandbox based game (rated E for everyone); it focuses on building up a garden and acquiring different piñata animals through a process of breeding piñata animals or attracting them to your garden by providing a variety of elements in your garden such as water, buildings, and vegetation.

Afternoon

At the beginning of the afternoon video recording Dee was playing *Viva Piñata* but quickly conceded to playing *Halo 3*[4]. Dee joined in playing *Halo 3* this afternoon and one of Dee's former teachers from her alternative school came by to visit, as he was interested in what was going on at my research camp. Dee taught him how to use the Xbox controller and

Figure 9: Teaching Halo

throughout playing *Halo* was very interested in teaching him how to play (See Figure 10). Throughout gameplay Dee was very vocal and described everything happening on the screen. The other gamers were not as vocal in describing

and instructing while they were playing. After about twenty minutes of gameplay everyone became much more subdued and was focused on playing the game. Dee states that she owns all the *Halo* games but does not enjoy them as much other games (around thirty-eight minutes into the video recording). Dee abruptly stops playing at around forty minutes into gameplay, a few minutes later she vents off her frustration with playing *Halo* after Charlie asks her why she quit playing at forty eight minutes into the recording.

Dee:	Charlie in the course of our relationship how many times roughly tenth to the nearest hundredth have I told you that I dislike this game. [Pause]
Charlie:	Probably one or two
Dee:	At least
Dennis:	I like how you said that
Dee:	Well it's just like I don't mind playing it for a bit but it's like when he asks why I stop playing I just have to wonder like how deep the brain damage is

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[4] *Halo 3* is the third iteration of the popular Halo franchise from Bungie/Microsoft. *Halo 3* is a multiplayer capable first person shooter game that is highly competitive.

Charlie: [chuckles]

Dee passes her controller to Frank and continues to watch the gameplay quietly. The video ends.

Day 3: Observations

Morning

      Dee started the day by playing more *Viva Piñata*; I proceeded to discuss the game with

Dee. We talked about different strategies of gaining more coins. Throughout the first forty

minutes Dee was focused on playing *Viva Piñata*, she seemed very relaxed and easy going. At

about forty six minutes into the video recording Charlie is pestering Dee; she is getting quite

exasperated with his antics. She tells Charlie off and he proceeds to play games on his phone. At

about fifty minutes into the recording Dee attaches her phone to the computer speakers and plays

some music. Throughout the first hour Dee is quiet and subdued.

      At approximately sixty minutes into the recording Dennis arrives, Dee hugs Dennis. All

the participants are now starting to play *Trauma Center*[5]. While starting up the game Dee talks to

Dennis about the previous night. She uses several curse words throughout their conversations.

During gameplay Dee openly curses and mocks Charlie's ability to suture and treat wounds in

Trauma Center. She seems to be the most knowledgeable in this game as she instructs the rest of

the participants how to play. Dee continues to play *Trauma Center* while the others move on to

play *Halo* at around ninety minutes into the gameplay session. She finishes playing at around one

hundred minutes into the video footage and begins to observe everyone else playing *Halo*. She

seems quite content listening to music and watching everyone else play *Halo*. She jokes about

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[5] *Trauma Center* is a mock surgery game on the Nintendo Wii. It challenges the gamer to work carefully and quickly to treat a variety of wounds.

the people (myself) getting continually beat by Charlie. After that we all stopped playing and headed off for lunch.

Afternoon

Upon coming back to the gaming room Dee begins working on some music theory, everybody else is playing *Halo*. Dee seems to be able to focus quite well on her paperwork despite the multiple stimuli comprising of heavy metal

Figure 10: Focused on Theory

music, *Halo*, and us talking (Figure 11). She works on her music theory until about sixteen minutes into the recording.

At thirteen minutes into the video recording we proceed to play *New Super Mario Bro's*[6] (*NSMB*). While playing *NSMB* the participants started playing cooperatively and started learning the mechanics of the game. Soon the participants found out that they could impede each other's progress and inadvertently kill each other. Throughout this session everyone is very social, in order to progress in this game the players need to communicate and problem solve on a constant basis. Approximately seventy minutes into the game we decide to move on to play *Super Mario Kart*[7] as NSMB is becoming too difficult. Dee giggled throughout playing NSMB and seemed to enjoy the casualness of this game. *Super Mario Kart* is a more competitive game that requires continuous focus in order to react to the many obstacles on the race course. Dee is much more

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[6] *New Super Mario Bros.* is a multiplayer capable platformer on the Nintendo Wii. The game is structured like a classic Mario side scrolling platformer, however, it allows four players to play together at the same time.
[7] Super Mario Kart is a multiplayer capable racing game on the Nintendo Wii.

focused during the time that we play *Super Mario Kart*. Dee is quite subdued and seems tired

after finishing playing *Super Mario Kart* she replied," It's the Mario, it's killed my brain a little"

in response to me saying that they can go home if they are all video gamed out.

Day 4: Observations

Morning

Dee is relaxing on the couch while watching Frank play *Call of Duty: World at War*[8]

(*COD*). They quickly decide to play multiplayer death match rather than zombie survival mode.

Dee seems to enjoy this FPS much more than *Halo*. While playing *COD* she barely says a word

and is very focused on beating the other gamers. After about thirty minutes the participants finish

playing *COD*, Dee lies down on the couch to relax and continues to watch Frank play *COD*. Five

minutes later we pack up for lunch.

Afternoon

Dee and her fellow participants started the afternoon session by watching a variety of

YouTube videos. They were watching the tap dance and musical performances from the 2010

Olympics opening ceremony. Throughout watching these video Dee, Dennis, and Charlie are

commenting on various aspects of this video. There are several instances in which they use slang

and offensive language without hesitation. Twenty minutes into the afternoon session Dee and

her fellow participants decide to play *Mario Kart*. During this gaming session Dee is hanging out

behind the couch, she plays for about twenty minutes and then hands me her controller, she starts

browsing the web on the desktop computer. She seems happy to switch between listening to her

music, browsing the web, and watching us play *Mario Kart*. She jokes and mocks the other

people playing.

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[8] *Call of Duty: World at War* is an fps and is an iteration within the *Call of Duty* franchise.

Day 5: Observations

Morning

Dee arrives with Charlie approximately twenty minutes late. She joins Frank, Charlie, and I in playing *New Super Mario Bros*. While playing she attempts to instruct the other people on what to do, she gets frustrated throughout gameplay when people mess up or cause her to die. Dee quits playing at about one hour into gameplay and begins browsing the web on the computer. She starts playing *Mario Kart* once Charlie, Frank, Dennis, and I finish playing *New Super Mario Bros* and decide to play *Halo*. Dee continues to play *Mario Kart* for about forty five minutes at which point we all leave for lunch.

Afternoon

In the afternoon Dee goes back to playing *Mario Kart*, Charlie joins her at about twenty minutes into the gameplay. Dee remains fairly quiet and focused throughout playing *Mario Kart*. During the loading phases she does socialize with Charlie who is sitting next to her on the couch. After playing for about forty minutes Dee looks tired and slightly annoyed from competing in *Mario Kart*, she lies down on the couch while Charlie moves on to browse the web on the computer. She remains on the couch until I stop recording.

Day 5: Post-Interviews

The post interviews were conducted on Friday, the last day of the research camp. During these interviews I was interested in pursuing some of the themes and ideas that were brought up during the camp. I was also interested in whether or not participants had anything else in mind regarding video gaming in the context of education.

I first asked Dee to help me clarify what it meant to be East side versus West side as I noticed throughout the week that the participants mentioned being East side in regards to

behavior and culture. Dee identified being East side as being more of a joke, she thought it was a 'fake' description or stereotype, and the terminology was used more for comedic effect.

The second area of my inquiry was around what it meant to be tech savvy. In response to the question of the question about what it mean for a teacher to be tech savvy Dee replied that "you have to know how to hook up the electronic equipment, quickly" (Appendix B.1). In addition, she mentioned that "if the picture doesn't show up on the video you have to know which cables to check, you can't bumble around for an hour or ask a student to help you right because it makes you look incompetent and people will lose respect for you" (Appendix B.1). Essentially, Dee believes that it is imperative for a teacher to know how to troubleshoot and utilize the digital technologies (in this instance video games, consoles, and PCs) they're using in the classroom.

To round out the question about being tech savvy, I asked if age was a factor in being tech savvy, to which Dee replied, "It comes with experience, it's not age, that's why there's 8 year olds better at video games than forty year olds. It's just about how many hours you put into it" (Appendix B.1). Dee understands that while age shouldn't be a factor realistically it is a factor due to the amount of exposure to digital technologies as evident in her following comment: "In newer generations it comes easier because we have so much more opportunity to play with these games and use technology" (Appendix B.1).

During the interview with Dee I was interested in further exploring her opinion of using video games in the classroom for learning. She seemed to be very biased in supporting the notion that video games are a viable method for learning, but despite these biases was very critical of

the drawbacks or shortcomings that video games present. This was evident in our dialogue about

using video games in the classroom.

Peter: If you're going to learn something in the classroom what would it be and which video game would it require?

Dee: You can't learn math through a first person shooter. I think there could be digital math, which would be entertaining, you could use a video game style interface to teach the course, cuz that would give the students lots of control over how it's presented, but I don't know, [pause] I would teach history through video games.

Peter: Which video game would you use to teach history?

Dee: *Call of Duty* style, cuz you teach about conflict, but still it's like you get to play a character on both sides of the war and you hear people talk so you can get an attitude that the soldiers had and you can see the environment so you can get a feel for World War II era tanks and weapons and uniforms and leaders and countries involved.

Peter: Would you do that more as a priming activity so oh, we're going to learn about World War II so before we even start we are going to play this game first, or would you kind of put it between lessons or end of lessons?

Dee: I would have the game designed and tweaked specifically for the curriculum, there's no game on the market right now that I would say is appropriate for teaching in high school. Because they're not historically accurate they're not meant to be educational, you would have to have either a mod or game designed specifically for education.

Peter: So you think it would be too confusing to teach through comparison and contrasts? For example, let's play *COD World at War* and then play several levels, and then say this is what happened in game, now how does it contrast and compare to against real life via history books?

Dee: No, like most students hardly pay attention at all, so if you give them a piece of information the first time and then tell them later its wrong, they're only going to remember the first one, you'll only confuse them it would be really confusing for most students.

(See Appendix B.1)

Dee repeatedly throughout the interview sticks to her idea that video games need to be designed

to effectively teach content mainly due to the potential of mainstream video games to misguide

students with wrongful information. Dee seems very concerned with the delivery of correct

course content; we further explored this in the following excerpt of the interview.

Peter: Most effective way to teach with video games would be with games designed for education.

Dee: YES, because like, the thing is, normal mainstream market video games won't cover all the curriculum and like they won't be exactly what we are supposed to

be learning and they won't be perfectly examinable. And I have had a lot of teachers who have tried to do fun shit that's not quite related to the curriculum and it always just ends up feeling like a waste of time.

Peter: Right, is that due to assessment? You're like oh, now I'm not going to get the full scope of all the stuff I need for my marks?

Dee: No, it just means we have to do the fun game they're trying to make us play and everything else, right, we have to do our homework and tests and we have to put on a skit.

(See Appendix B.1)

Dee mentions something that is extremely important in thinking about using a novel method of teaching. Is the method just an add-on to the required work and expectations, or is the novel method a replacement for a section of the current required work and expectations.

Dee thinks that video games are enjoyable and engaging because they have the potential to deliver rich immersive content that one can interact with. However, she realizes that formal schooling is based on a set curriculum, course content should be concise and to the point so that students who utilize the course content can do well on the assessment areas

4.2 Introduction to Frank

Frank is a fifteen year old male; he was the youngest member of this research study group. Frank responded to my call out for participants while I was advertising it at the school I was teaching at. He was born in Iran and went to school there prior coming to Canada. He was typically a quiet person, introverted, but friendly. He didn't seem very comfortable sharing his thoughts in group situations, possibly due to the fact that English was his second language. Frank was my student in a technology education course for one year prior to this research camp.

4.2.1   Frank's Story

Day 1: Pre-Interview

Frank is from Iran, he described himself as a quiet person and was quick to mention that he was a pacifist; however, he does not mind fictional visual violence and often likes violence in forms of video games and movies. He mentioned that he could sometimes be talkative depending on where and with whom he is. He usually works very hard, tries his best, and stays quiet. He went on to mention specifically that he thinks he has a bad memory. He spent the last eight years attending Canadian public schools located in the downtown core of Vancouver.

Since Frank attended school in Iran he had a unique perspective on contrasting and comparing the methods of teaching from two very different societies. Firstly, he described the students in Iran as being much more disciplined than the students in Canada. He argued that students were more disciplined in Iran because teachers were allowed to use force, physical punishment, and emotional humiliation against the students. In Canada he mentions an almost exact opposite situation, in which students make fun of the teachers and other students without much reprisal or repercussions. While students in Iran are more disciplined Frank mentioned that students in Canada have more freedom. In Iran students were not allowed to go outside during school hours, they were forced to sit in a specific area for lunch time, and the classroom itself was much more controlled and enforced. According to Frank, the main reason why students were not allowed to go outside of the school during class hours was to prevent people from skipping school. In terms of workload, Iran was much more difficult in subjects such as math and sciences, there was more homework and much more time was taken to review materials over and over until everyone knew it.

When I asked Frank what he thought about school in general, he continued to contrast his experiences from both Canada and Iran. He explained that school was important because, "knowledge is needed for a person to be successful at life. If you don't go to school then you have nothing to work with" (Appendix A.2). He contrasted the way social studies was taught in Iran versus Canada, in Iran everything would be very structured and they would follow the textbook page by page, whereas in Canada, content in textbooks would be skipped or progressed through very slowly. Other times, the teacher would deem certain content in textbooks not necessary to cover. Furthermore, in Iran school was a lot more restrictive and conservative; for instance, no one would talk about sexuality or drugs in school, if a student was caught talking about these subjects the student would be subject to suspension or expulsion. Frank reinforced his idea that there need to be clear boundaries between students and teachers, he thought that students in his current school were too disrespectful to each other and their teachers.

Frank prefers to learn at school through more traditional methods of instruction. For example he enjoys following a text book and will often read his favorite social studies textbook chapters three to five times. He noted that conversations in the classroom become distracting as they sidetrack the prescribed learning content. This links over to the fact that he does not enjoy discussion groups and thinks that the teacher should primarily be the only person talking in class. Furthermore, he would rather look at notes as they are more concise.

While Frank enjoys traditional methods of instruction he did stress the fact that teachers need to be passionate about the content and class that they are teaching. He also indicated that there need to be small breaks in instruction and that having a mix of learning activities is good. Finally, he pointed out that in his experience group work usually ends up with friends getting together in one group and not finishing their work.

Frank's preference in instructions relates to the methods that he employs to learn difficult content. For example, in French class he enjoys listening intently to the teacher to learn the language. He will also break complicated learning concepts into small chunks, for example, he will take a complicated French sentence and break it down into small sections which he then translates, upon understanding the small sections he puts them all back together and attempts to learn the entire message of the sentence. If this method does not work he will try to ask the teacher for assistance.

Upon asking Frank about whether or not video games offer an effective strategy for learning in the classroom he indicated that *Call of Duty* and mathematics have no connection. However, he did indicate that there are some games that could connect to curriculum in social studies. Frank also thought that the PlayStation Move and Wii controllers could be incorporated as part of warm up activities in Physical Education (PE). Finally, he thought that games such as *Batman: Arkham Asylum*[9] could potentially be used to teach self-defense in PE.

For teachers to employ video gaming in the classroom, Frank thinks that those teachers need to have an average understanding of video games and technology. This understanding comes with knowledge through experience, not age.

Frank tends to play video games at home, but also plays video games with friends at his local community center and school. At home he plays with his sister who only seems to enjoy playing fighting games. He prefers to play single player games such as *Assassins Creed*, *Batman* series, and *Civilization*. Generally speaking, he prefers the action adventure genre video games. Frank plays these video games in the mornings on weekdays and, "Non-stop over the weekend".

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[9] *Batman: Arkham Asylum* is an action adventure game based on Batman available on the multiple platforms.

When I asked Frank what other forms of entertainment he enjoyed he replied that he usually plays on his computer, he indicated that he finds movies to be all too similar. He does sometimes enjoy watching TV or reading books. He also goes out to play basketball with his friends on the weekends. Finally, Frank added that he will watch an amazing movie over video games, and will sometimes also just sit and read for hours.

Day 2: Focus Group

Prior to this focus group Frank was playing *Halo 3* with Dennis, Charlie, and myself, during this gaming session we were all quiet, focused, and quite competitive. Throughout this focus group Frank was attentive but did not participate in the discussions as much as the other participants.

This focus group focused on identifying participants' preferred learning styles, how they like to learn, how they think classroom teachers should teach, ways they have learned in the past, and ways they like being taught organized by subject area

While Frank was relatively quiet and reserved during this focus group he did communicate several interesting points. For example, while discussing small group work Frank revealed that he usually does most of the work and that his group members won't do anything in addition he often gets asked to be part of groups because the students know he will do the work. When we discussed how participants liked to learn by themselves, Frank indicated that unlike the other participants he prefers learning from textbooks over the internet, "rather it has the information that I should be knowing, rather than just going on internet finding extra information I don't need to know" (Appendix D.1).

Frank was predominantly passive throughout the rest of the discussions about how the participants like to learn. However, Frank did participate in the discussion when the focus group

discussed participants' experiences with different subject matter in the classroom. For example, during the conversation about English class, Frank echoed Dee's complaint about how classmates would never finish reading the assigned novel while they would often finish reading the novel on the day of receiving the novel.

The focus group came to a pause as the participants were becoming hungry and felt exhausted, we decided to go out to eat lunch. After lunch the participants wanted to play video games instead of continuing on with the focus group, we agreed to finish the focus group after playing video games first.

Once we reconvened for the focus group we continued from where we left of prior to lunch, and discussed how the participants like to learn within different subject areas. Frank was still quite shy and did not say very much, however, he did provide some contrasting (compared to the other participants) observations about how and what should be taught in social studies. Frank stated that, "We shouldn't allow reading aloud, because people laugh or make comments that slow down the class" (Appendix D.2). Frank also made an insightful comment in conversation with Dee about using video games in the classroom.

Dee: OMG you know what would be really fun? Cuz' I'm just thinking why we're doing this, imagine if you could play like a video game that was basically like assassins creed except actual history, and you gotta follow the missions, dude that would be so awesome that would be so fun. Just imagine all the units you'd have done in history!

Peter: Now could a teacher for example have modified a video game to kind of teach that?

Dee: It would be difficult… specifically.

Frank: IT couldn't be like that, because uhgm…

Dee: There's no game with those stories in it, I don't think…

Frank: It's like saying the teacher will just modify the textbook; she can't, because she has to teach this stuff that the school board tells her to. So you can have like a game special made by the school board and has the stuff that you're supposed to teach. Students can just play with it.

Charlie: The game would have to be made by a video game company. But there is not a
             big enough market for it…

(See Appendix D.2)

Frank criticizes video games' limitation to connect the prescribed learning outcomes that

teacher has to teach students with what is taught by playing a video game. Frank remains quiet

during the focus group until we get to the question of whether it is important to learn how to

learn or learn how to memorize things and be encyclopedic. To this question Frank replied,

"Mostly its important how to learn it because memorization can be done anytime and you're

going to forget anyways, so actually understanding it is rather better." Frank remained mostly

silent for the rest of the focus group; however, he was attentive to the other participants' ideas

and conversations.

Day 2: Observations

Morning

Video observations of gameplay were made in the morning. Frank and Charlie were

playing Marvel vs. Capcom 2[10]. During this game session Frank is quite talkative and

comfortable, which contrasts strongly against his demeanor during the focus groups. Frank

continues to be very polite in his demeanor; he offers and passes his controller to other

participants. During this session Frank continues to address me by my last name rather than my

first name. Throughout the next half hour Frank joins the sustained cycle of cheering (during

moments of success of either participant, e.g. succeeding at pulling off massive combos[11]),

advice giving (in moments of calm and when one person is losing the match in addition to

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[10] *Marvel vs. Capcom* 2, the sequel of *Marvel vs. Capcom* 1, is a fighting game on the PS3 (also available on other systems) that pitches characters from both the Marvel Comics universe and Capcom universe against each other.
[11] A Combo in a fighting game refers to combinations of attacks (punches, kicks, or special moves like fireballs) that successively hit the opponent without any interruption.

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choosing of characters to beat the repeat winner), and focusing (the two players focusing on fighting).

Afternoon

Frank is playing *God of War* (*GoW*) with Dennis. Frank has played GoW in the past and is coaching Dennis on how to play *GoW* (Figure 12). They trade the controller between the two of them while everyone else

Figure 11: Teaching God of War

plays *Halo*. Frank continues to play *GoW* when Dennis moves on to play Halo. Frank finishes playing *GoW* after about forty five minutes. After finishing with *GoW* Frank quietly watches everyone else play *Halo*, he continues to watch until we start the last section of our focus group.

Day 3: Observations

Morning

Frank and Charlie start of the morning by playing *Little Big Planet*[12]. Charlie and Frank play for approximately fifteen minutes before eventually getting stuck in a level. I join their game to help solve their puzzles. Frank becomes bored of the game at approximately twenty five minutes into gameplay and stops playing, he starts watching Dee play *Viva Piñata*. The entire group starts playing *Trauma Center*. Frank is quieter than Dee and Charlie who are both quiet rambunctious; during his turn to play he seems focused and is open to Charlie's criticism and guidance. The entire group overall is very supportive during this gaming session. After playing

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[12] *Little Big Planet* is a multiplayer platform action adventure game available on the PS3.

Trauma Center for approximately forty minutes the group moves on to play *Halo 3*. Conversely during this session the gamers are all very quiet and focused. There is less use of profanity while playing *Halo* as compared to *Trauma Center*. Frank does not use any profanity throughout these gaming sessions.

Afternoon

In the afternoon Frank goes back to playing *Halo* with Charlie, Dennis, and I. We play for approximately fifteen minutes before moving on to *New Super Mario Bros*. Frank, Charlie, Dee and I play together for approximately an hour. The first half of the game we work cooperatively to finish each level, however, when the levels get more difficult we become more competitive and selfish in order to beat the level. This game session elicited a lot of profanity and laughter from the gamers, as we accidently (or purposively) killed each other in the game. Frank is generally quieter than Charlie and Dee, however, compared to *Halo* and previous game sessions he is much more animated and social, also, while Dee and Charlie used a lot of profanity Frank did not. Frank joined playing *Halo* with Dennis after we finished playing *New Super Mario Bros*, while playing *Halo* he again was much quieter and reserved. He continued playing *Halo* until I ended the camp for the day.

Day 4: Observations

Mornin*g*

Frank started off the morning by playing *Call of Duty: World at War*, he played solo for about ten minutes before Dee and Dennis joined him in a thirty minute multiplayer match. During this gaming session Frank was quiet and barely spoke a word. He remained focused on the screen for the duration of the gameplay.

Afternoon

While Dee, Charlie, and Dennis were watching the 2010 Olympic performances Frank began playing Tom Clancy's *Ghost Recon: Advanced Fighter*[13]. He continues playing this game silently for about twenty minutes until everyone joins in to play *Mario Kart*. Frank continues his trend of quietly playing and chuckling at Charlie and Dee's antics. We play for about forty five minutes before it is time to go home for the participants.

Day 5: Observations

Morning

Frank showed up earlier than expected, he decided to read his book while I went out to grab coffee and snacks for the day. Frank read his book on the couch for about twenty minutes at which point I returned to the gaming room (Figure 13). Frank and I played New Super Mario Bros for approximately twenty minutes at which point Charlie and Dee arrived. During the twenty minutes Frank talked quite extensively and joked around.

Figure 12: Reading

He also referred to me as Peter rather than Mr. Halim during this session. Frank continues to socialize in the same manner even when Dee and Charlie joined the gaming session; a drastic change compared to the prior four days. Frank annoyed the rest of the participants by repeatedly saying, "Bubbletize" in reference to being able to turn into a safety bubble in *New Super Mario Bros*. Frank played this game for about eighty minutes without much of a break. He looked very

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[13] Tom Clancy's *Ghost Recon: Advanced Fighter*, (*Ghost Recon*) is a tactical FPS game on the Xbox 360.

comfortable around the other participants in this gaming session. We left for lunch shortly after finishing playing *New Super Mario Bros*.

Afternoon

Frank started his afternoon by playing *Halo* with Dennis and me. He behaved similarly as during other sessions when he played *Halo*, quiet and focused. Frank continued playing *Halo* until he joined me for his post-interview.

Day 5: Post-Interviews

The post interviews were conducted on Friday, the last day of the research camp. During these interviews I was interested in pursuing some of the themes and ideas that were brought up during the camp. I was also interested in whether or not participants had anything else in mind regarding video gaming in the context of education.

Just like how I first asked Dee to help me clarify what it meant to be East side versus West side, I asked Frank the same question, he replied to that he doesn't every really think about it. He also noted that the idea of identity based on geographical location in Vancouver, " doesn't really necessarily show what I am or who I am, it just shows that I was able to purchase this house in here… its showing that my parents chose this place, not me, it doesn't really define me" (Appendix B.2).

After asking about identity I asked Frank to explain to me what he thought it meant for a teacher to be tech savvy. His response to the question aligned with the need for a classroom to be organized and smooth operating. Interestingly, I found out that Frank wasn't entirely clear on what savvy meant.

Peter: What requirements do you think your teachers need to meet to be able to teach with technology, what does it mean to be tech savvy?

Frank: Well, I guess you have to know, because if say in the class if the console breaks well that's kinda terrible because at least 3 or a whole group of people isn't going to get their turn to play with it, game, and they are going to call someone to fix it, but that's going to take the whole day or three days to do it, but if the teacher knows what's going on and it breaks then she can, if its within her knowledge, she can fix it easily, and the class can go about its business, but if the teacher doesn't know a single thing, if the teacher doesn't know if it's broken or not then it kinda sucks. (Appendix XII)

Peter: Basically the teacher needs to have an in-depth knowledge of the technology that they use?

Frank: She has to know more than average, below average is not good enough; if she is average [Pause] there could be a few spots here and there.

Peter: What does that mean being average?

Frank: Minimal understanding of it, [Pause] like they know some stuff but they don't know every single part and how they work, and what needs to be replaced to make it work.

Peter: Is age related to tech savvy, what does it mean to be tech savvy?

Frank: Well, I don't know what the word really means (savvy)

Peter: Being tech savvy means that you know how technology works, being savvy means that you kinda know the ins and outs about it, you know how to connect things, you know how to set it up, you know how to troubleshoot, you know how to do all that stuff.

Frank: I guess not then, because if age mattered then that would kinda suck because there's a different range of people with different ages that use computers and it has to be a specific age, then yeah that's like saying if only people under 30 can do it, well you know not all teachers are under 30, that means they can't have the knowledge? It just depends on who is able to get the knowledge and process the knowledge [pause] It depends on the actual teacher like if they don't want to and just have the kids play the game, well, they just don't want the knowledge, they don't want something they're not gonna be using outside of the classroom, but if somebody is actually wanting it then the age doesn't even matter.

(Appendix B.2)

I was intrigued by Frank's response and asked him if he thought that his peers or himself

was technology savvy. In response to this question Frank referred to his opinion that savvy-ness

is related to the amount of time that an individual interacts with the technological device.

My following questions were focused on the learning. I asked Frank about what he would

like to learn through video games in the classroom and what video games it would require. Frank

responded that history would be interesting to learn through video games because, "history with

textbook gets boring" (Appendix B.2). Furthermore, according to Frank, video gaming would

bring, "a whole new level to it, video games work best with history, not math or science or English, because they are subjects that require a lot of thinking and equations and a lot of written stuff" (Appendix B.2).

Frank recognizes the limitations of video games in the capacity to efficiently convey theoretical concepts, "For math, well that's going to be really hard, you don't have a story you don't have a real character that is going to be using it, all you know is they gonna need equations, and that makes it really hard for designers" (Appendix B.2).

I followed up his comments about how he thought that content in the video game was the primary method of promoting learning by alluding to how we learned from each other while playing *New Super Mario Bros.* on the Wii. He replied to this with examples from his experiences at the video game camp.

> In video games you are not going to pay attention to other people, because you need to focus on your own character in the video game otherwise you will get lost…When you become interested in something your brain thinks that, "oh yeah that's a really important piece of information." Because you are interested and really want to know it, that's how video games go. Like if you really love this game you will remember like a few of the levels inside out, as you saw, Charlie knew where all the weapons were in *Halo* when we first played, because he was interested in the level and gameplay. (Appendix B.2)

This was the last question that I asked Frank during the interview.

4.3   Introduction to Dennis

Dennis at the time of conducting the research camp was a sixteen year old male. He came to the camp on Dee's insistence. Dennis attended the same alternative school as Dee and Charlie. Dennis is relatively introverted and describes himself as reserved.

4.3.1 Dennis's Story

Day 1: Pre-Interview

Upon describing himself Dennis noted that he has attended lots of different schools, about six to seven elementary schools, some which he attended for less than 2 weeks. Additionally, he has attended three secondary schools. The reason why he changed so many schools is attributed to him being either expelled or him choosing to switch schools. He also pointed out that he attended a choice school in lower grades, and described that school as being able to choose what you want to do.

In response to the question of what Dennis thought about school in terms of his past experiences he replied that he isn't against education but believes that the current institution of education is useless and underfunded. He believes that presently school doesn't do much, except for teaching children to follow routines, obey authority, and prepares them to be working tools. He believes that the current model of education needs to change and states that, "school so far has sucked" (Appendix A.3).

Dennis's opinion of school in general is similar to his opinion based on his experiences. He believes that school is an important institution and key to a functioning government. He is dismayed at the lack of funding for education and gives an example to this lack of funding by highlighting the lack of textbooks available to students in his class. He believes that instead of pumping money into fighter jets, the government should instead put that money into education (Appendix A.3).

Dennis's experience at school made him believe that people who blindly follow the rules have a more reliable chance to get somewhere in life. However, people who break the rules and interact with their environment have a greater chance of success but also failure.

Regarding video gaming, Dennis stated that he was not much of a gamer anymore, and as a matter of fact sold all his video games and used that money to get into skateboarding instead. However, he did note that he enjoys sandbox or open world style games. He also enjoyed video games with good dialogue and consequences for dying as he thinks that video games are supposed to be simulations of life. In the past Dennis described himself as a video game addict, he was able to get away playing a lot of video games because his parents had different rules at their homes. Currently, he does not play video games on a daily basis and has abstained from hardcore gaming this year. Dennis did state that he will often join his friends when they are playing and believes that he is primarily a social gamer. His definition of a video game is, "Digital visual entertainment with user input; purpose of entertainment, few real world consequences." (Appendix A.3)

When asked what other things Dennis did for entertainment he replied that he enjoyed skateboarding, reading, and navigating the web for general browsing and listening to music. He also said that he is not very social and is somewhat shy; therefore, he prefers to talk over the internet versus talking to people face to face.

Dennis was concise in describing how and what he likes to learn. He commented that he likes to learn on his own and through experience, experiential learning. If he has to learn theory or difficult abstract content he prefers to be given a textbook and be allowed to follow it at his own pace. He does not enjoy being told what to do or being dictated to do specific things. He also enjoys learning through conversations; however, class discussions are only useful when everyone contributes. In addition, when he has to learn something difficult Dennis likes to learn in baby steps, he believes that with one hundred percent effort and perseverance he can eventually learn the concept or lesson.

While Dennis felt negative about his school experiences he did believe in the importance of school and education. When asked about what he thought was important to learn in school he commented that life skills are the most important. Educational skills he thinks should be secondary to teaching concepts such as responsibility and self-motivation for learning. He summed up his thoughts on what should be taught by stating, "Learn how to learn (is a) priority above learning knowledge" (Appendix A.3).

I segued from Dennis' statements about learning to learn into a question about whether or not he would like to learn course materials through video games. He responded that his enjoyment would depend on if the video game was boring or not— if it was he would not enjoy it. After that response Dennis stated that he wasn't sure exactly how it would be implemented properly in class.

Dennis's experiences with video games in the classroom revolved around *Math Munchers*[14]. He learned how to do mental math from video games and continued to play many educational video games throughout his primary years. Additionally, he played all the *Jump Start*[15] games through grade six.

Dennis had some interesting insight into video gaming in relation to education. For example, according to Dennis, if a teacher were to teach with video games in the classroom, that teacher needs to be tech savvy. Furthermore, the teacher must also be literate in the video gaming nomenclature and culture. When asked if he had teachers that taught in ways that mimicked video games, Dennis responded that interactive lessons and discussion felts closest to learning like he would from a video game. Also, earlier in the interview Dennis stated that he believes

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[14] *Math Munchers* is an educational video game that teaches mathematics.
[15] *Jump Start* is an educational video game franchise that teaches mathematics and language skills.

that it's hard to balance fun and education. Additionally, believed that the success of education through video gaming depends on how fast people learn, how much money has been put into the initiative, and the learning objectives. When asked about what type of students would benefit from learning curriculum through a video game, Dennis replied that attentive students who can pick up information easily would benefit. Finally, he also noted that alternative learning strategies (such as learning through video gaming) are not easier, they are different and better geared for specific people.

Day 2: Focus Group

Prior to this focus group Dennis was playing *Halo 3* with Frank, Charlie, and myself, during this gaming session we were all quiet, focused, and quite competitive. Throughout this focus group Dennis was attentive and seemed to think carefully before responding.

The first thing Dennis talked about was in response to Frank's question about what the difference was between alternative school and mainstream school. Dennis described his alternative school as, "Teachers actually care about the students and they don't just throw paper at me and expect me to hand it in" (Appendix D.1). We continued on to discuss small group work.

Dennis's experience with small group work was predominantly negative as evidenced by his remark that;

> I unfortunately stood out from my class, so my teacher would throw me in groups with kids that she though needed help, which basically meant that I was thrown in with a group of stoners and I was expected to do all the work for everybody. (Appendix D.1)

Dennis also added that he puts pride in his work, but feels that in group projects his group members would sometimes ruin his hard work and grade by sabotaging the group project by not fulfilling their components of the project.

Dennis determined that he preferred to learn on his own, and evidenced this by how he used the internet to learn to play guitar on his own. He describes this learning experience as, "I got a guitar, I sat in a room with a laptop, and about three hours later I could play chords and *Smoke on the Water*" (Appendix D.1). Some of the websites that Dennis used to learn were YouTube and Google. Dennis further explained his view on how he likes to learn in response to the participants talking about being taught by an expert:

> It's sort of a tradeoff, like I find that I learn faster if I'm being taught 'cause then I can have my questions answered rather than scour the internet for someone else asking the same question … and they also have the opportunity to tell me things I wouldn't find on my own. (Appendix D.1)

Dennis further highlights the benefit of being able to learn from a teacher by revealing his general impression of teachers, "Most of the teachers are competent and provide personal help when necessary, rather than just sitting at the front and droning from a book" (Appendix D.1).

Dennis often finds that too many people in class do not pay attention and ask irrelevant questions that have either already been explained or are not pertinent to the topic in the class. He responded to Dee's complaint about being told to "shut up" in class when asking questions with,

> I was usually the person face palming [, 'talk to the hand,' expression of exasperation], because like everyone, just nobody was listening to the teacher, because the teacher so far away, there were so many kids, everyone was getting distracted amongst themselves, they all had their own questions that were pretty much recapping or generally dumb… (Appendix D.1)

Dennis summarized his feelings by talking about it was frustrating for teachers to have to repeat themselves to his classmates due to people not listening or following instructions.

Dennis spends a lot of time drawing on his arm and fidgeting while Dee and Charlie discuss autonomous learning. He does respond to my question about if the participants learned from traveling by saying that, "Passively walking around you learn things you're not actively like, "Tell me about your culture right now!" (Appendix D.1).

This discussion about learning through travel segued to conversations about experiential learning, this led Dennis to describe some of his favorite assignments which he described as, "a teacher lets each kid go on their own tangent… do something that is related to like fourteenth century French ruler ship… then you have these kids who literally, like, built these trebuchets or guillotines and just go totally far off…" (Appendix D.1).

Dennis does not participate much when Charlie and Dee discuss learning in mathematics; however, Dennis takes over writing down comments on the flipchart paper at about thirty minutes into the focus group. After discussing mathematics the focus group discusses English class.

Dennis agrees with Dee that they hate being amongst the fastest readers in their English class as they would often finish reading their assigned novels before their classmates finished a single chapter. He further went on to describe how in grade ten English class he was able to achieve extremely high marks by finishing his required work early and completing extra assignments for bonus marks. Dennis described this experience as being a product of being taught by a new (younger) teacher who was experimenting with different teaching methods. He believes that older teachers are more rigid in their teaching methods and are less flexible in making class learning more individualized.

Dennis along with the other participants was showing signs of exhaustion and was having difficulties focusing on the conversations at approximately fifty minutes into the focus group. We decided to reconvene for the remaining topics of the focus group after lunch. After lunch the participants did not feel like commencing the focus group right away, instead they wanted to play video games prior to finishing the focus group. We finished the remaining sections of the focus group about an hour before the end of the camp.

Upon reconvening we continued our discussions about how the participants like to learn within different subject areas. Dennis joked that he wanted to dissect a pickled fetus; I directed the participants back to discussing how the participants liked to learn science. Dennis disagreed with Charlie that physics is more fun when taught with hands on experiences, "I don't think there's any feasible way to demonstrate hands-on physics in the school that's both entertaining and not futile and not stupidly expensive" (Appendix D.2).

Dennis remained quiet for the next twenty minutes; he spends that time drawing on his arm and hands (Figure 14). Dennis did reenter the conversation when we discussed informal learning. At approximately thirty minutes into the focus group the participants seem edgy and tired of talking about learning. Charlie and Dennis bothered

Figure 13: Drawing

Dee until I guide the participants into discussing how they each like to learn informally, or learn things not at school. I was able to discuss with Dennis how he liked to learn longboarding:

Peter: How do you find you learn things in general? How did you learn how to skate, or learn to longboard?
Dennis: Learn from trial and error… you fall and you get back on.
            [Further into discussion]
Dennis: I've had tips from other people through like knowing people who were just like don't do this, do this, and I was like oh my god.
Peter: Did they verbally tell you that?
Dennis: Well they notice me doing something, I notice them and they notice me, and I deliver those same tips to other people.
(Appendix D.2)

After finishing this conversation the participants were exhausted and were ready to go home.

Day 2: Observations

Morning

Video observations of gameplay were made in the morning. Dennis arrived to the camp approximately thirty minutes late. He spent the entire morning quietly watching other people play video games while sitting on the couch with Dee.

Afternoon

After lunch Dennis spent the first half hour playing *God of War* (*GoW*) with Frank, they alternated between each other. Dennis had never played *GoW* so Frank explained the game mechanics to him. Dennis is offered a chance to play *Halo 3* with the other participants at approximately thirty three minutes into the gaming session. Dennis notes that he hasn't played *Halo* 3 in a while. Dennis quickly regains his gaming form is fairly competitive against the other people playing *Halo 3*. Dennis keeps on playing while everyone else convenes around the table to continue the focus group. He seems quite engaged with *Halo* 3 after playing it for approximately thirty minutes.

Day 3: Observations

Morning

Dennis shows up approximately an hour late in the morning. When he shows up the participants are setting up *Trauma Center*, he takes a seat and socializes with Dee. Dennis trades spaces with Charlie on the couch when it's his turn to play. He has not played *Trauma Center* before; the participants teach him how to play. He takes about five minutes to play before passing on the controller to Dee. Dennis begins to play *Halo 3* with Charlie and Frank after changing the music on the computer and having a coffee break. Everyone was socializing while playing *Trauma Center*, but the moment we start playing *Halo 3* the room turns much quieter,

everyone talks much less. Dennis goes back to the computer after about twenty minutes of playing *Halo* to turn on some folk genre music. He plays about ten more minutes of *Halo* before we leave for lunch.

Afternoon

In the afternoon the male participants go back to playing *Halo*. Dennis seems to be very drawn to *Halo*, after about thirty minutes everyone except for Dennis join in playing *New Super Mario Bros.* on the Wii. Dennis keeps on playing *Halo 3* until he leaves at the end of the day. He was not interested in playing *New Super Mario Bros*. He did however observe some of the gameplay while *Halo 3* was loading. He also got up twice throughout the afternoon to change the music on his mp3 player connected to the computer speakers.

Day 4: Observations

Morning

Dennis joins in on multiplayer *Modern Warfare World at War* with Dee and Frank; he sits on the couch next to Dee. He does not move from the couch for approximately forty minutes until the participants finish playing *World at War*. He socializes a little bit with everyone until we leave for lunch.

Afternoon

In the afternoon Dennis, Dee, and Charlie are watching the tap dance and musical performances from the 2010 Olympics opening ceremony (Figure 15). After about twenty minutes Dennis and his fellow participants decide to play *Mario Kart*

Figure 14: Watching Performances

on the Wii. Dennis sits on the couch with Frank and deeply engaged with the game while competing. He plays intently until it is time for everyone to head off home (approximately forty minutes of sustained gameplay). Dennis is very relaxed while done playing and is comparatively quiet to Dee and Charlie.

Day 5: Observations

Morning

Dennis shows up about an hour late in the morning. He observes us playing *New Super Mario Bros* for about ten minutes until Charlie, in annoyance, passes Dennis his controller. Dennis continues playing with the rest of the participants for about an hour. He loses interest in the game about fifty minutes into the game, the last ten minutes he spends more time socializing with Charlie and using his smartphone. Charlie, Frank, Dennis and I commence playing *Halo* after a ten minute break from *New Super Mario Bros*. The participants play *Halo* until we leave for lunch forty-five minutes later. Throughout playing *Halo*, Dennis stays calm and sporadically socializes or comments on things happening in the game.

Afternoon

In the afternoon Dennis plays more *Halo* with Frank and I. We play for approximately an hour before I leave to setup my recording equipment for the post-interviews. Throughout this gameplay Dennis behaves as he typically does while playing *Halo*, quiet, engaged, and focused. However, there is an exception, Dennis and Charlie talk in depth about how different armor affects ones gameplay in *Halo* while the game is loading.

Day 5: Post-Interviews

I asked Dennis similar questions during the post interview as Dee, Frank, and Charlie. The first question I asked him was regarding identity and what East Vancouver versus West

Vancouver meant to him. Dennis responded that he thought that people are people, but it's (identity) relative to the societal conditions in which they were raised. He notes that he observes the effect of societal conditions on most people he encounters.

After Dennis finished talking about his views on how social differences cause people to act and react differently I asked him about what it meant for a teacher to be tech savvy. He explained that tech savvy-ness means that a teacher can turn on a video game and knows enough to keep things in the classroom running smoothly. He noted that teachers wanting to use technology in the classroom do not need to be computer geniuses, but they do need to be familiar with video games and technology and not be, "a complete dinosaur" (Appendix B.3).

Dennis's answer to learning through video games was that currently he does not think he could learn much from a video game. However, if he was younger he would like to learn "process thinking, analyzing your environment, interacting with your environment, [and] hand eye coordination" (Appendix B.3). He also thought that multiplayer games were helpful in helping him learn how to socialize and communicate when he was younger because, "I was a super withdrawn kid who didn't really like to talk or interact or emotionally connect with people, but sort of just being like shoot that over there, there are people over here, watch this watch that, and like kinda having to do that out of necessity in order not to die sort of brought me out of my shell when I was really young" (Appendix B.3).

When asked what he thought about bringing video game consoles into the classroom or to target kids playing at home he came up with some interesting observations. Dennis thought that the *Tomb Raider* series had some really good puzzles. He also added that some students may like playing a video game whereas other might not. Thus, if the video game was being used in the classroom, the students that owned the game at home and spent a lot of time playing the game

would gain an unfair advantage over the other students. Dennis, very strongly, brought up issue of economic advantages brought out by the fact that not all students may be able to afford to play video games at home, and therefore would miss out.

I observed Dennis playing *God of War* and was interested in his opinion of whether or not it would be a good idea to use a game like *God of War* to teach mythology. Dennis responded that he would rather watch a movie about mythology than play *God of War* to learn mythology because when watching a movie one can observe more of what is going on rather than being in the midst of the action. He observed that video games are entertaining because of the gameplay, not the cut scenes (which often hold a lot of the information). He also noted that video games often require a lot of time to progress relatively little through information, whereas movies can very quickly move through content due to the lack time spent playing scenarios.

I followed up Dennis's notion of video games not being efficient mediums for delivering information by asking my last question, if he thought that, "essentially playing video games in the classroom would be a waste of time?" to which he replied, "It wouldn't be a waste of time, it would be an interesting addition but I'm not so sure for an entirely video game based class or period it might not work as well as course work or course work and movie" (Appendix B.3).

4.4 Introduction to Charlie

Charlie at the time of conducting the research camp was a sixteen year old male. He came to the camp on Dee's insistence. Charlie attended the same alternative school as Dee and Dennis. I had taught Charlie the year prior in Physical Education and Planning 10. Charlie is extroverted; he is very sociable, humorous, and seems quite comfortable sharing his thoughts during both the interviews and focus groups.

4.4.1   Charlie's Story

Day 1: Pre-Interview

Charlie was born and raised in Vancouver, he describes himself as chill, easy going, and open to most things like school (which he thinks is easy). Charlie also mentioned that he doesn't like to do things that are mandatory and that he will do well in things that he wants to do.

Charlie mentions that a lot of his identity can be traced to video gaming because he thinks he was essentially raised by video games since the age of five. He started playing the Nintendo 64 (N64) from five until he was twelve. The games he played on the N64 were all games that put the gamer in the role of the protagonist, such as Link in the *Zelda* series, which meant that he only played as the "good guy". Furthermore, Charlie believes that video games have had a large effect on his viewpoints in life. He thinks that life can be viewed as a game and sees himself as a player character. Strangers are more like non-player controlled characters and close friends and family he views as other player characters. Essentially, Charlie could be described as being a gamer.

Video games are important to Charlie; he describes his gameplay habits as binging. He will play one game and complete the game up to ten times. He doesn't believe that he is addicted to video games, rather he just gets addicted to specific games. For example, he will sometimes just play *Team Fortress 2*[16] thirty minutes per day. Whereas, he will get addicted to RPG games, for example, he states that he has played *Fallout 3*[17] over three hundred hours and played approximately five hundred hours of *Oblivion*[18]. Charlie usually plays these games at home in

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[16] *Team Fortress* 2 is a team-based FPS on available on the Xbox 360 and PC, it features cartoony graphics despite being highly violent and graphic.
[17] *Fallout 3* is an open world post-apocalyptic themed RPG.
[18] *Oblivion* is an open world fantasy themed RPG.

his room, if he is playing a multiplayer game he usually plays with other people online. He also

commented on how people aren't always cooperative in games that require teamwork. He enjoys

competition and prefers it to cooperative games because cooperative games require people to be

in sync and willing to cooperate. In his experience, people often are unwilling to cooperate

because they are not as good as him or because they "suck", which in turn drags him down.

Charlie appreciates all types of video game genres. He generally enjoys the best of all

genres, for example *Halo* series as one of the best FPS genre games, *Fallout* and *Oblivion* as top

RPG games, and *Zelda* series as top Action Adventure games. He also noted that enjoys games

that incorporate multiple genres or push boundaries and are innovative. He specifically noted that

Zelda: Ocarina of Time[19] was the best game he has yet to play, it involves an open world, good

NPC interaction, and incorporated the RPG and platforming genre elements perfectly.

Charlie first started his school life in a Montessori elementary school, he continued in

Montessori until he came to his current alternative school. In school Charlie pays attention,

contributes to class by talking, but does not do work until the last minute to get the bare

minimum mark to pass class. He does, however, work harder at subjects that he is interested in

but even in those subjects he resents tedious studying. He describes himself as being motivated

to work hard when there is a perceivable personal benefit or extrinsic reward.

While Charlie spends a sizeable amount of his time playing video games he does have

other hobbies and interests. He enjoyed being on a rugby team until he was thirteen at which

point the team fell apart due to poor team work and players disrespect for the coach. He currently

prefers individual sports such as longboarding and sword fighting. He noted that he prefers

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[19] *Zelda: Ocarina of Time* is an open world Action Adventure RPG available on the Nintendo N64.

sword fighting over a lot of things; however, if he started playing *Mass Effect*[20] then he would prefer playing that. Furthermore, Charlie enjoys spending time on websites such as Facebook, YouTube, and Flash based game sites. He considers video games to be digital challenges, and states that for it (video game) to be a game it must have a goal and there must be objectives a gamer must complete.

Although Charlie loves video games and thinks they were an important aspect of his life he does note that school is important as well. He thinks that on paper schools are a good idea, however, it comes down to individual teacher that a student has, "it comes down to the teacher… if you have a good teacher than you will do well in the subject" (Appendix A.4). Furthermore, Charlie believes that schools should provide more classes that offer hands on experiences, "Things like learning how to repair and build certain things… would be useful" (Appendix A.4). He believes that he won't need the math skills that he will learn after the tenth math grade level unless he chooses to go into a field of science or mathematics. Charlie also reveals that he wants to learn more about the current real world, rather than focusing on historical events such as the Canadian fur trade. Finally, he believes that school as an institution is probably the most important experience for people because that's when you learn about life and how to interact with people.

When I asked Charlie about what he thought of school based on his past experiences he revealed to me that he thinks that teachers baby students too much. He also noted that teachers are scared of making their classes too difficult and that teachers need to give students more responsibility and respects, "If I'm not treated as someone responsible and given respect than there is no room to act like that" (Appendix A.4).

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[20] *Mass Effect* (series) is a sci-fi open world RPG available on the PS3, Xbox 360, and PC.

Upon asking about what Charlie thought were some of the most important things that he learned in school, he mentioned that he didn't think any of the most important things came from specific classes. Instead, he thinks that at school he learned most about social skills, perseverance, and hard work.

Charlie differentiates as to how he likes to learn different subjects in school, for example, he prefers to be taught mathematics by, "someone who knows their stuff" (Appendix X). He notes that just learning from a book is always hard and that learning from a mentor or someone else is best. Furthermore, making real world connections or hands on learning makes learning easier for Charlie, he points out the oft student question to the teacher, "Why do I need to learn this? What's the point?" (Appendix A.4). Finally, Charlie notes that respect for the teacher is important as it makes him want to impress the teacher: "If I really care about really impressing the teacher then I will do it (work)" (Appendix A.4).

Charlie appreciates learning with classmates as long as the classmates "are intelligent and act like a teacher then its good" (Appendix A.4). He does prefer to study and do homework alone at home rather than with others at school.

According to Charlie, video games could be used as strategy to learn within the context of the classroom but it depends on the classrooms subject matter. For example, Charlie remarked that, "Video games will not teach us math, ever!" (Appendix A.4). However, he believed that political science could be taught through video games by incorporating the political system in the game. He also noted that *Civilization* (game series) could be used to teach history and basics of all the countries. Interestingly, Charlie touched on the ability of a video game to captivate its audience, "I remember things in video games so perfectly, like *Oblivion*, logged five hundred to six hundred hours, I can tell you anything about that game, any question and I know it, even

more so, the *Pokemon* games, you can ask me any question about the 151 *Pokemons*….”

(Appendix A.4). Finally, he remarked that video gaming in the classroom would only really

work for students who are competent and responsible, for example, students in alternative

school.

While Charlie thought of some video games that could be used for learning he couldn't

think of a current video game that could teach him specific curriculum. He noted that, "If a game

was enjoyable and also taught curriculum it would be one of the greatest things of this time.”

(Appendix A.4). However, he would not want to be taught an entire course through a video

game, rather, he would like to see video games used as a test. For example, use one's learning

from textbooks and lectures to solve problems in a video game level in order to beat that level.

Charlie came to a conclusion that while having video games in the classroom would be positive,

schools would not have the budget to pay for the implementation of video games for learning.

While schools may or may not have the budget to implement video games for learning,

teachers are needed to guide students through these activities. According to Charlie, teachers that

teach using video games as a strategy need to have basic knowledge of video games and need to

be skilled. They should have experience playing video games and understand the controls. He

also notes that if video games are to be used as a learning strategy they need to be used for

students at a young age.

Finally, Charlie brought up an interesting point of non-gamers having preconceived

notions of people who play video games as nerds or geeks. These notions would make it not cool

to learn through a video game, for people to learn through video games they need to have respect

for video games. Also, Charlie knows a lot of people who do not enjoy video games thus they

would not benefit from learning through video games.

Day 2: Focus Group

This focus group focused on identifying participants' preferred learning styles, how they like to learn, how they think classroom teachers should teach, ways they have learned in the past, and ways they like being taught organized by subject area. During this focus group we also wrote down participants' and researchers' ideas in different color markers on a flip chart.

Prior to this focus group Charlie was playing *Marvel vs. Capcom* with Frank. Throughout the focus group Charlie would spin around in his chair and joke around with Dee. Charlie started off the focus group by describing how he did not enjoy group work.

Charlie: I never liked group projects.
Peter: Have you been thrust in that situation where you had to…
Charlie: [interrupts] um… well usually like in all the group projects I have ever been in, like in elementary school, it was always, I was the competent one, so I ended up doing most of the work just because I wanted to get a good grade, and I would just like pawn off all the jobs I didn't want to do on people. So I would just like do this fifty percent of the project and they're [group members] like okay you're doing half, but they had all the shit jobs.
(Appendix D.1)

Charlie feels quite negative about group work based on his previous school experiences. He believes that group work should only be assigned when group work is necessary based on the scope of the project.

Charlie disagreed with Dennis and Frank in that he prefers to learn from a teacher, "I don't like learning on my own, though I prefer having a teacher at all times… for most things" (Appendix D.1). He also mentioned that when he does have to learn things on his own he prefers to use YouTube and Google. He expands his argument for wanting to learn from a teacher, "… better for teacher to teach you the basics, of it, and then ask, you learn more that's interesting to you… not knowing anything makes it kinda hard to start comprehending it" (Appendix D.1).

Once Charlie finished discussing learning from teacher he starts to spin around in his chair and seems occupied by his cellphone, he remains occupied until we begin discussing how the participants like to learn various subjects. We first discuss mathematics, Charlie brought up how one of his favourite math teachers would, "explain ways of doing it to us that are not in the textbook that are better" (Appendix D.1). He also discusses with Dee how some math textbooks are too distracting due to unnecessary information and pictures.

The participants move on to English, Dee and Dennis complain about how their classmates never finish reading their books. Charlie describes himself as the opposite and rarely finishes reading assigned books in English class. He explains that English is his least favourite subjects, "I don't enjoy the subject very much, it's like my worst subject" (Appendix D.1). He finds that he has difficulties with reading comprehension and creative writing. He prefers his assignments to be more directed and less focused on creative writing. Before we end the focus group for lunchtime we finish up talking about biology, Charlie believes that biology would benefit from having more hands-on learning;

Dee: We need more dissection in school.
Charlie: [cuts in] In biology, about like the inner workings of things and it doesn't really mean anything until you get to cut one open and see it and be like, okay!, I get it now!
(Appendix D.1)

After making this remark we decided to take a lunch break and reconvene after lunch.

Upon reconvening we continued discussing how participants liked to learn science. In reference to physics, Charlie commented that he likes to "build tiny little contraptions to learn about physics" (Appendix D.2). In addition, Charlie remarked how these contraptions could be used in assessment by having them, "graded on their effectiveness (of contraptions) because you have to know physics to get them to like do something" (Appendix D.2).

Charlie seemed to be bored after talking about physics as evidenced by him spinning in his chair throughout this session and using phone to text and play games. Despite the apparent boredom he still participated in some of the discussions. Charlie mentioned that in his experience social studies was most often taught by, "reading aloud in the classroom from textbooks" (Appendix D.2) He did not have much to say about social studies but did respond to the groups' discussion about how students could learn from *Civilization*, "like World War II, don't play as Germans, but play as like the British or Americans but you mess up and lose, and then it shows you a video of what the world would be like if Germans had won!" (Appendix D.2).

Charlie quickly lost interest in discussing social studies and started doodling on his coffee cup while the other participants discussed learning through video games in social studies. After a few minutes he passed his cup to Dee to which she responded with disgust, these actions lead them to play fight for several minutes.

After calming down Dee and Charlie I asked the group if the participants learned anything else informally to which Charlie responded, "Uhmmm friends, like I know more about environmental issues from being friends with [people who are environmentally conscious]" (Appendix D.2).

Finally, his last contribution in relation to learning was that he thought that learning from friends is "kinda like community knowledge and information gets passed around through people of that community" (Appendix D.2).

Day 2: Observations

Morning

Video observations of gameplay were made in the morning. Charlie spent most of the morning playing *Marvel vs. Capcom* with Frank and I. Charlie was very vocal during this

gaming session socializing with Dee and discussing game strategies with Frank. Approximately twenty minutes into playing *Marvel vs. Capcom* Charlie asks Dee if he can play *Halo*, to which she replies no. Charlie seems to be focused while playing but also seems to be relaxed and enjoying himself.

Afternoon

Charlie starts of the afternoon gaming session playing *Viva Piñata* with Dee for a few minutes. They quickly decide to play *Halo* on Charlie's insistence. Charlie quickly takes over in setting up multiplayer mode. While setting up the game modes he quickly explains to everybody on how to play *Halo*. Charlie is very vocal throughout playing *Halo*, quickly dishing out insults and jokes while he defeats the other participants. He upsets Dee when he teabags[21] her character after he repeatedly kills her. Charlie's superior skill in *Halo* annoys Dee especially because Charlie continuously insults her after killing her character. We continue playing *Halo* until we reconvene for the focus group.

Day 3: Observations

Morning

Charlie commences the third day by playing *Little Big Planet* with Frank; he seems to enjoy the game. He plays *Little Big Planet* for approximately forty minutes before moving on to play *Trauma Center* with

Figure 15: Teaching Trauma Center

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[21] Teabagging is a form of disrespecting players in (typically) online FPS games by repeatedly squatting on a defeated opponents avatars' face and/or body in reference to a sexual act.

Frank and Dee. Charlie calmly plays *Trauma Center* and jokes about the game with Dee and

Dennis. He also instructs Frank on how to play *Trauma Center* (Figure 16).

After approximately thirty minutes Charlie moves the couch around and starts playing

Halo with Frank, Dennis and I. This session Charlie remains much quieter and looks more

focused. We continue to play *Halo* until we take a break for lunch.

Afternoon

After the lunch break Charlie goes back to playing *Halo*. He stops playing *Halo* after

about twenty minutes so that he can play *New Super Mario Bros* with Frank, Dee, and I. While

playing *New Super Mario Bros*, Charlie displays the same sense of focus as when he plays *Halo*;

however, he does at time attempt to instruct other participants on what to do. He comments that

this game is good for learning teamwork, while Dee thinks that it if anything it makes her angry

at her teammates. Charlie decides to keep on playing *New Super Mario Bros* with Dee and I

while Frank leaves the game to play *Halo* with Dennis. We continue to play until the end of the

day.

Day 4: Observations

Morning

Charlie spends his entire morning shopping for a new computer on the internet. He does

not participate in playing *Call of Duty* with Dee, Frank, and Dennis.

Afternoon

After coming back from lunch, Charlie joins Dennis and Dee behind the computer to

watch the 2010 Olympics performances. After watching the performances the group decides to

play *Mario Kart* on the Nintendo Wii. During this session Charlie is more subdued compared to

the previous gaming sessions. After finishing playing *Mario Kart* the group gets ready to go

home. Charlie remarks that he really wants to eat McDonald's McRibs for lunch next day. He also suggests that they have a McRib eating contest. Today Charlie seemed much more subdued, this could be due to us going for an extended walk through the university after lunch, rather than just coming back to play more video games.

Day 5: Observations

Morning

Upon arriving Charlie immediately joins Frank and I in *New Super Mario Bros*. He snacks on donuts while playing. He becomes frustrated at the game after playing approximately twenty minutes, he promptly hands of his controller to Dennis saying, "Dennis

Figure 16: Solo PC Gaming

take my place over, I really cannot stand this, like shit." and switches to playing games on the computer (Figure 17). Charlie commences to play *League of Legends*; he plays this game for approximately sixty minutes until he leaves for lunch.

Afternoon

Charlie spent the beginning of the afternoon browsing the web on the computer. After approximately ten minutes he joined playing *Mario Kart* with Dee (Figure 18). They play *Mario Kart* for thirty minutes until Dee,

Figure 17: Playing Mario Kart

frustrated with *Mario Kart*, stops playing. Charlie goes to the washroom and joins Frank and Dennis who are playing *Halo*.

Day 5: Post-Interviews

Before starting the interview Charlie was busy spinning around a ball on the table. He slid it away from himself when we started the interview. I asked Charlie the same question as Dennis, Dee, and Frank, if he thought if East Vancouver versus West Vancouver was part of how he identifies himself. Charlie thought that it wasn't part of his background and remarked that, "I don't give a crap at all where people are from" (Appendix B.4).

I proceeded to ask Charlie about what he thought tech savvy-ness meant in regards to teachers using video games in the classroom. He responded that he thought that teachers need, "to be competent with the interface, you can't teach a video game lesson if can't play a video game" (Appendix B.4). He also remarked that tech savvy-ness does not come with age, rather it's more about length of experience that makes one savvy. I then asked Charlie if he thought if he was tech-savvy to which he replied, "I wouldn't say I'm tech savvy but I am tech competent, I pick up things fast and I'm not totally unaware of how things work. I can tell the difference between a piece of crap computer and a good computer" (Appendix B.4).

Charlie thinks that the best thing to learn through video games is history; he believes that one could play a historical figures role through a series of guided missions to learn about that figure. Furthermore, the game would require the player to already have some background knowledge of the figure that they are embodying otherwise they won't be able to pass the level.

When I asked him if he could give me an example of a game he had played that could be used to learn in the classroom he mentioned *Age of Mythology*[22] However, Charlie remarked that

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[22] *Age of Mythology* is a mythology themed PC turn base RTS game.

you wouldn't be able to actually pass a course just based on the things one learned from *Age of Mythology*.

Charlie believes that existing video games that have educational value are educational only when used recreationally because it would take too long to get real information from them if they were used in the classroom. Essentially, using the games would not be a practical teaching method. He summarized that video games, "have the potential to teach, but they themselves aren't useful tools yet" (Appendix B.4).

Our conversation deviated from my original questions; we discussed how students might respond to taking turns playing a video game in the classroom. Charlie thought that it could work for small classes of eight to ten people. He thought that, "it would give people who are not used to playing video games a chance to learn how to play video games" (Appendix B.4). He also mentioned that, "I would only pay attention to a video game while not playing if it has a good story" (Appendix B.4).

Charlie had some great insights on the use of video games in the classroom. He remarked that if teachers were to use cooperative multiplayer video games in the classroom they "would have to implement consequences for screwing each other [classmates] up" (Appendix B.4). Furthermore, he observed that there currently wasn't much of a difference between educational video games and learning from textbooks:

> Educational video games don't really work because it's no different than from studying form a book because the kinda person who buys educational video games that's the kind of person who gets straight A's already because they enjoy studying and learning math, so if you have that it'd be no different than studying from a math textbook and doing practice problems on paper but it would be on the screen. (Appendix B.4)

The solution according to Charlie would be for video games to be specifically made to be applicable to the classroom, for example,

> Joan of Arc, I think her life story is very interesting and eventful and if you play a game from a position of Joan of Arc, and have it be 100% historically accurate and it would require you to know about her and her experiences to beat the game I think that would work." (Appendix B.4)

Additionally, Charlie also thought that teachers could have students play the game version of a book, just like how teachers often make students watch the movie version of a book. For example, both the *Lord of the Rings* or *The Hobbit*, which are both available as video games or movies. However, Charlie reminded me that sometimes it is important to read. He thought that one does not just read to learn the content of a novel but also to become literate, expand ones' vocabulary, and to use ones' imagination to mentally visualize the text in the novel. In addition, he thought that studies of novels were important to encourage reading and that playing the video game version of the book could mean that the student would miss out on a lot of content due to the limitations of video games.

Finally, Charlie also revealed that he has yet to play a game that was educational and actually a mainstream video game. He remarked that it is very difficult to make a fun video game that is also educational because most people will recognize the educational aspect and make the game not fun. He thought that the learning would have to be done subconsciously: "Like, games that I play that I memorized everything from if it turned out that those were like real events and things that would be great because I would have learned all that stuff" (Appendix B.4). He also mentions that developers should focus on making fun games and then make them educational, "Make a game that's fun then make it educational… Fun comes first in gaming, because if it isn't fun you're not going to play it" (Appendix B.4).

4.5   Peer Interviews

Dee conducted her peer interviews with Charlie while Dennis conducted his interviews with Frank. Dee and Charlie decided to complete the first set of interview questions on the public bus leaving the research camp; they recorded the second set of interviews on the couch in the gaming room. Dennis and Frank conducted all their interview questions during the research camp in the gaming room.

The first set of peer to peer (p2p) interviews that were available to the participants consisted of four questions:

Q1: How have video game s been used in class?

Q2: Should video games play a bigger role in the classroom? Yes? Why? No? Why?

Q3: What are the limitations of using video games in the classroom?

Q4: Which video games would be good for students to learn with in the classroom?

The second set of p2p interviews consisted of one question:

Q5: What have you learned in video game? (Which video games)?

4.5.1   Dee and Charlie

There was a lot of shuddering and background noise in the video recordings, but most of the dialogue was comprehensible. Dee and Charlie also made several extra recordings of them play fighting on the bus. During these sessions they're very loud and rambunctious. Fellow bus passengers around them looked annoyed, especially when Dee swore loudly at Charlie because he poked her bruised knee. They recorded the following p2p interviews on Day 3 of the research camp.

In response to Q1, Dee replied, "Dee: uhm okay occasionally we get to do research projects on them like if it's something you're interested in, but other than that not really much at all." Charlie replied, "I've never had any experience with video games in class." (Appendix C.1)

Dee and Charlie in response to Q2 both believe that they and other students would get positive results from using video games as educational tools in the classroom. However, Charlie mentions that, "But I don't think it would work for most people because most of the people in my class are bad with video games and they don't know how to use controllers so the lack of interface would make it bad."

Dee believes that some subjects should probably not incorporate video games, for example, "I think it would be really hard to teach PE with video games, so that could be a problem." Charlie thinks that the key limitation of video games in the classroom would be the attitude of people who classify video games as mindless entertainment and his fellow classmates' lack of competency in the use of video game controllers.

The fourth question elicited some of the most interesting dialogue between Dee and Charlie,

Dee: I think that *Age of Empires* would be good, I think that *Assassins Creed* if it was slightly more historical would be good, I think that all the *COD* and *Gears of War* games would be good 'cuz they're all relatively accurate'ish, they teach you things about war, so, I think that certain puzzle games would be good, and that's my answer.
Charlie: I don't think there's any,
Dee: Really? Think harder?
Charlie: I don't think there's a single video game that I have ever played that would be helpful in the classroom.
Dee: Really? Did you learn anything about modern warfare from playing [*Call of Duty*] *Modern Warfare*?
Charlie: Nope.
Dee: You didn't pay any attention?
Charlie: No I paid attention, but it's like, what did I learn, oh, a rocket launcher is good against a helicopter, no shit there!

Dee:	Well, no I don't mean by tech [incomprehensible audio] but like by countries involved.
Charlie:	No, I learned that Afghanistan is involved, but I'm sure everyone already knows that, that's about it, the rest is all fiction. They made up a terrorist lord who got a hold of a nuke for the game.
Dee:	Okay, but what about *COD World at War*.
Charlie:	Never played it.
Dee:	Loser! Okay, play it, it's really good [pause] what about… well you do play shit video games, okay never mind, Charlie doesn't think that any video games would be good for learning.
Charlie:	No, I don't think nobody makes them good for in the classroom, there's lots of video games that are good for learning.
Dee:	He hasn't played any good video games.

(Appendix C.1)

The fifth question was conducted on Day 4 while Dee was lying on the couch and Charlie was playing *Call of Duty*. Both Dee and Charlie learned from video games, after discussing, Dee remarked that she learned a lot about the world's nations through playing *Age of Empire* and *Civilization*. Charlie thought that he may have learned some mythology from the *Final Fantasy*[23] series but overall decided that he didn't learn much of importance from video games.

4.5.2 Frank and Dennis

Frank and Dennis completed all their interview questions in one session. They answered each other's questions seriously and succinctly. Frank answered all the questions while Dennis asked the questions; they switched roles after Frank finished answering all the questions.

Responding to Q1, Frank remarked that he knows of younger children playing educational video games to learn basic skills. He thought that parents get their children to use these games because it allows them to track their child's progress within the game.

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[23] The *Final Fantasy* series are typically RPG games developed by Square/Square-Enix. They often incorporate mythological elements from a variety of cultures such as the Norse and Romans.

Dennis in agreement with Dennis (Q1) acknowledged the use of video games to teach elements to younger children. Additionally, he also remarked that video games have been used in other employment fields, such as air plane simulators (for pilots).

Frank does not think that video games should play a bigger role in the classroom (Q2), because,

> If they have a bigger role then the students is going to stop having a teacher because the role of the teacher is to teach and having a video game that does everything that the teacher is supposed to do kinda takes away from the point of going to school. (Appendix C.2)

Frank believes that video games should be used as a supporting learning activity in the classroom, "it should have like 50/50, teacher should teach some stuff and the video game should have some stuff" (Appendix C.2).

Dennis thinks that video games gaining a larger role in the classroom (Q2) are "entirely conditional based on the curriculum of the learning environment there's a trade of between motivation and entertainment" (Appendix C.2). He thinks that unless students are motivated to learn from video games all they would do is press buttons and this would not result in learning the intended materials.

Frank states that, "that some video games cannot be actually be used in helping teach the subject" (Appendix C.2) in response to Q3. He believes that some video games cannot be used to help teach because children would not like to play that specific game teaching the content.

Dennis thinks that currently video game technology is a limitation (Q3) to being effectively used in the classroom. He believes that, "you could have a fully immersive virtual reality environment with all your senses engaged, you could probably learn pretty quickly like that" (Appendix C.2). However, current consumer based video games, he believes, have not reached this level of sophistication.

In reference to Q4, Frank thinks that video games that revolve around history could be good for students to learn with in the classroom. Dennis remarked in response to Q4, that "Right now without much research, I wouldn't really be able to answer that question" (Appendix C.2). However, he did note that games that "Integrate puzzles, common knowledge, historical settings with accurate depictions of the settings themselves, realistic environments, sandbox games, perhaps the students could interact and learn from, learn correctly from their environment in the video game…" (Appendix C.2) would be good for students to learn with in the classroom.

After careful thinking Frank responded to Q5 that, "from Portal I have learned how to think before I act, and how I should consider putting an object somewhere, and while not using objects in other places" (Appendix C.2). He also noted that he learned history of places and some basic mythology from *God of War*.

Dennis in response to Q5 thought that he learned how to solve puzzles, decision making, and order of operations. He remarked that by order of operations he was not referring to math instead he refers to order of operations as, [in reference to *Portal* and *Tomb Raider*] "figuring out what you're going to do [and] how you're going to do it and uhrm in a 3d space" (Appendix C.2).

4.6   Conclusion

This chapter provided a description of interviews and observation derived from the four participants' involvement in a summer gaming research camp. I used the four chronological stories to describe the participants' responses to data collection techniques and interactions during gameplay. This chapter was primarily descriptive. The following chapter is analytical and discusses the findings through Diffusion of Innovation and GAM theoretical frameworks.

Chapter 5: Findings, Conclusions, and Recommendations

This chapter provides and analysis and synthesis of findings along with conclusions and recommendations for further study. This chapter includes an analysis of themes and collected data in relation to Rogers' Diffusion of Innovations and the General Aggression Model. I will use the analysis in the previous chapter of the four participants to review the use of video gaming in the classroom through my understandings of current gaming trends and issues.

5.1 Key Findings

Through analyzing the research camp participants' stories several key issues arose that help answer the research questions of this study. The answers to the research questions can then be used within Rogers' Diffusion of Innovation theory to assist in determining if mainstream video games should be pursued as part of learning strategies within the classroom.

5.1.1 What are current students' opinions and values regarding video games?

The four participants had differing opinions and values regarding video games, some of the positive opinions and values that the participants exhibited and communicated included gaming from a young age, an activity through which they have developed relationships, and as a form of highly engaging entertainment. The participants also exhibited and communicated the negative values of video games such as, a potential source of emphasizing socio-economic discrepancies, questionable content and messages, and their potential to be highly addictive.

Dee was the most vocal participant throughout this study's research camp, she discussed how she played video games when she was younger and recalled many positive memories of

playing video games with her family and friends. Her father owns a video game company and that is one reason identified by Dee why she has been involved with video games.

Dennis on the other hand seems to have a more complicated relationship with video games, his parents are divorced or separated and the ability to play video games without rules at one of his parents' home might have influenced his relationship with his parents.

Frank seems to have benefited from video gaming, as it caused him to play with his sister and, in addition, it was apparent that playing video games acted as an 'icebreaker' for Frank. Frank seemed much more comfortable socializing with the three other participants while playing video games.

Charlie attributed video games as being a key influencing factor on his personality. Interestingly he mentioned that when he was younger he only played video games in which he played the protagonist and was guided to do good. This brings up the question, if he had played video games in which he played the antagonist or extremely violent video games would he have a personality that reflected those qualities?

None of the participants directly brought forth the issues of violence in video gaming during the focus groups or peer to peer interviews. However, Dee did touch on the violent aspect of video game when she described how she would secretly play violent video games that she wasn't allowed to play at home, at her friends' house.

During the research camp the participants, on multiple occasions, talked about the fact that not all students or youth own video games, either due to economic reasons or because they did not like video games. Dennis during his post interview mentioned that some students could be disadvantaged in school if video game-based learning strategies were implemented. Charlie and Dee on several occasion talked about how several of their friends did not play video games.

Despite the fact that many of Charlie and Dee's friends did not play video games, playing video games can also be a medium through which friendships and relationships are built. For example, Dee indicated how she would often go to her friend's house to play video games. Furthermore, she played video games with her older sister and father, bonding through video gaming. During Frank's pre-interview it was revealed that Frank plays video games with friends at his community center, he also plays video games with his sister. Dennis revealed how he was starting to only play video games if his friends were playing video games, essentially becoming a social video gamer. Additionally, Dennis determined that video games helped him become more social and make friends. Finally, while the participants listed reading, watching movies, browsing the internet, longboarding, and playing music as other forms of entertainment that they enjoyed, video gaming seems to be a common denominator. This is important as video gaming became a common interest amongst all the participants and researchers in the video game research study. Through a degree, the participants and I were able to interact on a more personal level as video gamers rather than teacher and students, as evidenced by Frank referring to me by my first name rather than Mr. Halim by the end of the research camp.

All of the participants described video games as being highly engaging and enjoyable. All the participants list video gaming as one of their favourite mediums of entertainment. The participants all touched on how video games are engaging. For example, Dee described video games as being immersive due to engaging multiple senses. Dennis delved deeper into this concept during his pre-interview and determined that not all video games are enjoyable or engaging. However, he believed that if developed well video games are potentially highly immersive and enjoyable. Charlie's opinions of video games reflect Dennis's assessment of video games as engrossing and addictive if they are developed well. Frank did not directly

comment on video games' ability to be engaging or immersive, however he did make statements that support the notion that he thought video games were immersive and particularly engaging during the focus group and p2p interviews.

Dee determined during her pre-interview, that while video games offer incredible potential for student learning they can also be offensive in terms of being overtly nationalistic, racist, or jingoistic. On a more personal note, during his pre-interview and peer-to-peer interviews, Charlie brought up the fact that sometimes being labeled as a gamer is negative, as people have preconceived notion of playing video games being mindless. Frank and Dennis did not specifically talk a about negative messages and content in video games.

Throughout the study's duration there were minimal occurrences of human aggression in the scope of GAM which is defined as, "any behavior directed toward another individual that is carrier out with *proximate* (immediate) intent to cause harm" (Anderson & Bushman, 2002, p. 28). The only discernible occurrence of overt aggression could be Dee's response to Charlie's repeated dominance and mocking while playing *Halo*.

There were other moments in which participants used profanity in response to experiencing frustration in video games. These moments of frustration occurred most frequently while the group played New *Super Mario Bros*, which was one of the least visually violent and graphic games played throughout the study. The frustration was most often in response to break down of teamwork resulting in virtual death. Charlie, the most competitive gamer in the group, quit playing in response to the poor performance of his fellow gamers. Experience from teaching leads me to speculate that chances of physical aggression amongst the participants would have been higher if they had been younger.

Finally, all the male participants in this study indicated either directly or indirectly that they suffered from video game addiction. Frank alludes to possibly being addicted to video games by stating that he plays them non-stop over the weekend. Charlie and Dennis admitted that they had been addicted to video games. Analyzing Dennis's recorded gaming habits suggest that he was at one point addicted to playing *Halo*, as throughout the entire study he would focus on playing *Halo*. Charlie communicated his addiction as being enraptured by certain RPG's during his pre-interview. In conversation with Dee during the p2p interviews, it was revealed that at one point he was also obsessed with, and possibly addicted to, *Call of Duty: Modern Warfare*.

In summary, the four participants enjoyed video games and listed them as one of their favourite activities. Nevertheless, their responses also indicated that some of their peers did not enjoy video games. Video games also seemed to have been a critical element, both positive and negative, in the four participants' lives. While video games do pose negative properties the responses regarding video games were more frequently positive. For example, all participants seemed to have developed healthy values and relationships directly through playing video games during their preadolescent years. Finally, the video observations show that extended playing of video games do not seem to make high school aged youth noticeably aggressive.

5.1.2   How do these students like to learn?

The participants' preferred methods of learning were primarily determined by several factors. These factors were, the subject of what was to be learned, the positionality of the learner in relation to the teacher or educator, and the freedom to choose.

All participants unanimously agreed that certain methods of teaching lend themselves better to the different subjects taught in BC high schools. For example, all participants

determined that mathematics needed to be taught very directly and clearly, and Dee found that math textbooks were too distracting with pictures not related to the mathematical concepts being taught. Furthermore, the participants thought that math had to be taught by an expert (i.e., a teacher who was trained to teach math) who could teach alternate methods of solving problems beyond examples provided in textbooks.

Unlike math, the participants disagreed on how physics should be taught; Charlie and Dee liked the idea of having hands on learning opportunities, such as building experimental contraptions to test out theories. Dennis, on the other hand, thought making small contraptions did not help him learn physics and determined that schools did not have a large enough budget to fund meaningful hands-on learning experiences.

The notion of hands-on learning being an effective learning method was pervasive in biology and general sciences as well. During the focus groups, Dee exclaimed that more dissections would be beneficial in biology. Charlie expanded on why dissections are beneficial by stating during the focus group that dissections assist in making connections between the theoretical and practical.

The participants' preferred styles of learning in social sciences were varied. Frank had some conflicting opinions of how he wanted to learn history. During his pre-interview he stated that he preferred a more traditional approach to instruction and learning. He enjoyed reading his textbook and thought that the teacher should primarily be the only person speaking in class. On the other hand, during his post-interview, Frank stated that he thought learning history from a textbook was rather boring. Frank's conflicting statements could be representative of how he is most familiar and comfortable with the traditional method of learning (teacher centered) because he has the ability to get a good grade in the traditional classroom. In addition, during his pre-

interview he described how classroom conversation would often go off-topic, thus sidetracking the teacher from delivering the prescribed curriculum.

While Frank was very concerned about being taught the prescribed learning outcomes of social studies, Dee, Dennis, and Charlie were more concerned about the relevance of content taught in social sciences and its delivery.

Lastly, during the focus group, Dee and Dennis both determined that they would prefer to learn social studies through more discussions and in-depth analysis. Dee, especially, wanted to be able to clarify the background information behind historical events and their ramifications with the teacher without being told to 'shut up' by her classmates. Dennis on the other hand, wanted his classmates to only ask relevant questions that had not yet been answered, rather than waste class time. Charlie during his pre-interview revealed how he wanted to discuss more current events in social studies as they seem to be more relevant to his life.

All the participants were in agreement that they generally did not like group work for a variety of reasons. Dee determined that group work allowed her to avoid doing work while Frank and Dennis remarked that they were often chosen or put into in groups and expected to do all the work. Charlie on the other hand determined that he would often do the majority of the work that he enjoyed and delegate all the tasks he did not like to his group members. The participants' common criticism of group work was that it was often not necessary for the assigned projects or work. They all agreed that group work could work if implemented appropriately. Nevertheless, all the participants seemed to agree that they preferred to do individual work based on their previous experiences with group work.

The choice to pick a method of learning was important to the participants. Charlie stressed during his pre-interview that he wanted to be treated as a responsible and capable person

who is able to decide how and when he should study. Dennis and Dee echoed Charlie's sentiments by stating throughout their pre-interviews and focus group that they want to be addressed as individuals and responsible young adults. Frank on the other hand did not touch on this area at all. Dee's, Charlie's, and Dennis's unified stance in regards to being treated as individuals rather than one of thirty can be attributed to them endorsing their current alternative school, which is rooted in democratic school values. Frank on the other hand attends a mainstream school and did not seem as concerned about being one of thirty students in a classroom. As a matter of fact, Frank voiced his preference for being in a more structured environment in which he was told what to do.

Finally, while Dee and Dennis remarked that they preferred to learn on their own, Charlie and Frank conversely preferred to be taught directly by a teacher who was passionate and knowledgeable in what they taught.

In summary, the participants communicated that they generally wanted more hands-on learning opportunities in the academic courses, choice to choose how they learn content and be treated as responsible individuals. The hands-on learning opportunities seem to be limited by resources and constrictions of the prescribed learning outcomes. Fundamentally, as they all preferred varying approaches to learning different content and the ability to choose the method through which they learn was very important to the participants.

5.1.3   How do current students envision themselves learning through video games?

The participants shared several common thoughts as to how they would effectively learn through video games. For instance, all the participants thought that video games were a viable platform through which one could learn, additionally, they all determined that video games have the

potential to be engaging and deliver information through sight and sound. Nonetheless, they also argued the limitations as to what could be learned through video games.

Dee brought up the idea that using video games would be a great method to learn social studies. She thought that games like *Civilization* and *Assassins Creed* had great potential to be examples for learning history and geography through video games. While she thought they were good examples of how students could learn social studies in video games she did not think that the specific games would entirely work. For instance, she noted that historical inaccuracies might lead to confusion of fact versus fiction. Charlie on the other hand thought that students could learn about history by looking at the ramifications of false historical occurrences, for example, the Allies losing World War II to the Nazis.

Dennis also liked the idea of playing video games as a method to learn, however, during his post-interview he commented on how he thought that no current video games would teach him much. In addition, Dennis questions the efficacy of using video games to teach content versus other media such as books and movies. Despite these issues Dennis remarked that video games have the ability to be extremely engaging and immersive, these characteristics would give video games great potential to be effective methods for learning.

Frank had a similar concern regarding the ability of video games to efficiently deliver prescribed learning content versus the efficiency of reading a book or watching a movie. He references this issue of (in)efficiency by describing how video games would impede the teacher's ability to deliver the prescribed learning content in social studies in the allotted class time. Furthermore, Frank thought that it would be very difficult to teach theory-driven subjects like calculus. Nonetheless, he also remarked that learning subjects such as history through video games would make it much more interesting than just learning through textbooks.

Charlie was quick to point out during his pre-interview that video games that are educational are typically not fun, and that fun video games that could be educational are not suitable for classroom use as they require too much time to spend on gameplay.

Finally, class size and composition can also be an impediment to the use of video games in the classroom according to the participants. Dee, Dennis, and Charlie determined that only responsible and mature students could really benefit from learning through video games, they also alluded to learning from video games as being more of an alternative school method for learning and thought that it would probably not work in mainstream school classes.

In summary, while the participants could presently not visualize themselves learning high school level course content through mainstream video games, they did recognize the future potential of mainstream video games to be used for learning in classroom. Presently, barriers to mainstream video games being utilized for learning in the classroom reside in the lack of infrastructure to support video gaming in the classroom, lack of connection between curriculum and game content, and poor efficiency of video games versus other media such as movies and books to deliver learning content.

5.1.4 Should mainstream video games be used for educational use?

The participants' responses throughout the study's duration indicate that mainstream video games need to be carefully chosen if they are to be used in an educational setting. During the p2p interviews, Dee questioned Charlie on what he learned from playing video games. Charlie replied that he had learned nothing relevant. Charlie repeated this sentiment during his post-interviews when he remarked that no video games to date are viable as educational. Dee on the other hand argued that games such as *Assassins Creed*, *Age of Empires* series, and

Civilization series provide some relatively accurate information that could be used to teach social studies. Furthermore, she referenced *Gears of War* series and *Call of Duty* series as games that could be used to teach about war.

Frank and Dennis echo Dee's estimation that historically accurate games could be used in the classroom for learning. During the p2p interviews Dennis remarks that interact-able elements in digital environments could be useful to teach students how to use an order of operations to learn about systems.

Dee touched on an important aspect of transferring learning from video games to other facets such as school. She mentions how some of her friends memorized compendia of knowledge for games such as *World of Warcraft* and how useful it would be if they could transfer that ability to learn massive amounts of information for other skills or areas of their lives such as school.

Charlie responded during his pre-interview that he thought video games could be used to learn within the context of the classroom but echoed the other participants' opinions that only certain classes such as political science and history would benefit. He referenced *Civilization* as a game that could be used to teach within the classroom.

Frank was unique in that he referenced using the Wii and PS3 Move systems in physical education as warm-up activities. Both the Wii and PS3 Move controller schemes involve the use of motion sense as inputs for the platforms' games. Additionally, Frank remarked that one of his favorite video games, *Batman Arkham Asylum* could be used to teach self-defense.

In summary, the study's participants' responses indicate that there is a recognizable potential for the use of mainstream video games in the classroom with limitations. According to the participants' responses, mainstream video games would best be suited for use in social

studies such as history and geography, and in literature classes such as English. However, all participants touched on the fact that schools probably do not have the budget to effectively implement video gaming as a learning strategy in classrooms.

5.1.5   What would be the optimal educational strategy involving video games?

The optimal educational strategy of using video games in the classroom was not clearly answered by the participants in this study. Nonetheless, several participant responses regarding class composition and learning, in conjunction with gameplay observations could be used to assist in identifying an optimal strategy.

Dee noted during her pre-interview that teaching students how to transfer skills they acquire within video games to other facets of their lives, such as school, would be invaluable. While none of the other participants discussed the transferability of skill from video games to real life they did indirectly reference the concept. Charlie and Dennis mentioned the concept of transferability during their pre-interviews by describing how they learned many of their social skills and values through playing video games.

The participants, particularly Dee, indicated how they learned about mythology from games such as *God of War*, *Age of Mythology*, and *Final Fantasy* which helped them create connections between their informal learning and formal learning of mythology in the classroom. The idea of learning background information or skills as a primer to learning content in the classroom was also alluded to by Dennis during his p2p interviews. Dennis remarked that learning how to solve puzzles and how systems work in video games could be useful for learning in the classroom.

All of the participants confirmed that smaller classes or class composition affect the quality of learning and instruction in the classroom. During the pre-interviews Frank inquiries into what the difference was between mainstream school and the alternative school that the other participants attended. Dennis explained to him that, in their current alternative school, the teachers cared more about the students and that there were more teachers available to the students— in essence, smaller class sizes. While Charlie generally dislikes group work he mentioned that he does not mind group work in his current school because he likes his classmates and gets to choose his own groups. Dee added that she prefers to have smaller class sizes because it allows the students to be more connected to the teacher, rather than feeling like a body filling a room.

Class composition is also an important factor in whether or not video games should be used in the classroom. Dennis and Charlie both confirmed that a novel learning strategy, such as learning through mainstream video games, is best suited for students in alternative schools, as those students are more responsible and mature. Charlie, however, also indicated that many of his current classmates would not benefit from learning with video games as they did not like or were familiar with video games. Frank indicated during his p2p interview that video games should be used as a supporting activity in the classroom, and should not take up more than fifty percent of class time.

Gameplay observations indicate that participants' behavior differed based on the genre of video game. For example:

- **FPS** games instilled a strong sense of competition and required a great deal of focus. FPS games also seemed to suffer the most from player skill imbalances, which became frustrating for participants who were continually defeated. This imbalance was also

communicated throughout the participants' responses as a potential for unfairness in using video games as an activity in a formal classroom. Additionally, playing highly competitive and stimulating games like *Halo* made the participants seem distracted and more excitable during the focus groups.

- **Platformers**, like *New Super Mario Bros.* and *Little Big Planet*, elicited more interpersonal communications between the participants; however, the specific game also seemed to cause internal strife and frustration amongst the participants.

- **Sandbox** games such as *Viva Piñata* seemed to have a very calming effect on the participants playing the game. There was also a lot more communication around the gameplay.

- **Fighting** or competition games such as *Marvel vs. Capcom* and *Mario Kart* seemed to be less frustrating for the participants and the rest time between each match had a calming effect on the participants.

The length of gameplay observably affected participants' level of frustration and enjoyment. Participants where observed to be more social and amiable while playing games that required them to take turns (*Trauma Center* and *Marvel vs. Capcom*), whereas the sessions in which participants played continuously for more than ten minutes (*Call of Duty*, *Halo*, *Mario Kart*, and *New Super Mario Bros.*) resulted in higher levels of observable stress and frustration. Furthermore, the competition aspect of video gaming did seem to garner some aggressive behavior, especially between Charlie and Dee. In the scope of the observations it would be difficult to determine if any of the participants' aggressive behavior was correlated to playing violent video games as suggested by GAM (Lee & Peng, 2008). Ironically, the least visually violent video game *New Super Mario Bros*, that the participants played, garnered the most

observable frustration and aggression. Based on the gameplay observations, taking turns to play mainstream video games in the classroom may be an optimal method of approaching gaming in the classroom.

In summary, taking into account participant responses and observations gathered during this study, designing an optimal educational strategy involving mainstream video games in a classroom should consider the following,

1. Gameplay sessions should be no longer than fifteen minutes, although this is much easier said than done as some games demand or sustain longer sessions while other games quickly become boring.

2. Students need to be taught how to transfer their learning from gameplay to the classroom. In other words, transfer is not automatic or autonomous.

3. Students' opinion of video games and level of maturity matter. Talking with and listening to students is crucial to any process of implementing gaming in classrooms

4. Genre affects the gameplay and, in effect, what is learned from video games (See observations immediately above)

5. Priming students' interest or creating connections between games and formal learning in the classroom is an important step to innovation with games.

5.1.6 How should and can video games be incorporated into a classroom?

Several of the study's participants had experience using video games in the classroom. These experiences involved using educational video games to learn basic numeracy and language skills in the primary grades. None of the participants experienced the use of mainstream video games in the classroom for learning in high school; therefore, the participants had difficulty determining how mainstream video games could be incorporated into a formal classroom.

Despite this difficulty they did present insights and ideas of how video games should be used in the classroom. Their visions included video game companies specifically designing games to be historically accurate so that they could be used for learning in the classroom, with video games becoming so immersive and realistic that students could use them as simulators of real (historical) life, and facilitate educators' approach to using video games to teach.

During the study's research camp, one theme regarding the viability of utilizing mainstream video games for learning in the classroom was the validity and accuracies of game content. Participants approached the idea of using mainstream video games similarly to how they approached any other learning material; they suggested that, like a textbook, the content needed to be succinct and accurate in relation to the prescribed learning outcomes of the class. In essence, would playing the video game provide them with accurate facts and knowledge that they could use to provide evidence of their understanding of the subject matter in their classes? This may sound like instrumentalism, but this was reinforced by the students in a number of interviews. The participants all generally communicated that content used for learning in the classroom needed to be relevant to the prescribed learning outcomes. Based on this presumption they noted that present mainstream video games would best work in history or social studies courses. Furthermore, they noted that if video game designers made video game content such as characters, dates, and locations more accurate then these games would be more relevant to classroom learning.

Dennis and Charlie both remarked how video games are steadily evolving in realism, which positions them as excellent simulators of real life. When video games become life-like they could then be used to simulate hands on learning opportunities typically not possible in real life.

During the pre-interviews and post-interviews participants were asked what a teacher had to know and do to teach with video games in the classroom. The responses generally all condensed around the fact that educators had to be knowledgeable and proficient at playing and learning through video games. Furthermore, the educator has to be knowledgeable in regards to the technical requirements and functioning of the gaming devices and technology deployed in the classroom.

In summary, video games should only be deployed in classrooms in which they will be relevant to the course outcomes. Furthermore, they need to present greater benefit over textbooks or other media to deliver the relevant content. The educator needs to be both knowledgeable in the games content and gameplay in order to develop and conduct an effective lesson utilizing mainstream video games. Additionally, the educator needs to be able to troubleshoot technical problems that may arise during the lesson.

5.2 Going Mainstream

This section will employ the four elements of Rogers' Diffusion of Innovation (DOI) theory to analyze the results in order to determine if mainstream if mainstream video games could become or are a viable learning strategy in North American classrooms. The four elements that comprise Rogers' DOI theory are Innovation, Communication Channels, Time, and Social Systems. Each of these elements is critical to the successful deployment of an innovation, in this case mainstream video gaming as a learning strategy in the classroom, throughout a social system, the BC school system. This study focuses on the Innovation and Social Systems factors.

5.2.1   Innovation

Rogers' DOI theory states that there are five factors or attributes that help determine if an idea/design is an innovation. These five factors are relative advantage, compatibility, complexity, trialability, and observability. Using these five factors, this study addressed whether or not using mainstream video gaming used as a learning strategy in the classroom can be considered as an innovation.

1. **Relative Advantage**

    This factor refers to how much of an advantage the innovation has over the current design. As evidenced by participants' responses, video gaming is increasingly becoming the preferred form of entertainment for people all over the world. Responses from the participants suggest that mainstream video games typically are disadvantageous in regards to conveying information compared to other media such as print and movies. However, they did note the potential of video games to be superior to textbooks and movies as they are more engaging, interactive, immersive, relevant and fun. Furthermore, in regards to teaching non-rote knowledge or information such as critical thinking and problem solving, video games may prove to be superior or quite effective in complementing proven techniques.

2. **Compatibility**

    The majority of people in North America have played video games and the amount of regular gamers is a growing statistic. The participants indicated that they would like to learn through video gaming if it was properly implemented and was relevant to acquisition of the courses prescribed learning outcomes. They also indicated that some of their classmates would not enjoy learning through video games as they did not enjoy video games; additionally, the variance in gaming abilities would have to be addressed. Additionally, the participants indicated that

educators would have to be knowledgeable in video gaming in order for them to teach with video games. Statistically, considering that teaching is a profession that sees a continuous influx of new teachers, teachers will eventually all be familiar with video games and most likely play video games for entertainment. Thus the readiness of educators to employ video gaming in their classrooms will only increase over time.

3. **Complexity**

Presently it is difficult to implement video gaming in the classroom for a number of reasons. Firstly, as the participants indicated, schools are likely not able to afford the equipment or training to implement mainstream video gaming as learning strategies in the classroom. Secondly, mainstream video games need to be carefully selected to teach specific content in each course; in addition, the participants determined that the teacher using this game to teach also needs to be familiar with the gameplay of the selected game. This means that the teacher would need to play the video game first, design a lesson plan around the video game, deploy the equipment, and manage the learning. Essentially, this adds several levels of complexity and extra work that requires time that many teachers do not have. Furthermore, many teachers already have multitudes of teaching materials and strategies readily available to them that do not require as much work and time on their part. Nevertheless, many teachers play mainstream video games; more importantly, many teachers play the same mainstream video games as the students. Therefore, a teacher that already played a mainstream video game for recreation makes the process for implementing that particular video game as a learning strategy a lot simpler. Furthermore, once a teacher designs a lesson plan around a specific concept using a mainstream video game, that lesson plan can then easily be shared across the continent as mainstream video games are typically available worldwide in more or less the same format. Finally, many parents

play video games as well, and this presents an interesting proposition for the parent to not only enjoy recreational time with their child but also participate in their school-based educational activities.

4. **Trialability**

Many research studies and projects have found positive effects of using mainstream video games for education (Krug, 2007; Lacasa, Méndez & Martínez, 2008; Prensky, 2006; Squire, 2008a; Ziaeehezarjeribi, 2010). This study's participants are an example of how we might determine whether or not using mainstream video games in the classroom is something that should be pursued. The participants' responses regarding variance in gaming ability may suggest that collecting data evidencing the effect of gaming on academic performance will be difficult to gather.

5. **Observability**

Video games are globally becoming one of the premiere forms of entertainment. Some video games releases are touted on the same level as Hollywood blockbusters. Video gaming has diffused throughout our society and has the potential to become the number one form of entertainment in North America. Utilizing popular video games in our classrooms helps classrooms remain relevant and exciting, two factors that drive student engagement in our classrooms. The participants' responses indicate that video games are becoming increasingly popular and are relevant to students.

Analyzing the data gathered during this study supports the notion that video games themselves are an innovation within the realm of entertainment. Furthermore, the participants' responses indicate that utilizing mainstream video games in the classroom as a learning strategy is not ready to be implemented on a widespread level; however, they also indicated that they

were excited about the notion to learn with mainstream video games in the classroom and supported the concept.

5.2.2   Social Systems

Adopting learning from mainstream video games as learning strategy in the classroom will require the cooperation and input from all parties involved in the social system of the classroom. Students, parents, administration and teachers all must at some level agree on the potential and viability of using mainstream video games for effective learning in the classroom.

For the scope of this study, participants' responses suggest where educators, parents, and students may be configured within Rogers' Adopter Categories.

1. **Innovators**

According to students' responses, both teachers and students could be placed within this category. The commonality between these groups would most likely be not only interest in video gaming but also a passion for exploring alternative methods for learning. Examples of Innovators include the research camps' participants, scholars such as Gee, Krug, Lacasa, and Squire, and everyday educators who currently are implementing mainstream video games in their classrooms for learning.

2. **Early Adopters**

This group is stated by Rogers' as the individuals who adopt an innovation second fastest. This research studies' participants alluded to being willing to be early adopters of an innovation like learning from mainstream video games, once implemented effectively. Furthermore, early adopters could also include teachers who are willing to adopt new methods of teaching but who

might not have available time to design and plan learning activities utilizing mainstream video games.

3. **Early Majority**

The early majority encompasses open minded educators and schools that do not have in house expertise to implement an innovation such as learning through mainstream video games. These educators and schools are often willing to try new innovations but perhaps do not have available funds or expertise to effectively implement the required technologies. This group would most likely benefit from prepackaged learning materials or from workshops specifically demonstrating how to teach with mainstream video games in the classroom. The early majority group may also include parents, as they would appreciate evidence from trial projects conducted by the early adopters supporting the effectiveness and potential of learning through mainstream video games in the classroom

4. **Late Majority**

The late majority, according to the participants, would probably consist of educators, parents, and students who do not enjoy or have limited exposure to video gaming. These groups would most likely require critical mass from the early majority. The participants' responses indicated that many current high school students lack the ability and experience to play video games due to difficult controls. This group of students lacking video gaming experience and exposure, however, is statistically supported to be smaller than the average and will continue to diminish in significance over time.

5. **Laggards**

Laggards are the groups or individuals that are the slowest or last to adopt an innovation, these individuals may be against the innovation. There will most likely be pockets of resistance

against the use of mainstream video games in the classroom despite evidence that may support the effectiveness of the innovation. Participants alluded to possible laggards as teachers who were set in their ways and not willing to adopt new methods or strategies for learning in their classrooms. Additionally, parents may be disturbed or frustrated at their children not only playing video games at home but also at school. Finally, the groups involved in using video games in the classroom will have differing attitudes and comfort levels regarding issues of violence, sex, and drugs that arise in certain video games.

5.3   Conclusions and Recommendations for Further Research

The findings of this research study help identify the strengths of mainstream video games as viable conduits of knowledge construction in the classroom. These findings indicate that video games, based on the participants' stories, are increasingly relevant aspects of our students' lives. The participants assisted in identifying what students might typically take away and gain from playing video games.

The study's participants' responses echoed many analysts' and scholars' notions that video games are excellent mediums through which students can learn (Gee, Krug, Lacasa, Prensky, Squire, and Steinkuehler). They also identified specific mainstream video games that are useful for learning in the classroom, additionally; they identified specific attributes of those games that would make them useful in specific subjects. Additionally, participants' responses and observations support the notion that video games can act as social forum and assist youth to develop healthy social relationships with one another. Video games also provide a medium through which individuals from a wide range of demographics can interact on a common level.

Furthermore, while mainstream video games may never be the ideal method of teaching formal curriculum, we need to remind ourselves that students are playing them anyways. The key advantage of attempting to teach with mainstream video games is that students are already engaged; therefore, why not attempt to use that engagement and experience constructively?

Despite the fact that students play video games on a regular basis, they still are subject to key factors inhibiting their use for learning. These factors include lack of funding, lack of knowledge regarding how to successfully implement games in the classroom for learning, and a mismatch between the curriculum and video games' content. Furthermore, the participants' responses all revolved around wanting to succeed at school and life. In essence, this drives the key factor whether or not mainstream video games should be used in the classroom— will they promote student success in school and life?

In conclusion, mainstream video games have potential to be effectively used as learning strategies in the classroom in the future. Presently there are too many glaring issues to naively endorse mainstream implementation of video gaming in the classroom as learning strategies. Additionally, the use of mainstream video games for learning will most likely continue to be a fringe learning strategy or innovation implemented by individual teachers who are experts on the issue of educational use of video games until this learning strategy gains more supporters, traction, and a guiding framework on how to implement mainstream video games in the classroom for practicing educators.

5.3.1   Recommendations

The findings of this study guide several recommendations in order for mainstream video games to be more widely adopted as learning material and strategies in classrooms.

1. As the study's participant indicated, there were several specific genres and titles that were geared towards being useful for learning content in the classrooms. Therefore, it is proposed that further research be conducted into which genre of video game is ideal for teaching specific subjects. This research would assist teachers in selecting appropriate and effective video games for students in context of curriculum.

2. Further research is needed into how classrooms and class time should be structured around learning with video games. Participant observations revealed a relationship between engagement with video games and duration of play. Additionally, learning with mainstream video games may not work well in traditional seating arrangements; therefore, physical classroom design and setup needs to be researched prior to evaluating the outcomes of using video games in the classroom.

3. Continuous research and investigation ought to be conducted into what content of upcoming and current video games is applicable to curriculum. Participants noted that future video games hold more potential in presenting realistic and immersive worlds for students to learn, and an educator would have to gauge the pedagogical value of these novel, digital realms prior to their use in the classroom.

4. A Participatory Action Research (PAR) based study could be utilized to further investigate how video games could be incorporated in a school's teachers' practices. The Participatory Action Research study would be valuable to gauge the worthiness of video games within a variety of subject areas. Additionally, PAR within the scope of DOI

would create an important critical mass of Innovators that would assist in diffusing the use of mainstream video games in classrooms.

5. Game and gaming literacies are among the most recent entries into new literacies research. This thesis contributes to this research by exploring teenagers' ideas about gaming in the classroom. Salen (2007) defines gaming literacy as

> learning to think about the world as a set of in interconnected systems that can be affected or changed through action and choice, the ability to navigate complex information networks, the power to build worlds and tell stories, to see collaboration in competition, and communicate across diverse social spaces…. the play, analysis, and creation of games— as agents of provocation, education, and change. (pp. 1, 2)

Similarly, "games literacy," according to Squire (2008c), means "developing *expertise* in designing rewarding experiences for oneself within a gameworld (particularly within the game's semiotic and rule systems)" (pp. 639-640). Zimmerman (2009) reiterates that "gaming literacy is *literacy*—it is the ability to understand and create specific kinds of meanings" (p. 24). Research into teenagers' views of literacy and gaming literacies is necessary to test these claims.

6. Finally, participants frequently noted the potential for game studios to partner with educators to design video games that could be utilized in the classroom. For example, *Assassins Creed* series could be retrofitted with an educational module or overlay. This educational module or overlay could be structured by an educator to direct the gamer's attention to specific content and details that are found in the school's curriculum.

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Appendices

Appendix A

Pre-Interview Responses Transcripts and Notes

These transcripts and notes are organized by the order of the questions asked during the

interviews. Not all questions were addressed in all interviews either due to human error, due to

the participant having no response to the specific question, or time restraints.

A.1 Dee

Can you please describe to me your background and personality?
Dee, East Vancouver, describes herself as a musician and avid music listener

How would you describe yourself as a student in a classroom?
Dee prefers to do online education and did not get along with many students in mainstream public schooling. Dee prefers to work alone so she can focus better. Dee prefers to be treated like an adult and wants to choose who she works with. Scheduling and flexibility seems pretty important her. According to Dee thinks that teachers need to have a good grasp of technology to effectively teach online

What do you think about school in terms of your past experiences?
Current teachers require more training. Grade 8/9/10 stuck in school learning about moot information, current practices are boring. (databases).
Alternative schools her entire life, Windsor house, reg elementary school (bored, smart and challenged the teacher, did not get along with the teacher, work was boring **spelling tests, moved about, sneak around), gifted program *math 5/6/7, grade 8 went to mini program. Poor working habits low, smart at getting out of doing work, honour roll works their ass off. Mainstream in grade 10 then went to king George (city school). She feels connected to the city school. Wants to assist with the extra-curricular program.

What do you think about school in general?
Thinks that school is important, learning for learning sake should be taught in schools. "Why do you run? Because you can!"

What are some of the most important things that you have learned in school?
Learned how to play a room! (social skills)
Experienced full spectrum of personalities and behavior.
Learned math, pretty useful.
Learned lots of English skills – formal rules of English aka composition.
Learned how to be/go to in school.
Learned taxes in math 11 essentials, doesn't like how people designate it as "dumb" math, learned more about Math and Social Skills.

Do video games offer an effective strategy for learning in the context of the classroom?
Thinks video games are very effective because it's immersive due to multimedia, very involving, people like to be stimulated by video games.

Peter: So this is the interesting question I think, you might have a lot of insight on this, uh Do video games offer an effective strategy for learning in the context of the classroom?, so do video games uhm offer like, the ways that you play a video game the way that you learn how to play a video game, does that, and even maybe the content in a video game, would that uhm would that be an effective way of teaching in a classroom?

Dee: I think its very effective because I know that it such an immersing form of stimulation for people, right, because your getting the visual your interacting with it your getting the stories and the images, and the sound right its very involving and people like to be stimulated in that way from what I can tell especially youth who play video games people who are used to it really like it so I think it's a good way of storing information but it goes with a secondary skill. Like you cant just sit, like I got, computer games that were supposed to teach me when I was little, theyre were all like those jump start ones and I always got the one …they were supposed to give you the one for the grade you were going into but I used to get the one a grade higher than that at the end of the school year every year, and like they still werent teaching me cuz like if it was stuff I knew I glossed over it if it was stuff I didn't know I find ways to get even better at it through the gameplay but not through the information. So, which is to say I think it can be very useful. Cuz like I was saying I wasnt joking I learned a lot about greek mythology and Egyptian mythology especially, from playing age of mythology, on the computer when I was a little girl, I learned a lot about … uhm Christian demon mythos from playing diablo, right and like as you play those games, when you get older and see the real life information you just compare, you have a basis for understanding…..

Dee: I think education through video games is a brilliant idea and a very good way of capturing peoples information but it has to be taught with a secondary skill, which is transferring those skills, if you're going to teach skills in video games then other skill you are teaching the kids is that how to transfer the skills they learn in one thing to another, and that is an invaluable skill so whether its video games to real life or shopping to school or whatever it is you're doing right people compartmentalize their lives, so I know girls who can add up a bill at the mall really well and they can't do their math homework right cuz they're not seeing how connected world is right? I know people, who are, like I said, I can name 6 people who know every stat they have in WOW off hand like of the top of their head, they know every class every piece of information every item, like special like rare quest item, they know everything, but they don't see how the skill that they have at learning those things can be transferred over to their school work to life to their job right everything is interconnected so teaching them to transfer the skills they learn from video games to things that they find less entertaining would be invaluable

Peter: Right

Dee: So that's like the secondary sentence right, like you did this on the video game now here's the real life equivalent now do this, teaching them to go back and forth that's really useful.

Good ways of storing information. Example, jumpstart, did grade higher, did not teach her glossed over it. Learned about mythology from Age of Mythology, learned about Christian demo mythos from diablo, creates basis of understanding when doing formal education. Gives her basic information about video games. Taught with secondary skill of transfer, teach kids how to transfer skills learned in video games to real life. Compartmentalize life, girls can add bills at a store but not in math (not connected). World of Warcraft, experts do not understand how to transfer their expertise in a video game to real life. (19:33).
"they know everything but they don't see how the skill that they have at learning those things can be transferred over to their school work, to life, to their job,… everything is interconnected"
"Teaching them to transfer the skills they learn from video games to things they find less entertaining is invaluable"

What types of video games do you enjoy and why?
Not a hardcore gamer, but doesn't commit as much time to everything. More into cartoony games, likes games with fun physics engines – sense freedom, does not like big level games, likes fallout 3, does not play a video game just to die, likes
Call of duty world at war, more balanced play both sides of the field. +Nazi Zombies! Headshots, gore fun! Does not feel bad about shooting Nazi Zombie.
Did not like call of duty modern warfare, too jingoistic, too edgy, mildly racist and nationalistic.

Where and with whom do you usually play games?
80% plays with Charlie in her living room. Grade 3 went to friends house play Xbox, played violent games that she wasn't allowed to play at home. Older sister got lots of Mario games that she played. Never asked for games, just played sisters games. Mainly played at friends' homes, likes to play video games at stores (EB/bb/FS). (main purpose to go play).

What are your video game playing habits?
Plays late at night, when she is bored and depressed. Great for when she is feeling down, play with friends and on her own. Dee is more fun, her friends are too hardcore. Dee classifies herself as a casual gamer. Doesn't finish video games, does not like to spend all her time on video games. Dee stated specifically that she probably reads as much as she plays video games.

What other things do you like to do for entertainment?
Loves to read, play and listen music, watches many shows with her parents, talked about violence vs. nudity.

> a. Do you prefer video games over other forms of entertainment?

Generally day to day, Dee prefers reading to gaming, she gets bored of reading so then she games for a bit, loves to listen to music while playing video games, Subtitles are a must. She prefers watching shows/movies with her family over gaming. Plays games with her dad, used to play Mario party with her family when she was young. Her dad owns a game company, loves to play video games with her family/extended family games.

> b. What do you consider to be a video game?

How do you like to learn?
> a. Do you like to learn with your classmates?
> b. Do you prefer to study and learn at home alone?

Learning from someone who is passionate about the subject and also an expert, aka clear understanding of what they are teaching/saying. For any subject. (why's and how's). Seems "friendlier" "open".
Does not like asking questions and hitting a brick wall (do not ask these questions)
Diverging questions not answered by her teachers aka politics in social studies.
Likes to go on field trips with classmates.
Prefers to study and work alone, not as organized.
Went to school she wants experiences.
Dee wants to work at home, separate from her school.
Everything in one place.

What do you do when you need to learn something difficult?
> a. Experiences or examples?

Memorization, (formulas), she does not consider as learning. Biology, e.g. she couldn't tell one everything about a system. Visualize the concept and attaches meaning to the learning. When it's about something she cares about because it makes it easier, "I cared about it"

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What do you think is important to learn and study?

        a.   Do you think that school is important?

Everything… thinks a good balance of personal interest (practical work) e.g. home etc. (which she got out of) would have been good because now she has to sew but doesn't know how. If you want to be a musician one must also learn stuff they don't care about as much. Equal balance of personal interests to standardized curriculum. "one makes you functional on an intellectual level, and one makes you functional in the physical world, and one makes you functional as like an emotional spiritual being because you have your passions"

Do you think that you would like to learn course material through video games?

        a.   How do you think this would look in the classroom?

        b.   What are some problems that may arise from trying to teach with video games?

        c.   Any examples?

Yes. Don't have the IT support. Class sizes are too large to accommodate all these people. Needs to be wildly interactive, teacher needs to know education. Good for math, interact with geometry. Sees potential in video games in a classroom. Minecraft would be educational.

What requirements do you think your teachers need to meet in order to teach with video games in the classroom?

        a.   Do you think this is a good idea? Why?

        b.   Do you have any past experiences learning with video games in the classroom?

Fully tech savvy, intuitive grasp of technological interfaces. "Born with a Nintendo controller in my hands." "You learn from a young age that the button on which your thumb falls on is the yes button and one of the other ones will be the no button, it's pretty simple." Needs to know how to plug in cables and hardware. Actions need to be CLEAR and DEFINED.

Do you think that some teachers already teach in a way that mimics how you would learn through video gaming in the classroom?

War class, present video games based on war, played in class. Video games used in presentations. Flexibility. Fields trips = interactive, more depth than lectures and reading, immersive.

What type of student would benefit from learning curriculum through a video gaming learning strategy?

Most students, average high school students, and the really out there students. Straight laced academic students might not like this. This is more creative and out there, not EASIER.

A.2   Frank

Can you please describe to me your background and personality?
- o   How would you describe your identity?
- o   How would you describe yourself as a student in a classroom?

From Iran, quiet person, pacifist, see violence and like violence. Sometimes can be talkative, usually works hard, try my best, stay quiet have bad memory. 15 8 years of school in Canada

What do you think about school in terms of your past experiences?
Students are more disciplined in Iran, teachers use force/physical punishment, teachers make fun at you. Canada, students make fun of the teacher and other students. Lot more controlled inside and outside the classroom in Iran, at lunch time can only eat in one spot. Not allowed to go outside the school during class hours. Prevent students from skipping school. Iran students are more disciplined, here there is more freedom.
Math and sciences are harder in Iran, more homework, more extreme on teaching, sometimes take weeks to review over the material over and over.

What do you think about school in general?
School is important, knowledge is needed for a person to be successful at life. If you don't go to school then you have nothing to work with. Iran, socials, worksheets and bring notebooks, page to page, very structured. In Canada, things are skipped or progress slowly, not necessary to cover everything.

What are some of the most important things that you have learned in school?
Students usually bad mouth a person and swearing at you, teacher teaches, students learns. Students have no respect for teachers in Canada. Friends make fun of me, they don't care. Talking about sexuality or drugs is not heard of in Iran, you will get suspended or expelled. Students abuse their freedom to be rude to teachers. Likes clear boundaries between teachers and students.

Do video games offer an effective strategy for learning in the context of the classroom?
Depends on the actual category of the game and subject. Call of duty and mathematics has no connection. Social studies might match up with games. Some video games could specifically be made for a subject, technology makes you build things in a game. Nowadays games are most about combat and violence. PlayStation Move and Wii can be used in PE classes for warm up. Self-defense training in PE as well PlayStation Move and Wii, Batman could teach self-defense.

What types of video games do you enjoy and why?
History games, Civilization. Batman, do not like god of war. Assassins Creed makes you think, where to jump. Puzzle action is pretty fun, mix of action and puzzles. E.g. Batman and Assassins Creed. Just puzzles are boring. Do not like WoW, first 10 levels is fun, but turns into a grind. Enjoys thinking and fresh content type of games.

Where and with whom do you usually play games?
Mainly friends with people at school and community center. Plays at home alone or sometimes with his sister. She is not a fan of gaming but likes fighter games. Does not play online, no online games. Batman is mainly single player.

What are your video game playing habits?
Prefer anytime, playing video games whenever bored. Mostly, playing in mornings, or on the weekends. Gaming no stop over the weekend.

What other things do you like to do for entertainment?
- o   Do you prefer video games over other forms of entertainment?

Usually play with computer, not movie type of person, nowadays movies are terrible, they are all the same, feeling of déjà vu. Clichés. Love batman movies. Sometimes TV sometimes read books play basketball on weekends. Will watch an amazing movie over video games, sometimes like to read a book. Sometimes can sit hours in one place and read.
Basketball over friends because face to face.

What is a video game?
Game which is on an electronic device.

How do you like to learn?
- o Do you like to learn with your classmates?
- o Do you prefer to study and learn at home alone?

From start to the end. Good at history, even though bored of it sometimes. Read favorite socials textbook chapters 3-5 times. Mostly likes to read to learn, read it over more than once if not understanding. Conversation gets sidetracked. Rather look at notes, more concise. Conversation and discussions don't work. 95% of the time someone talks about something else in class. Does not like discussion groups. Silence is golden. Teacher should talk about it and go through content. Delivery of content doesn't matter, teacher should be perseverant, never give up. Teacher gives up on hard content that is being taught to students is not good. Teacher needs to be passionate about the content and class. Need a mix of delivery to prevent boredom and keep students engaged. Need small breaks. Having a mix of activities is good. Classmates usually pick all their friends to work with = not getting work done, if people are all working then it's enjoyable.

What do you do when you need to learn something difficult?
- o Experiences or examples?

French, listen to the teacher, and be super focused. Have to care and be focused and also have to actually listen to the teacher. Study it, break down into smaller parts until I understand it, if it doesn't work then ask the teacher. Classmates make fun of people who try hard. Logical approach, usually applies logic to learning difficult concepts, break down on sections and then add it all up together to complete the picture. E.g. sentence in French, break down English word to French, then put it in right order, then right place. Go through your memory, see if you saw it somewhere else.

What do you think is important to learn and study?
- o Do you think that school is important?

Do you think that you would like to learn course material through video games?
- o How do you think this would look in the classroom?
- o What are some problems that may arise from trying to teach with video games?
- o Any examples?

History, textbooks get boring. Math and English requires lots of equations and written stuff.

What requirements do you think your teachers need to meet in order to teach with video games in the classroom?
- o Do you think this is a good idea? Why?
- o Do you have any past experiences learning with video games in the classroom?

Teachers have to know how to fix broken console and the class will go about their business. Teacher has to know more than average, minimal understanding of video games and technology. Tech savviness comes with knowledge not so much age, different range of age and different age of abilities.
Do you think that some teachers already teach in a way that mimics how you would learn through video gaming in the classroom?

A.3   Dennis

Can you please describe to me your background and personality?
> o   How would you describe your identity?
> o   How would you describe yourself as a student in a classroom?

Lots of schools, 6-7 elementary schools, some for less than 2 weeks. 3 secondary schools. Kicked out or left from different schools. Like to read, enjoys nature, socializing trying to like, and longboarding. Easily entertained. Try not to follow routine, stay chaotic, does not like routines, and does not enjoy the mundane. Try to learn something new every day. Went to choice school, choose what you want to do (activities) in lower grades.

What do you think about school in terms of your past experiences?
Not against education but current institution is useless and underfunded. Right now doesn't do much. Teaches children to follow routine, obey authority, preps them to be a working tool. Thinks that needs to be changed. Unhappy time in school, school so far has sucked.

What do you think about school in general?
Key to a functioning government. Funding, if a kid in a school can't get a textbook for a class required to graduate. Forced to pay for a single book which should be provided. Politicians could do more for education. Pump money into fighter jets, instead should put money into government. Politically, school is a microcosm of what is happening in general in society.

What are some of the most important things that you have learned in school?
People who blindly follow the rules have a more reliable chance to get somewhere in life. People who break the rules and interact with their environment have a greater chance of success and failure. Grind away at school and come out with masters. Need to revamp schools.

Do video games offer an effective strategy for learning in the context of the classroom?
Depends, basic level, hard to balance fun and education. How fast people learn, how much money has put in, how much people learn.

What types of video games do you enjoy and why?
Not much of a gamer. Sold all video games and got into skateboarding instead. Sandbox or open world games, stuff in which I can mess around. Good dialogue. Consequences for dying, video games are supposed to be simulation of life. If you die you have no fear of failure, no real for or after thought. Currently, just huge massive rewards but no massive consequences.

Where and with whom do you usually play games?
At home on the couch. Will play when everyone else is playing, social gamer.

What are your video game playing habits?
Doesn`t play video games on a daily basis. Plays video games 2-3 per month. Younger was a video game addict, 2004/05. Different rules with parents, mom no games, dad games. Abstained from being a hardcore gaming for the past year.

What other things do you like to do for entertainment?
> o   Do you prefer video games over other forms of entertainment?

Skating, reading, internet, not most social person, somewhat shy. Talking over the internet vs. face to face. Internet flash games on terrible days. Internet for music.

What do you consider a video game?
Digital visual entertainment with user input, purpose of entertainment, few real world consequences.

How do you like to learn?
>> o   Do you like to learn with your classmates?
>> o   Do you prefer to study and learn at home alone?

Like to do it myself, like to be in it, teach me proper technique for anything, I want to experiment. Not passionate about it don't need to learn it. Experiential learning. Math and science, left with a book, spare time will read it when have time. Don't want to be told or dictated to. Conversation would work, discussions about learning topics. Class discussion if everyone contributes.

What do you do when you need to learn something difficult?
>> o   Experiences or examples?

Try not to give up, baby steps. Put in 100% effort, keep on moving forward and eventually it'll get done.

What do you think is important to learn and study?
>> o   Do you think that school is important?

Life skills first, educational skills second. Kids should learn how to be responsible, and self-motivated before learning about science and math. Being a mature developed person, fully rounded. Learning maturity, how to fit in society,
Learn how to learn priority above learning knowledge.

Do you think that you would like to learn course material through video games?
>> o   How do you think this would look in the classroom?
>> o   What are some problems that may arise from trying to teach with video games?
>> o   Any examples?

Depends on bunch of factors, if boring game by myself probably not. If it could be done yes.
Not sure how it would be implemented properly in class.

What requirements do you think your teachers need to meet in order to teach with video games in the classroom?
>> o   Do you think this is a good idea? Why?
>> o   Do you have any past experiences learning with video games in the classroom?

Tech savvy, above all else. Must be literate in your own material.
Played math munchers in elementary school. Learned mental math from video games, played lots of educational games throughout childhood. Played all the jump start games through grade 6.

Do you think that some teachers already teach in a way that mimics how you would learn through video gaming in the classroom?
Interactive lessons and discussion were closest too learning like a video game.

What type of student would benefit from learning curriculum through a video gaming learning strategy?
Attentive students who can pick up information. Played Halo and learned everything about the backstory. Real world was flourishing lots of really interesting current events, socials 8-10 fur trade was terrible, irrelevant. Alternative learning strategies are not easier, are different and better or more geared for specific people.

A.4   Charlie

Can you please describe to me your background and personality?
> o   How would you describe your identity?
> o   How would you describe yourself as a student in a classroom?

Born and raised in Vancouver, chill easy going, open to most things, likes school, thinks it's easy, doesn't like to do things that are mandatory, will do well in things that he wants to be in. Most of his identity comes from gaming, raised by gaming since age of 5. Played N64 5-12, before video games would let him be an asshole (raised by Zelda, being the good guy). Started Montessori elementary, 8-9 Montessori high school, 10 city school.

Video games had a large effect on his view points. Life can be viewed as a game. See myself as a player character, other people are like PC characters, people that are close are other player characters.

Pay attention, contribute to class by talking, does not do work until last minute to get bare minimum. Certain subjects that are of interest make him study it harder, but does not do tedious studying. Works hard and based on personal benefit. EXTRINISIC rewards.

What do you think about school in terms of your past experiences?
Teachers baby students all the time. Teacher was scared of making class too difficult. Teachers need to give students responsibility and respect.
"If I'm not treated as someone responsible and given respect than there is no room to act like that."

What do you think about school in general?
On paper it's a good idea to have school. It comes down to individual teachers. **comes down to the teacher** if you have a good teacher than you will do well in the subject.

What are some of the most important things that you have learned in school?
I don't think that any of it would have been from actual classes. Basic Mathematical skills were very important. Social skills and being school as a social environment is important. PE is important; PE teacher didn't treat anyone like babies. If you worked hard and tried then he would respect you. Teacher made him work hard, taught self-discipline and hard work. Perseverance and hard work.

Do video games offer an effective strategy for learning in the context of the classroom?
Depends on class. Video games will not teach us math ever. Saw past the educational game, game elements. Political science could be taught by video games, incorporate the ways the political system works. Civ, taught to play history, pick a nation and fight other nations, learn the basics of all the countries.
"I remember things in video games so perfectly, like oblivion, logged 5-600 hours, I can tell you anything about that game, any question and I know it, even more so, the Pokémon games, you can tell me any question about the 151 Pokémon's…." (18:42).
Depends on the students, can only work in a class of competent and responsible students. Start alternative programs, generally students are better students in alt programs. Mainstream school, students are assholes, screw around, and waste time. Must respect the teacher. Would work for science.
Subject and students.

What types of video games do you enjoy and why?
Not restricted to genre. Like almost everything, but the best of all genres. FPS, e.g. halo good, MW1 not 2 – mw2 had a lack of story. Games that can incorporate multiple genres are awesome, brutal legend RTS + FPS + hack and slash, games that push boundaries/innovation are good. Zelda, ocarina of time, the best game because it was like RPG, (no grind), open world , and interact with NPC more than once, made it feel like a community, made the game more real, more immersive, combat, puzzles, and platforming = integrated really well. Combat incorporates puzzle as well. Combat puzzle RPG.

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Where and with whom do you usually play games?

Usually, 1 player in my room with Xbox/console. Play with others online. Other people aren't always cooperative. Likes competition, interesting, coop not a fan, need to be in sync with others. Local coop only sometimes plays with people, some people are not as good as me but not willing to cooperate, or they suck and drag me down.

What are your video game playing habits?

Binging, play 1 game and play it endlessly over and over beat it 10 times. Played dead space recently. Not addicted to video games, just to specific games, TF2 play it 30 minutes per day sometimes. RPG addicting, play it to death. 300 hours fallout, 500 hours oblivion, mass effect

What other things do you like to do for entertainment?
- o Do you prefer video games over other forms of entertainment?
- o What do you consider to be a video game?

Sports, team sports stopped being fun after 13. After 13 other players do not respect the coach, and not as fun anymore. Rugby, team got canceled no one did anything they were supposed to do, not good team work. Now likes individual sports, longboarding, and sword fighting. Respect for teacher is important. Spend a lot of time screwing around on the internet, YouTube Facebook.

Plays a lot of flash games and iPhone apps. Prefers sword fighting over a lot of things, if I started mass effect 1 again (not played) then I would prefer it to everything. Video games have the potential to be the number 1 form of entertainment.

A video game is a digital challenge, there has to be a goal, whether there has to be something you have to complete or perpetual, has to be played on a screen for now… Virtual Goal that you can achieve through a controller. Farmville the goal is to make more money, it's boring. Goal of Halo is to kill the covenant.

How do you like to learn?
- o Do you like to learn with your classmates?
- o Do you prefer to study and learn at home alone?

Depends on the subject. Math, 1 way to learn, best way, not reading yourself, have someone else teach you, taught by someone who knows their stuff. Best way to learn is from a mentor. Learning from a book is always hard. Learning from someone else is the best way. As long as I like the mentor. Having, hands on things helps, give it a real world application, why do I need to learn this? What's the point? Chemistry would be easier to learn if there were more hands on learning opportunities. Need to respect the teacher then I feel the need to produce work to show that I can do the work. "If I really care about really impressing the teacher than I will do it (work)"

Learning with others depends on the classmates and the subject. If the people are intelligent and act like a teacher then its good. Tommy taught the class about the military because he's an expert, contributed to the class more than the teacher due to his expertise.

Prefer to study at home and do homework alone at home. Being told what to do does not get a good response. Lie at home in bed, put on music, and get my studies done.

What do you do when you need to learn something difficult?
- o Experiences or examples?

Biggest challenge is chemistry, never took the time to memorize. Keep doing it, persistence.

What do you think is important to learn and study?
- o Do you think that school is important?

More classes offered, hands on classes, things like learning how to repair and build certain things, electronics/mechanics class would be useful. If your stove breaks then you can fix it yourself. General technology,

basics of mechanical and electronics for everyday use. Math and science, depends on career. Don't think I need math after math 10, unless going in field of science or mathematics. Current events are important, not enough education on what happens in the world. Feel uneducated about the world, foreign relations with other countries. Real things that are important in current times, do not want to know so much about the fur trade, not as important right now.

School as an institution is probably the most important experience in everyone's life, graduate from school around 18 to 19, those are the most important year because you learn about life. School offers so many social things. Attending school makes you interact with people, if you don't learn how to interact with people you won't get far. Interacting with people is the most important skill you can have.

Do you think that you would like to learn course material through video games?
- o   How do you think this would look in the classroom?
- o   What are some problems that may arise from trying to teach with video games?
- o   Any examples?

If a video game was made well and got it right, then probably. Currently can't think of a video game that could teach me curriculum. If a game was enjoyable and also taught curriculum it would be one of the greatest things of this time. I would not ever want to be taught an entire course through a video game.

Rather than have the video game teach you things, instead make the video game the test. Play a level and you would have to then say what you learned from it. Teach you to learn from experience. Learn from what I just did.

Important to be able to learn from experience. Learn from textbooks and lectures, then put into a level of a video game and only way to beat it would be based on information from textbooks and lectures. Alternative way of testing, video games.

Physics, trajectory, one shot need to hit the target, use prior knowledge to solve it.

People would abuse video games in class and use it to dick around. Budget, schools do not have much money to pay for this.

What requirements do you think your teachers need to meet in order to teach with video games in the classroom?
- o   Do you think this is a good idea? Why?
- o   Do you have any past experiences learning with video games in the classroom?

Basic knowledge of video games, they need to be skilled in it. They should play some video games. Controller's schemes are in his mind. Very important to teach through video games from a young age. If you tried to teach peers who are not video game experts would make it incredibly difficult for them. Some peers have no comprehension of video games. Some people have advantage in video games. People always need alternative programs, have something that appeals.

In engineering we had a program to design catapults, needs to be situated first.

Do you think that some teachers already teach in a way that mimics how you would learn through video gaming in the classroom?

Word problems are kind of like a video game problem. Rather than just the equation it puts it into real life situation. Taking a word problem, but more interactive, **experience** the problem.

What type of student would benefit from learning curriculum through a video gaming learning strategy?

Responsible students, a lot of non-gamers think video games are for nerds or geeks. A lot of people have no respect for learning through video games. Wouldn't be cool to learn through a video game. To learn through a video game one needs to have respect for video games. A lot of people would not like video games.

Appendix B

Post-Interview Responses Transcripts and Notes

These transcripts and notes are organized by the order of the questions asked during the

interviews. Not all questions were addressed in all interviews either due to human error or due to

the participant having no response to the specific question.

B.1   Dee

How do you identify yourself, east van vs. west van?
Dee: East van vs. West van is fake, they're fun for comedy, not real.
Dee: when I make jokes about being saying that I'm from east van is because it's funny but in reality people are just people no matter where you are from in the city, like it's a set of stereotypes that goes with it. The way I dress when I like go to west Vancouver, or west end sometimes I kinda feel east Vancouver cuz I look like it.

What do you exactly mean by being tech savvy?
Dee: Okay, you have to know how to hook up the electronic equipment, quickly.
You have to know how to troubleshoot
Dee: If the picture doesn't show up on the video you have to know which cables to check, you can't bumble around for an hour or ask a student to help you right because it makes you look incompetent and people will lose respect for you.
You have to know how to interface with digital technology, have to know how to navigate digital menus.
2. You have to know how to use the controls, you have to know how to be very competent with those (keyboard, mouse, and controller)
3. You have to know how to play games, you have to understand and need to have basic hand eye coordination.

Does tech savviness come with age?
It comes with experience, it's not age, that's why there's 8 year olds better at video games than 40 year olds. It's just about how many hours you put into it.
In newer generations it comes easier because we have so much more opportunity to play with these games and use technology.

If you're going to learn something in the classroom what would it be and which video game would it require?
You can't learn math through a fps. I think there could be digital math, which would be entertaining, you could use a video game style interface to teach the course, cuz that would give the students lots of control over how it's presented, but I don't know I would teach history through video games.

Which video game would you use to teach history?
Call of duty style, cuz you teach about conflict, but still it's like you get to play a character on both sides of the war and you hear people talk so you can get an attitude that the soldiers had. And you can see the environment so you can get a feel for World War 2 era tanks and weapons and uniforms and leaders and countries involved.

Would you do that more as a priming activity so oh, we going to learn about World War 2 so we before we even start we are going to play this game first, or would you kind of put it between lessons or end of lessons?
I would have the game designed and tweaked specifically for the curriculum, there's no game on the market right now that I would say is appropriate for teaching in high school. Because they're not historically accurate they're not meant to be educational, you would have to have either a mod or game designed specifically for education.

So you think it would be too confusing to teach through comparison and contrasts, for example, let's play world at war and then play several levels, and then say this is what happened in game, now how does it contrast and compare to against real life via history books.

No, like most students hardly pay attention at all, so if you give them a piece of information the first time and then tell them later its wrong, they're only going to remember the first one, you'll only confuse them it would be really confusing for most students.

Is there anything you'd like to add, in relation to video gaming in the classroom?

I'm not really sure what you're going for …

So technically I'm looking at how we can create a learning strategy through video games

You seem pretty adamant about it being on the market games

yes, I'm primarily interested looking at mainstream video games, the main reason for that is that when you look at educational games first of all there's not that much money to develop them, so money is always the biggest factor, because if it was a perfect world sure we would get Activision to develop all these educational games.

So in the real world, what I'm very interested in is how we can use mainstream video games to teach.

For example, in new super Mario bros all four us were playing it but at the same time we were all learning how to play in a team.

Or the way Charlie has learned to communicate through playing Halo in teams. He gives commands and you guys snapped to. That's like a really good communication skill that he doesn't have normally that he learned through playing that game… He's gotten used to commanding people and like making things clear and being strategic.

The mainstream classes that I was in like a lot of the girls didn't know how to play video games.

Well you can play video games, do you think you are an exception to the rule?

No, I know a handful of girls who can play video games, 1 girl knows, 2 don't. I don't think I know any guys that don't know how to play video games.

Do you think girls play video games for different purposes?

It's all entertainment.

If video games were used for education would they best be played in school?

Uhm yeah, not everyone has an Xbox, although you would probably need 30 copies of the game.

How about the environment itself? Do you think it really matters if you're at school or at home?

Your teacher should be there to point out things while you are playing?

Do you think that you could play a video game as a classroom?

Having one person play at a time, having 30 backseat driving me, while playing call of duty, it would be pretty stressful but might be fun.

Could induce anxiety just like people who have to read the textbook one at a time, movies are nice because everyone just quietly watches.

Most effective way to teach with video games would be with games designed for education.

YES

Because like, the thing is, normal mainstream market video games won't cover all the curriculum and like they won't be exactly what we are supposed to be learning and they won't be perfectly examinable. And I have had a lot of teachers who have tried to do fun shit that's not quite related to the curriculum and it always just ends up feeling like a waste of time.

Right, is that due to assessment? You're like oh, now I'm not going to get the full scope of all the stuff I need for my marks?

No, it just means we have to do the fun game they're trying to make us play, and everything else, right, we have to do our homework and tests and we have to put on a skit.

B.2   Frank

East van vs. West van.
Nope, I don't think about it… good for you (if someone says they're east van).
Where I live doesn't really necessarily show what I am or who I am, it just shows that I was able to purchase this house in here… its showing that my parents chose this place, not me, it doesn't really define me.
What interests you?
History, really cool stuff. In London there's really old cool looking buildings. (in response to where you want to live).
What requirements do you think your teachers need to meet to be able to teach with technology, what does it mean to be tech savvy?
Well, I guess you have to know, because if say in the class if the console breaks well that's kinda terrible because at least 3 or a whole group of people isn't going to get their turn to play with it, game, and they are going to call someone to fix it, but that's going to take the whole day or three days to do it, but if the teacher knows what's going on and it breaks then she can, if its within in her knowledge, she can fix it easily, and the class can go about its business, but if the teacher doesn't know a single thing, if the teacher doesn't know if it's broken or not then it kinda sucks.
Basically the teacher needs to have an in-depth knowledge of the technology that they use?
She has to know more than average, below average is not good enough, if she is average… there could be a few spots here and there.
What does that mean being average?
Minimal understanding of it,… like they know some stuff but they don't know every single part and how they work, and what needs to be replaced to make it work.
Is age related to tech savvy, what does it mean to be tech savvy?
Well, I don't know what the word really means (savvy)
Being tech savvy means that you know how technology works, being savvy means that you kinda know the ins and outs about it, you know how to connect things, you know how to set it up, you know how to troubleshoot, you know how to do all that stuff.
I guess not then, because if age mattered then that would kinda suck because there's a different range of people with different ages that use computers and it has to be a specific age, then yeah that's like saying if only people under 30 can do it, well you know not all teachers are under 30, that means they can't have the knowledge? It just depends on who is able to get the knowledge and process the knowledge…
It depends on the actual teacher like If they don't want to and just have the kids play the game, well, they just don't want the knowledge, they don't want something they're not gonna be using outside of the classroom, but if somebody is actually wanting it then the age doesn't even matter.
Do you find that your peers or yourself are technology savvy?
It depends on what I'm working with, because, most of the experiences for kids about video games comes from using the objects that they want knowledge of. For example, if someone never used a computer, they won't know very much, instead of a person who is really, he or she uses it for lots of gaming, like using consoles she will know a hell lot about the console and how the network of it works, and how it actually works.
If you were going to learn something through video gaming in the classroom what would it be and which video games would it require?
I guess history, because history is with textbook gets boring. But with video games it gets a whole new level to it, video games work best with history, not math or science or English, because they are subjects that require a lot of thinking and equations and a lot of written stuff. But with socials I guess you can kinda have to … pause … it's very easy to make a video game, because you are not coming out with a whole new story by yourself. It's already there,

you just have to make a character that looks like the person you are talking about you have to make a stage and missions, that's it.

For math, well that's going to be really hard, you don't have a story you don't have a real character that is going to be using it, all you know is they gonna need equations, and that makes it really hard for designers…

Right, so you are really focused on content itself, so, basically, if you were going to learn something in the classroom you would want to learn content? Versus other skills, for example, when we played super Mario bros. Do you think you learn things playing games like that (Super Mario Bros)?

In video games you are not going to pay attention to other people, because you need to focus on your own character in the video game otherwise you will get lost.

I know a lot of useless stuff instead of stuff I need to know.

(14:40)

When you become interested in something your brain thinks that, "oh yeah that's a really important piece of information." Because you are interested and really want to know it, that's how video games go. Like if you really love this game you will remember like a few of the levels inside out, as you saw, Charlie new where all the weapons were in halo when we first played, because he was interested in the level and gameplay.

18:22

Some games make you think more open minded or be more focused on multitasking.

B.3   Dennis

East van vs. West Van

People are people, but it's relative to the societal conditions in which they were raised. And like the mentality and environment they were raised in. I can see a really big effect of that on pretty much most of the population raised in a social environment. I am all over greater Vancouver.

There's some social differences, how people act and react.

Tech savvy?

Tech savvy enough to turn on video games, give the kids help if they need it just enough to make sure the classroom runs smoothly. You don't have to be a computer genius, you just have to know video games and not be a complete dinosaur with them, because if you don't know the material, you are not familiar using a keyboard and controller, if you come straight from pen paper completely old school background and you get thrown into a completely computerized classroom a teacher would be completely overwhelmed.

If you are going to learn something in the classroom and through which video game?

There's not much that I could really take in from a video game considering where I am now, but younger kids maybe, to learn process thinking, analyzing your environment, interacting with your environment, hand eye coordination…

Multiplayer in video games I think might have helped me out a lot because I was a super withdrawn kid who didn't really like to talk or interact or emotionally connect with people, but sort of just being like shoot that over there,

there are people over here, watch this watch that, and like kinda having to do that out of necessity in order not to die sort of brought me out of my shell when I was really young.

Would it be a good idea to bring a video game console into the classroom or would it be a better strategy to give students kids games to play at home?

Tomb raider had some really good puzzles.

How much you play comes into effect, there could be kids that say they really love civ and play 1 hour per week and then there's kids who really love civ and play 3 hours per day. Those people who have played it would gain a massive learning advantage over those who don't.

What if there are kids' families who cannot afford them or what if there's people who in general don't like video games, that creates a really really big have have-not scenario that I am not a fan of.

Would it be a good idea to bring in a video game like God of War to teach mythology?

I'd rather have them see movies, instead of being in the action you can see it from a wider scope, ergo, you could be learning about character interaction over their weak spot. So I think you'd be able to observe a lot more information from movies over video games in general.

The entertainment of video gaming isn't cut scenes for information that you take in, its game play itself, one cool thing about movies is that you can sort of have cut scenes, you can cut through certain scenes, and you can cut over paste over jump from like one day to a year. In a video game like a war game, if you have to take Vimy ridge you can learn about it but then you literally have to spend five hours trying to shoot the gunners, you're not learning anything there your just replaying and trying not to die, but if the video game just let you through in order to accelerate the flow of information that would just be a broken video game and not really be fun.

So essentially playing video games in the classroom would be a waste of time?

It wouldn't be a waste of time, it would be an interesting addition but I'm not so sure for an entirely video game based class or period it might not work as well as course work or course work and movie

B.4   Charlie

Charlie's interview deviated from the original interview questions, the interview ended before

we could get to the remaining questions due to time restraints.

East Van vs. West Van

Not at all, I don't give a crap at all where people are from.

People want a group to be part of, so they use their location to decide which group they're from.

Tech Savviness

They need to be competent with the interface, you can't teach a video game lesson if you can't play a video game.

Does that come with age?

Experience, age has nothing to do with it, it's just how long you have been doing it, I've been playing video games since I was 5 years old

Are you tech savvy?

I wouldn't say I'm tech savvy but I am tech competent, I pick up things fast and I'm not totally unaware of how things work. I can tell the difference between a piece of crap computer and a good computer.

If you know how to build a computer you are tech savvy.

If it's on a console, not really, consoles are different than computers because you don't really fix them. (in regards to being tech savvy enough to teach).

If you were going to learn something in the classroom what would it be and through which video game?

I think the best thing to learn through video games is history, you could have a role playing game, not a true rpg because in all true RPGs you have to make choices, but you would play the part of someone in history and have to

do what they did and in order to complete that you would have to learn it and there would be like conversation challenges, you would have to like actually know what you are talking about.

Some examples?

I don't really know, perhaps mythology… but you only learn basic stuff from age of mythology, you wouldn't actually pass a course based on that.

If you were going to learn from a video game like civilization, how would you like to learn…

Existing video games that have educational value are educational but only in a recreational way because it takes too long to get the real information from them and they're just not practical as a teaching method, there's an example of how video games have the potential to teach, and they themselves aren't useful tools yet.

There's a lot of people who don't enjoy video games.

Response to playing video games as a class, turn by turn.

That might work for smaller classes, 30 people passing the controller wouldn't work, 8-10 people might work. It would give people who are not used to playing video games to learn how to play video games. I would pay attention to a video game while not playing if it has a good story.

On Collaboration:

There's no consequence for fucking everyone else over, and be just like ha-ha, I won by screen dragging you guys all to death.

Teacher would have to implement consequences for screwing each other up.

Educational video games don't really work because it's no different than from studying from a book because the kinda person who buys educational video games that's the kind of person who gets straight A's already because they enjoy studying and learning math, so if you have that it'd be no different than studying from a math text book and doing practice problems on paper but it'd would be on the screen.

I really think that the only way for it to be a real like consistent big part of the curriculum would be for video games to be made specifically for schools. And not even specifically for schools just games specifically that it could be used in school, like Joan of Arc, I think her life story is very interesting and eventful and if you play a game from a position of Joan of Arc, and have it be 100% historically accurate and it would require you to know about her and her experiences to beat the game I think that would work.

Play the video game of the book, like the hobbit or the lord of the rings. There's a lot of other books that have video games based off of them.

20:00 how to test video gaming in the classroom*

One downside to playing video games rather than reading books is that one of the main points of reading books is not just to learn the story and memorize the characters, reading books is important because it expands your vocabulary and its good for your brain, so one of the main points of novel studies is to encourage reading, if you just replace that with a video game you might learn what happened in the book and you might learn all the characters and relations in the book but you didn't read the book so you've lost half the content already, so I think a combination of both (reading and video games).

I have yet to play a game that's educational and actually a game, it's really hard, the most important thing behind making an educational game that's actually fun is masking that's its actually educational and have people learn things subconsciously. Like, games that I play that I memorized everything from if it turned out that those were like real events and things that would be great because I would have learned all that stuff but they're not. because no one has ever bothered to do that because when u make an educational game people go into it thinking they're making an

educational game but they really don't, they really shouldn't do that, because educational games are not fun, you got to make a fun game and make it educational.

Make a game that's fun then make it educational.

Fun comes first in gaming, because if it isn't fun you're not going to play it.

There is just not enough educational content in video games, like God of War, you learn a lot but not enough for the time spent.

Use the game as a starting point, in god of war you fight a lot of

God of War 27:00. Research the game as a starting point.

Appendix C

Peer to Peer Interview Transcripts and Notes

These transcripts and notes are organized by the two participant peer to peer interview groups.

C.1   Dee and Charlie

[Notes, fooling around, they just got onto the bus, and answered all of these questions on the bus.]
[They also made extra recordings of them fighting together on the bus and fooling around, they're very loud and rambunctious. People around them look annoyed, Dee swearing loudly at Charlie because he poked her bruise on her knee (she got the bruise after falling off her long board that week).]

Q1
Dee: uhm okay occasionally we get to do research projects on them like if it's something you're interested in, but other than that not really much at all
Charlie: I've never had any experience with video games in class.

Q2:
Dee: I think, that, we probably should, we would get pretty good results.
Charlie: why?
Dee: Why would we get positive results? I think kids would respond pretty well to it. I think you would respond well to video games used as educational tools in the classroom.
Charlie: I agree, I think that video games should have a bigger role in the classroom…
[Charlie tells Dee to stop spinning the camera]
But I don't think it would work for most people because most of the people in my class are bad with video games and they don't know how to use controllers so the lack of interface would make it bad.

Q3:
Dee: I think there's something's you probably couldn't teach properly with video games, like, gym. I think it would be really hard to teach PE with video games, so that could be a problem.
[Play fighting]
Charlie: mostly, it would be people not being able to learn through them because most people aren't as competent with the controller as they would need to be, and a lot of people just disrespect video games as mindless entertainment.

Q4:
Dee: I think that age of empires would be good, I think that assassins creed if it was slightly more historical would be good, I think that all the COD and Gears of War games would be good cuz they're all relatively accurate'ish, they teach you things about war, so, I think that certain puzzle games would be good, and that's my answer.
Charlie: I don't think there's any,
Dee: Really? Think harder?
Charlie: I don't think there's a single video game that I have ever played that would be helpful in the classroom.
Dee: Really? Did you learn anything about MW from playing MW?
Charlie: Nope.
Dee: You didn't pay any attention?
Charlie: no I paid attention, but it's like, what did I learn, oh, a rocket launcher is good against a helicopter, no shit there!

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Dee: Well, no I don't mean by tech (incomprehensible) but like by countries involved.

Charlie: No, I learned that Afghanistan is involved, but I'm sure everyone already knows that, that's about it, the rest is all fiction. They made up a terrorist lord who got a hold of a nuke for the game.

Dee: Okay, but what about COD world at war.

Charlie: Never played it.

Dee: Loser! Okay, play it, it's really good [pause] what about… well you do play shit video games, okay never mind, Charlie doesn't think that any video games would be good for learning.

Charlie: no, I don't think nobody makes them good for in the classroom, there's lots of video games that are good for learning.

Dee: He hasn't played any good video games.

Charlie: Dee is a crazy hoe.

Dee: Yes she is.

Charlie: I think were done now.

Separate Instance (Day 4)
 [Notes: Charlie playing video games (Call of Duty) on the couch, Dee is hanging out on the same couch.]
Q5:
Dee: Charlie come over here, it's time for your interview. Asks Q5.

Charlie: I learned that Dee has a very large vocabulary, COD.

Dee: You learned that from video games and COD?

Charlie: Yeah

Dee: was it like my vocabulary of swear words?

Charlie: Yeah

Dee: I unleashed that in Halo too, but seriously focus, what have you learned in video games?

Charlie: Well I need a minute to think about it, stop filming, unless you want to record me thinking and eating blueberries.

Dee: Yeah

Charlie: Okay

Dee: I want a blueberry

[Goofing around with blueberries]

Dee: Answer the question… [Angling the camera away from Charlie's face]

Charlie: Uhmm, is that filming of blueberries or my crotch?

Dee: Blueberries, answer the question.

Charlie: Uhrm, why don't you answer first cuz I need time to think.

[Dee passes camera to Charlie]

Dee: I have learned a lot about mythology, Greek and Egyptian mostly from age of mythology, and I learned not a lot about the different nations of the world… Charlie if you're doing that thing you're gonna stop doing it right now.

Charlie: What I'm not doing anything… I'm not! It's at your face it's pointing at your face.

Dee: It better be, uhrm I learned a lot of the different nations of the world at a young age from playing age of empires and civ, and I learned how bad I am at halo by playing halo. I learned, uhm how to dominate the world by playing civ, I learned, oh, civ taught me some famous world leaders too, at a young age, and I've learned some interesting facts and depth about the world wars from playing games like COD [pause] and I've learned, I don't actually know if there's anything else, I've learned a lot about animals from playing zoo tycoon actually, because I used to read the little info panels, but I think that's about it so its Charlie's turn to answer the question

Charlie: I don't think that other than like some mythology stuff from like final fantasy games and things like that I really don't think I have learned anything of importance from video games.

Dee: Cool story bro.

C.2 Frank and Dennis

[Notes: They did all their questions and answers in the video gaming room in one quick session.]

Q1:
Frank: well as far as my knowledge goes, they have been used for younger children some uhrm, some you know are going to school they're being used by parents to get them started on the basics, and have their mind tracked in the subject early on.

Q2:
Frank: No, because, uhrm, if they have a bigger role then the students is going to stop having a teacher because the role of the teacher is to teach and having a video game that does everything that the teacher is supposed to do kinda takes away from the point of going to school and the students is gonna sit home and never really come to the classroom. So, it should have like 50 50, teacher should teach some stuff and the video game should have some stuff.

Dennis: So, it would make teachers kind of obsolete and sort of take out that personally motivating element, right?

Frank: Yeah

Q3:
Frank: Well, the limitations for using video games in the classroom, is that some video games cannot be actually be used in helping the subject, because then they would totally not in the category of the game that the kid would like to play, for example, math there's not a video game that really helps out with math.

Dennis: there's math munchers.

Frank: What?

Dennis: There's a bunch a of math games, but alright

Frank: Yeah but no one's going to play them

Q4:
Frank: well it depends on the subject, mostly because of the subject, because for history you can have video games that give you missions and you have to go around and do them to be able to learn other people, uhmr they're history and what they've done in history and that's about it.

Q5:
Frank: well, uh, from parole I have learned how to think before I act, and how I should consider putting an object somewhere, and while not using objects in other places. From other video games, I have learned history of places and some mythology from like god of war and that's basically it.

Q1:
Dennis: uhrm video games have been used as teaching elements for younger children in alternate learning environments, they have been introduced in some military education as simulators or in uhrm other employment fields as like air place simulators, I believe there's even a combine harvester simulator and that's it.

Q2:
Dennis: I think that it's entirely conditional based on the curriculum of the learning environment there's a trade of between motivation and entertainment. Video games are completely ineffective if you're not motivated and you're not entertained by them if you basically don't want to play them your just pressing buttons and you wouldn't be absorbing any information.

Q3:
Dennis: that depends on the limitation of the video games themselves, you could have a fully immersive virtual reality environment with all your senses engaged, you could probably learn pretty quickly like that, but the

technology that we have right now at the consumer level simply isn't at that point, again you still have to balance entertainment, motivation, and education. Question 4?

Q4:
Dennis: Right now without much research, I wouldn't really be able to answer that question but I figure games that would integrate puzzles, common knowledge, historical settings with accurate depictions of the settings themselves, realistic environments, sandbox games, perhaps the students could interact and learn from, learn correctly from their environment in the video game, alright that's it.

Q5:
Dennis: That depends on the video game, I have learned from some video games not to get shot, and others I have learned how to solve puzzles, Tomb Raider features puzzles, uhm, there's a lot of interactive puzzle solving in a lot of games, even with uhm, like say, Portal you learn decision making, problem solving, order of operations, not math,

but just order of operations and like figuring out what you're going to do how you're going to do it and uhrm in a 3d space, it's pretty engaging, and that's about it.

Appendix D

Focus Group Transcripts and Notes

The focus group was conducted over two separate instances on the same day, one before lunch

(Morning), and the other a few hours after lunch (Afternoon).

D.1   Morning

The notes and transcripts were hand written for this section.

D.2   Afternoon

The left column indicates the timestamp on the video recording in relation to the notes or quotes.

[Prior to the focus group we were playing Halo 3, Dennis, Frank, Charlie, and Myself. Very focused and competitive.]

9:30	Started off by talking about **science**
934	Dennis wants a pickled fetus for dissection.
950	Continuing discussions about learning different subjects, physics, boring.
952	Dee - physics labs are normally not as fun Peter - how so? Dee - cuz normally like, put a rubber band on the axel of this car and wind it and see how fast it goes, [sarcastically] and that's exciting.
1016	Dee thinks that physics needs to be direct. Needs to be taught like math.
1050	Charlie: Build tiny little contraptions to learn about physics. That would be cool. Charlie - Be graded on their effectiveness (of contraptions) because you have to know physics to get them to like do something
1132	"I don't think there's any feasible way to demonstrate hands on physics in the school that's both entertaining and not futile and not stupidly expensive" - Dennis thinks it's futile to teach physics through an entertaining way…
12:30	[General note, Charlie spinning around incessantly in his chair, seems quite bored.]

Social Studies

1507	The fur trade and war of 1812 and world wars.
1531	Learning more about different cultures rather than focusing on European history and Canadian History.
1616	**How was socials taught?** Charlie – Reading aloud in the classroom from the textbooks. Dee – The videos and multimedia they watched was horrible and old. Dee – wants more interaction, some way to interaction with the information rather than just being told.

Frank – agrees with the terrible movies and terrible documentaries, material is being taught very slowly, 2 months to complete 1 chapter.

2000   Frank - We shouldn't allow reading aloud, because people laugh or make comments that slow down the class.

2010   Dee – OMG you know what would be really fun? Cuz I'm just thinking why we're doing this, imagine if you could play like a video game that was basically like assassins creed except actual history, and you gotta follow the missions, dude that would be so awesome that would be so fun. Just imagine all the units you have done in history?

2104   Peter – Now could a teacher for example have modified a video game to kind of teach that?
        Dee – It would be difficult… specifically
        Frank – IT couldn't be like that, because uhgm
        Dee – there's no game with those stories in it, I don't think…
        Frank – it's like saying the teacher will just modify the textbook, she can't, because she has to teach this stuff that the school board tells her to. So you can have like a game special made by the school board and has the stuff that you're supposed to teach. Students can just play with it.
        Charlie – the game would have to be made by a video game company. But there is not a big enough market for it…

(In response to the idea of roleplaying in the classroom for learning, taking on roles to explore the relationships and issues, jigsaw)

2230   Dee – the only problem with roleplay in anything that's actual life instead of a video is that you have absolute freedom, I have the freedom to do it historically inaccurately, in a video game you are prompted to make the right choices.

23   Peter – How about a game like civilization (in regards of open ended ness video game for learning history/social studies)

2312   Dee – Civ is like really historically inaccurate… you can play a World War 2 scenario as Germany and win. Like that's the whole point of playing those games… if you had no choice but to win that wouldn't work.
        Peter – what could you learn through from doing things the wrong way? And then finding out that

2330   Dee – k you could for other subjects but for social studies you don't really want to do it the wrong way, and remember that instead of the right way, you don't want to win as the Germans.

2357   Charlie – like world war 2 don't play as Germans, but play as like the British or Americans but you mess up and you lose and then it shows you a video of what the world would be like if Germany had won!

Is it important to learn how to learn, or learn how to memorize things and just like be encyclopedic?

2419   Frank – mostly its important how to learn it because memorization can be done anytime and you're going to forget anyways, so actually understanding it is rather better.

2531   It's one of those subjects were you don't want to make a sandbox game (RE: Social Studies), if it was a science game than yeah you can make it totally sandbox because when you do it wrong your

	experiment or whatever doing doesn't go right you can do it again in a different way and discover whatever you want, social studies you want to learn certain campaigns.
2626	Geography like super Mario world (exploring a real version of the 3d world).
2730	Peter- So what you are saying is that you know things correctly, you need to know the names and dates in Social… Sandbox you're just making things up.
2738	Dee- I played civ rev, and according to civ rev Gandhi could have kicked Cleopatra's ass at war…
28	Dee – if you're doing history it has to be open and shut, if you're doing politics you can have an entire game based entirely on politics and made up politicians and whatever and you can just interact with that.

[Dee – exhausted on talking about social studies, feels like her point is not coming across.]

Informal learning.

31	Dee – I like talking to strangers you learn a lot. Especially from crazy people.
31	Dennis – Crazy people can be the funniest people.
3120	Dee – they can also be really informative.
3123	Dennis – they can also be extremely knowledgeable in really random things.
3125-33	Dennis, Charlie, Dee talking about crazy people / schizophrenic people on the bus.
3330	Charlie passes cup to Dee with weird drawing, Charlie and Dee play fighting
3430	Peter – how else do you guys kinda like learn things informally?
3440	Charlie – uhmmm … friends, like I know more about environmental issues from being friends with XXXX than any other source and XXXX.
35	Dennis, Dee, and Charlie goofing around.
3640	Dennis – Learn from trial and error… you fall and you get back on.
3642-3718	Dennis and Dee joke about learning through extreme metal, and talk about destroying their knee caps learning how to longboard.
3719	Dennis – I've had tips from other people through like knowing people who were just like don't do this, do this, and I was like omg, Peter –did they verbally tell you that? Dennis – well they notice me doing something, I notice them and they notice me, and I deliver those same tips to other people
3745	Charlie – it's kinda like community knowledge and information gets passed around through people of that community.
3815	Dee shows her sewing skills, Charlie drawing disturbing pictures on his cup and annoying Dee