Integrating Video Games into the Elementary School Classroom

By

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Abstract

Video games are prominent in contemporary Ontario student cultures in that 85% of Ontario students play outside the classroom. As such, video games have the potential to be an instructional tool that can vastly increase student engagement through “edutainment” which is the combination of education and entertainment. Here, I report local teacher experiences on their integration of video games into their elementary school classroom. The participants reported a) the importance of distinguishing student, gaming and school cultures, b) the importance of moderation and boundaries for students, c) the overall positive reception to the use of video games by students, and d) the importance of teachers having perseverance. Based on these findings, I also make recommendations on multiple levels of the education system including the need for more professional development, more funding for technology, parent engagement, and transparent communication between students, parents and teachers.

Key Words: video games, student engagement, technology integration, Information and Communications Technology (ICT), edutainment
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Chapter 1: Introduction

1.0 Research Context

Video games often have a negative connotation because of media that has emphasized their sometimes violent and graphic content. Studies have shown that video games can increase aggressive behaviour (Bartholow, Sestir, & Davis, 2005) and desensitization to violence (Carnagey, Anderson, & Bushman, 2007). However, as with using violent movies in the classroom, the careful selection of video games may lead to constructive and meaningful learning in any subject area. Some studies indeed have shown that video games can increase cognitive learning (Boot et al., 2008; Chuang & Chen, 2009) as well as enhance math learning (Shin et al., 2012). In addition, by simply being exposed to various forms of technology, a student’s “digital literacy” improves (Eshet-Alkalai, 2004). Digital literacy refers to the ability to use software and operate a digital device, but also includes the cognition, motor, sociological and emotional skills required. In today’s technological era, digital literacy is an essential skill for students to have and they can be given the opportunity to learn in their schools.

There is also the concern of video games becoming a behavioural addiction (Holden, 2001). Individuals who play video games excessively have been shown to exhibit “various problems similar to those described in substance addiction, such as preoccupation, tolerance, loss of control, withdrawal, family or school disruption, lying, disregard for consequences of excessive play, and occasionally, committing illegal acts to continue playing” (Turner et al., 2012, p. 878). Therefore, there is an onus on parents and teachers to ensure that students do not become addicted to video games and to teach students moderation. In spite of these findings, however, within a controlled environment (i.e., the classroom), video games still have an exceptional potential to be an instructional tool.
An additional concern about video games is the availability of technology for video games to be played by students. Within the Ontario classroom, there is an increased amount of technology use including interactive whiteboards, mobile laptop carts and tablets (Toronto District School Board, n.d.). For the 2015-2016 school year, an additional $3 million was allocated to provide classroom technology to all schools across the TDSB (TDSB, n.d.). Therefore, there is increasing availability of technology for students across the TDSB.

Furthermore, the TDSB is guided by the Information and Communications Technologies (ICT) Standards (2009) which is a guideline on using technology as an instructional tool from kindergarten to Grade 12. According to the guideline, games can be used to assess critical thinking and problem solving.

Video games are deeply embedded in youth culture. Using a representative sample, 85% of Ontario students are reportedly playing video games outside of the classroom and 18.3% are reportedly playing video games daily (Turner et al., 2012). Therefore, there is a significant prevalence of video games in youth culture that could be potentially be exploited to augment student learning in the classroom. According to the Entertainment Software Association (2015), 26% of the 155 million gamers in the USA are under the age of 18. Presumably, all of those gamers are elementary and secondary school students. This allows the education system to exploit this prevalence by utilizing video games to keep students engaged in a meaningful manner. One mathematics game in particular, Prodigy, has become increasingly popular over the past few years and is now being used by over 3 million teachers, students and parents (“Prodigy Math Game,” n.d.). The game is a mathematics game designed for Grades 1-8 on the premise that students build a character who grows stronger as they fight battles using mathematics. There are many other features that also retain students’ interest such as the more recent ability to battle
against other students. Currently, there are no studies that assess the effectiveness of Prodigy; however, the Toronto District School Board (TDSB) Professional Library (2015) approves its use in the classroom as they list the game as a resource. In spite of the numerous potential benefits, video games tend to be neglected as an instructional tool for various reasons, including resource limitations and teacher attitudes.

“Edutainment” has become the term to describe the combination of education and entertainment, primarily in the form of games (Addis, 2005). The concept “relies heavily on visual material, on narrative or game-like formats and on more informal, less didactic styles of address” (Okan, 2003, p. 255) to make learning more fun and interactive. By this definition, there is a distinction between educational games and video game-based learning. In many cases, educational games lack narratives and are often too simplistic to hold on to students’ attention to the point where “they ultimately fail to work because the creative game dynamics that induce transportation and immersion are missing, making them simply not fun” (Granic, Lobel, & Engels, 2014, p. 74). There are numerous platforms to use mainstream video games as an instructional tool i.e. analysis of themes and content within games, creative thinking using game design, and the opportunity for class community building. By exploiting these already available and well-designed video games, there is ample opportunity to engage students, teach students 21st century skills, provide personalized learning opportunities and provide an environment for authentic and relevant assessment (McClarty et al., 2012).

1.1 Purpose of the Study

The main purpose of this qualitative study is to investigate how Ontario elementary school teachers are currently integrating video games into the classroom. To explore this topic, I interviewed a sample of these teachers about their reported practices for using video games
within the classroom, the intent of the usage, the perceived value of game-based learning, the perceived effectiveness of video games as an instructional tool (e.g., due to increased student engagement and increased academic performance), and the perception of video games in student culture. I hope this study further elucidates the value of using video games in the elementary school classroom.

1.2 Research Questions

The focus of this study is to answer the following central research question: how are Ontario elementary school teachers currently integrating video games as an instructional tool in the classroom? Subquestions further guiding the study are:

- What are teachers’ reported practices for integrating video games?
- What are teachers’ purpose in using video games in the classroom?
- What value do teachers see in game-based learning or educational video games?
- What outcomes do teachers perceive when integrating video games?
- How do teachers perceive the role of video gaming in student culture?

1.3 Background of the Researcher

Video games have consistently been an integral component of my life. I am a 29 year-old Canadian-born Chinese and have been playing video games since the age of 8 years old. My brothers were the catalyst in my passion for video games because they introduced me to the world of video games when they bought a Sega Genesis when I was in Grade 3. Ever since, I have played video games on multiple platforms. Personally, I often use video games as either a stress-reliever or a social tool. There is a stereotype that Asians in general have a tendency to play video games and, while this tends to be true in my limited personal experience, I also
perceive socio-economic status as a factor. I come from a lower middle-income family that could afford to buy video games; this may not be true for lower-income families.

I believe video games are a not-often explored avenue of improving student learning. However, in my experience during my elementary school years, video games were used as a reward to finish work done in class instead of as an instructional tool. Therefore, I was curious if video games could be used to improve students’ learning outcomes, not as a reward, but as a form of instruction. Over the years, I believe my exposure to video games has improved my hand-eye coordination, general knowledge, and critical thinking. It also gives me greater insight into what type of games could be better used in the classroom depending on the subject area that could motivate students and keep students engaged.

Before I began my Master of Teaching, I have previously incorporated educational video games primarily into math but also into science. I personally have observed increased student engagement and learning, but it reached a point where their attention began to wane after several sessions of the game. From that experience, I was curious as to why they might have lost interest. Partly, I believe it was because it was an educational game as opposed to a mainstream video game causing loss of interest, becoming bored from repetition, or having insufficient incentive for progression. Therefore, I wanted to learn more about the use of video games in Ontario’s education system and specifically how elementary teachers are using video games as instructional tools and whether they consider them to be effective. However, it should be noted that my bias towards video games may hinder my research because I personally believe them to be a positive instructional tool. I also have multiple ideas about how and what video games can be integrated into the classroom. These preconceived notions may cause me to unintentionally
skew my interviewing and data analysis in a way that reduces the representation of barriers or negative aspects of video game use in the classroom.

1.4 Overview

To answer my research questions, I conducted a qualitative research study using purposeful sampling to interview two elementary school teachers about their experiences of integrating video games into their lesson plans. In Chapter Two, I review the literature on video games in the context of K-12 education. Next, in Chapter Three, I elaborate on the methods by which I obtain and analyze my data. In Chapter Four, I report my findings and relate them to the reviewed literature. Lastly, in Chapter Five, I describe the implications of the research findings and their significance for my own teaching practice and the educational research and teaching communities. I also indicate questions that arise from the present study that may be investigated in the future.
Chapter 2: Literature Review

2.0 Introduction

In this chapter, I review research literature pertaining to ICT, teacher limitations including first- and second-order barriers, elementary school students, and video games. However, I will begin with a preface that there is little literature from Canada and most of the research literature regarding video games originates from Europe or Asia, with some literature from the United States.

In what follows, I briefly review the literature on ICT in education focusing on the impacts on education, the prevalent use of interactive whiteboards, and the development of “edutainment”. I explore ICT because it shares many of the same limitations and barriers as video games presumably because video games are a subset of ICT. This section describes changes in ICT pedagogy over the years, how ICT can be beneficial in the classroom and give a brief overview of the concept of ‘edutainment’. Next, I review the challenges and barriers that teachers must overcome to be able to integrate technology into their classroom because teacher limitations are a prevalent concern in the implementation of technology and video games into the classroom. In the subsequent section, I explore the rapid advancement of technology in the context of elementary school students growing up within the contemporary technology boom. Lastly, I review video games, their impact on today’s society, and their involvement in student culture.

2.1 Information and Communications Technology

Information and Communications Technology (ICT) is a widely researched topic in the field of education because there have been links to increased student engagement. “[ICT] includes computers, the Internet, and electronic delivery systems such as radios, televisions, and
projectors among others, and is widely used in today’s education field” (Fu, 2013, p. 112). Studies have shown that using ICT can increase the quality of education and contextualize the learning material (Lowther et al., 2008; Weert & Tatnall, 2005). More recently, there has been a large increase in the availability of education and avenues of education due to technology. Currently, online courses are frequently used, particularly at a post-secondary level (Means et al., 2009). According to Driscoll et al. (2012), “when online courses are designed using pedagogically sound practices, they may provide equally effective learning environments” (p. 312). While technology has greatly advanced education in terms of availability, it has not necessarily done so in terms of cost effectiveness (Driscoll et al., 2012).

Several benefits have been extracted from the use of ICT in education including: expansion of material availability to students (Brush, Glazewski, & Hew, 2008), the support of student-centred and self-directed learning (Castro-Sanchez & Aleman, 2011), the production of a creative learning environment (Chai, Koh, & Tsai, 2010), the development of critical thinking skills (McMahon, 2009), and the improvement of teaching and learning quality (Gee & Hayes, 2011; Serhan, 2009). However, despite the numerous benefits that ICT presents, there are also numerous challenges that have to be addressed (Fu, 2013). These challenges can be divided into two categories: external and internal factors. External factors include technology availability and accessibility, lesson preparation, and insufficient technical or administrative support (Chen, 2008) whereas internal factors include teacher understanding, perceptions, beliefs and attitudes towards ICT (Al-Ruz & Khasawneh 2011; Chen, 2008; Lin, Wang, & Lin 2012; Sang et al. 2011). As teacher limitations present a large concern in the integration of ICT, including video games, into the classroom, the topic will be further discussed in a later section.
An example of mixed results for ICT integration is the use of interactive whiteboards. The commercially available interactive whiteboard is becoming increasingly more common in the classroom in many countries. Many studies (see Balta & Duran, 2015) have shown overwhelmingly positive perceptions among both elementary and secondary school students in using interactive whiteboards. Balta and Duran defines the interactive whiteboard as “an instructional tool that is connected to a computer and a projector and enables the transfer of images from computer to the board” (p. 15). Educators in many countries such as Canada, USA, Mexico, Taiwan, Japan, Singapore, Malaysia, Russia, and China use the whiteboard (Yang, Wang, & Kao, 2012). However, there are some differences in the literature regarding actual student improvements with the use of the interactive whiteboard. Although the majority of studies appear to support the positive effects of interactive whiteboards (Holmes, 2009; Lewin, Somekh, & Steadman, 2008; Thompson & Flecknoe, 2003; Yang, Wang, & Kao, 2012), there are also studies that have shown that the technology’s effect on student academic achievement is insignificant (Glover, Miller, Averis, & Door, 2005; Higgins, Beauchamp, & Miller, 2007). As a form of ICT, interactive whiteboards are an example of how advancing technology appears to be enriching pedagogy but with mixed results. As such, the utility of interactive whiteboards and ICT as a whole require further study.

2.1.1 “Edutainment”

As a further extension into ICT, technology typically allows for a medium in entertaining students to increase engagement. Previous efforts have been made to combine the concepts of entertainment and education in the form of “edutainment”. According to Hongke (2014), “edutainment is...a teaching method that combines technology and art, theory and practice, and makes the most of entertainment characteristics to achieve the maximum respect for the life of
the learner’s lives and cognition” (p. 27). Historically, the concept of combining education and entertainment possibly began with Confucius, an ancient Chinese philosopher, when he proposed that education should formally include recreation (Hongke, 2014). Within the shift of pedagogy from teacher-centred learning to student-centred learning (Kember, 2009), recreation is likely a more ideal term than entertainment because the objective of student-centred learning is to get full participation from the student. However, entertainment was used because it encompasses various forms of entertainment, including television, movies, radio, and video games (Addis, 2005).

The development of edutainment progressed to have a “sound multi-disciplinary ground of pedagogy, psychology, and information technology” (Hongke, 2014, p. 27). Pedagogically, edutainment should create an environment for the students’ individuality to promote student-centred learning. Psychologically, edutainment should allow student learning to be fun and engaging (Correa, 2014). With regards to information technology, edutainment allows for the integration of technology into education (Corona, Cozzarelli, Palumbo, & Sibilio, 2013). More recently, edutainment is often associated with the use of games as the form of ICT to create a student-centred environment that keeps students engaged (Jarvin, 2015). The use of games in education will be further discussed in later sections.

2.2 Barriers to Integrating ICT in the Classroom

In spite of the numerous benefits that ICT can provide, there are barriers that prevent it from being fully utilized. One of the largest concerns regarding the use of ICT or video games in the classroom is teachers and their ability to appropriately use technology (Fu, 2013). These concerns include that the teachers’ expectations of the effectiveness of ICT are low, they do not clarify student learning goals (Al-Bataineh, Anderson, Toledo, & Wellinski, 2008), they have low software skills (Goktas, Yildirim, & Yildirim, 2009), they have little knowledge of ICT in
the teaching context (Honan, 2008), and/or they lack professional development resources to
develop these skills (Yildirim, 2007), among many other reasons. As previously discussed, there
are two categories of limitations: external and internal. External factors, also known as first-order
barriers, are factors that do not depend on the teacher. Internal factors, also known as second-
order barriers, are factors that are dependent on the teacher (i.e., their attitudes, beliefs and
perceptions) (Ertmer, 1999).

2.2.1 First-order barriers

The most common first-order barriers are technology availability, inadequate technical or
administrative support, and lesson preparation time (Chen, 2008). The availability of technology
in education systems is most significant in developed countries such as Canada, USA, and the
United Kingdoms (Trouche et al., 2012) because of their overall economic progress and
technological advancements. However, that is not to say that all schools within these countries
have appropriate technology readily available. In many cases, schools have outdated hardware or
software (Brinkerhoff, 2006) and cannot update to newer technology due to financial costs
(Groff & Mouza, 2008).

Another common first-order barrier is the limited or lack of technical or administrative
support (Smerdon et al., 2000). For the most part, this refers to the availability of resources that
guide the teacher in their learning about ICT and how to best utilize it in their classroom. These
resources can include professional development workshops or online resources. In one study,
(Brown & Warschauer, 2006) teacher candidates were found to not be exposed enough to
technology so that they felt inadequately prepared to use ICT in their pedagogy.

The last and most common first-order barrier is the lack of lesson preparation time
(Wood et al., 2005). Due to lack of familiarity with technology, the teacher may require extra
time and effort to familiarize themselves with the technical skills involved with either the hardware or software, and also optimizing the use of the technology. This would also include the time spent to attend professional development workshops or learning through available online resources. However, given the overall amount of time that teachers have, the time required to learn technology may not be feasible.

2.2.2 Second-order barriers

While first-order barriers are often out of the control of the teacher, second-order barriers are the teacher attitudes that can be changed at the individual level. Teacher attitudes towards technology represent the strongest predictor in the future use of ICT (Palak & Walls, 2009). Furthermore, Sang, Valcke, van Braak, and Tondeur (2010) found that teacher candidates with constructivist teaching pedagogy have a greater interest in adopting technology into their pedagogy. Additionally, those teacher candidates in the study who were confident were also more capable of using computers in their classroom. Therefore, not only does a teacher’s attitude play a role in the future use of ICT, but likely also their confidence.

With regard to the reluctant teacher’s attitudes toward ICT, they may experience fear that they will appear incompetent in front of their class due to lack of familiarity with technology (Hixon & Buckenmeyer, 2009) and anxiety in struggling to stay ahead of students (Buabeng-Andoh, 2012). With teachers reluctant to adapt technology into their pedagogy, there is evidence that pre-service teachers who underwent a teacher preparation course on the use of ICT showed increased positive attitudes (Chai, Koh, & Tsai, 2010; Doering, Hughes, & Huffman, 2003) because they learned how to adapt their pedagogy by learning about different instructional approaches, obtaining enriched activities that require technology, and receiving guidance from supportive faculty members (Abbott & Faris, 2000). These studies suggest that to aid in the
integration of ICT into education, teacher preparation programs should include a course to expose the teacher candidates to technology to demonstrate the potential utility in their pedagogy. However, these findings do not exclusively apply to pre-service teachers. Vannatta and Beyerbach (2000) also found an increase in experienced teacher proficiency with technology applications and instructional methods as a result of a professional development workshop.

While there may be many barriers and challenges to integrating ICT into the classroom, second-order barriers are influenced on a smaller scale whereas large scale changes can be made to first-order barriers if adequate funding and support is provided. However, second-order barriers are more restrictive because teacher attitudes are critical in the implementation of any new practice or pedagogy.

2.3 The New Generation of Elementary School Students

The newer generation of students is showing themselves to be able to adapt to new classroom technologies more rapidly than teachers can optimally integrate them into the classroom (Besnoy, Housand, & Clarke, 2008). Prensky (2001) defines this generation of students as “digital natives” who “spent their entire lives surrounded by…the toys and tools of the digital age … and therefore are native speakers of a digital language” (p. 1). With potential technological distractions such as smartphones and tablets, it can be more of a challenge to engage these students. Marzano, Frontier, and Livingston (2011) differentiate between student engagement and student learning in that engagement is a state in which students are mentally ready for the learning task and understand that it is important and relevant whereas learning is the ability to demonstrate content. Therefore, to engage students, Prensky (2006) proposed utilizing current technology that is relevant to these “digital natives.” This was demonstrated by Dietrich and Balli (2014) who found increased engagement among grade 5 students with the use
of technology such as interactive whiteboards, computers, and iPads, particularly when the students controlled the technology themselves. Alongside the term “digital natives”, “digital literacy” has become another very relevant term regarding this generation of students. Digital literacy refers to the ability to use software and operate a digital device, but also includes the cognition, motor, sociological and emotional skills required (Eshet-Alkalai, 2004). Students typically demonstrate greater digital literacy compared to adults (Ortlieb & Marinak, 2013). With regards to higher-level cognitive thinking such as evaluating information found on the Internet, Colwell, Hunt-Barron, and Reinking (2013) found that Grade 7 students were unable to independently implement taught strategies. This suggests that using technology—particularly the Internet—has to be approached with a goal of digital awareness, not only digital literacy. Given that the newer generation of students are more technologically-inclined, there are many teaching opportunities in terms of engagement and support. While they learn content, they are also developing critical technological skills that are relevant to their daily lives.

2.4 Video Games

Video games and the perception of them have evolved over the years therefore this section will be addressing the prevalence, teacher perception and the effects of video games on students. For the purposes of this study, a video game will be defined as a “system in which players engage in artificial conflict, defined by rules, that results in a quantifiable outcome” (Salen & Zimmerman, 2004, p. 80); a video game is also played on a computer or console. The idea of incorporating games into education is not a new one. It was first proposed in the 1960s by Vygotsky (1967) and Piaget (1962) when they conceived the notion of using games in preschool and beyond to improve social cognition. With the more recent development of video games that
is strongly embedded in student culture, there is potential for this form of ICT to be utilized to improve student engagement and learning (Cheng, Chen, Chu, & Chen, 2015).

2.4.1 Video games in today’s society

Video games have become a prominent fixture in today’s society. There are reportedly 155 million gamers in the USA (Entertainment Software Association, 2015). Over the years, multiple aspects of video games have evolved. Previously, video games were associated with “leading to social withdrawal, self-neglect, family and marital problems as well as sleep deprivation and fatigue resulting in poor education and/or work performance and job loss (Sim et al., 2012, p. 3). However, these effects were mostly attributed to video game addiction i.e. excessive gaming. Video game addiction will not be discussed thoroughly here because in the context of the classroom, gameplay would be moderated by the teacher. In addition to the aforementioned effects, video games have also been associated with sedentary behaviour in youth (Biddle et al., 2004). However, the evolution of video games has developed to address the more negative effects, particularly social and physical inactivity.

Nowadays, video games are a medium for social activity due to recent changes in development that allow for online multiplayer interaction. Indeed, 54% of frequent gamers play in these multiplayer games (Entertainment Software Association, 2015). There are games that are specifically designed on the basis of social interaction such as the Sims, which is a virtual social game (Halverson, 2005). Similarly, beginning with the introduction of the Wii console, the physical inactivity concern was partially addressed although Peng, Crouse, and Lin (2012) only found a few interventions that significantly increased physical activity.
2.4.2 Teacher perspectives on video games

There is a distinct lack of purely qualitative research done to elucidate teacher perspectives on video games. However, one mixed method studies using quantitative and qualitative research that have identified key issues that affect teachers’ acceptance of video games as educational tools. Similar to ICT, the teacher’s attitude towards the relevancy of video games for their own educational practice is the most crucial factor (Proctor & Marks, 2013). Another factor was a teacher’s personal experience with video games in their spare time (Barbour & Evans, 2009). In other words, the more personal experience the teacher had, the more willing they would be to integrate video games into their teaching practice. In a study by Bourgonjon et al. (2013), they found that teachers’ acceptance of video games was largely dependent on needing information before practical issues such as ease of use could be considered. Interestingly, they also found that the teachers’ personal experience with video games or their predisposition toward ICT did not affect their acceptance of video games, directly in contrast with other studies.

2.4.3 The effects of video games on student engagement

As previously stated in Chapter One, studies have shown that video games can increase aggressive behaviour (Bartholow, Sestir, & Davis, 2005) and desensitization to violence (Carnagey, Anderson, & Bushman, 2007). Other studies have shown that the negative effects of gaming also include addiction and depression, as well as aggression (Ferguson, 2007). However, most of these effects were linked to excessive gameplay, which would be outside the context of this particular study. In contrast, studies have also shown that video games can increase cognitive learning (Boot et al., 2008; Chuang & Chen, 2009). Specifically looking at mathematics, Ke and Grabowski (2007) found that students playing a co-operative team video game showed the most
positive attitude among Grade 5 students towards mathematics compared to students who only played interpersonal competitive game or no-game-play condition. This relationship was further supported by other studies (Chang, Wu, Weng, & Sung, 2012; Ke & Grabowski, 2007) that looked at duration of game play as a factor in effecting academic achievement. A moderate amount of gameplay (i.e., 25 minutes to six hours per day) has been found to significantly increase mathematics achievement compared to no gameplay (Chang, Wu, Weng, & Sung, 2012; Ke & Grabowski, 2007). By contrast, when there is excessive gameplay (i.e., more than eight hours), mathematics achievement can significantly decrease (Kim & Chang, 2010). Based on these findings, this would suggest that when incorporating games into the classroom, the type of gameplay, the selection of video game, and the duration of gameplay are critical components in lesson and unit design.

Not only do video games show positive outcomes for academic achievement, but there is also supportive evidence that video games can have a positive effect on social behaviour and emotional states. Ewoldsen et al. (2012) found that students demonstrate more supportive behaviour in class when using co-operative versus competitive gameplay in Halo II, a first-person shooting game. Similarly, another study (Lenhart et al., 2008) found that students demonstrated increased social interaction and civic engagement in their daily lives such as volunteering in charities after having civic gaming experiences. These experiences include helping or guiding other players, playing a game where the player has to think about moral or ethical issues, and organizing game groups or guilds (Lenhart et al., 2008). As noted previously, violent video games can increase aggressive behaviour, but there is also evidence that playing violent video games that are cooperative seem to decrease players’ tendency to aggressive cognitions (Schmierbach, 2010). Therefore, there is reasonable evidence of video games
promoting social behaviour, at least in the short-term; however, longitudinal studies are needed to elucidate long-term effects. In addition to these prosocial effects, several studies (Russoniello, O’Brien, & Parks, 2009; Ryan, Rigby, & Przybylski, 2006) have shown a cause and effect relation between playing video games and improved mood. Furthermore, there is an emotional state that is described by gamers as flow or transportation where they are immersed in an intrinsically rewarding activity that elicits a high sense of control while at the same time, evoking a loss of self-consciousness (Sherry, 2004). This psychological aspect has been linked to positive outcomes for adolescents such as commitment and achievement in high school (Nakamura & Csikszentmihalyi, 2002).

The type of genre can also predict the type of benefits that can be gained from playing video games. Green and Bavelier (2012) have shown that people who play shooter video games showed faster and more accurate attention allocation, higher spatial resolution in visual processing and enhanced mental rotation abilities. However, these effects were not seen when people played puzzle or role-playing games. Instead, puzzle or role-playing games have been speculated to improve problem-solving skills (Prensky, 2012). Indeed, Adachi and Willoughby (2013) reported that adolescents playing role-playing games self-reported improved problem-solving skills the following year. There has also been a correlation between video game playing and creativity (Jackson et al., 2012), although it is uncertain whether playing video games develops one’s creativity or that creative people simply prefer to play video games. Interestingly, the same study found no correlation between creativity and the use of other technologies such as computers, Internet or cell phones.

While the prevalence of video games is significant, the utilization of them in education has been studied with mixed results. This includes the teacher perceptions that may impede in the
implementation of video games, the duration of gameplay, and the genre of the video games themselves. However, many studies seem to show that video games have an overall positive effect on student learning.

2.5 Conclusion

In this chapter, I have reviewed research literature on ICT including the effects of ICT and the barriers surrounding the implementation, school students and an overview of video games in the context of society and education. I initially focused on ICT research in education because there is much overlap between ICT and video games, presumably because video games are a subset of ICT. I then reviewed studies on the relationship between technology and education including the challenges and barriers that the education system faces with respect to the integration of technology in education such as teacher limitations and student engagement. Lastly, I reviewed research on video game usage in education, specifically the prevalence in our society, teacher perspectives and the effects of video games on students. The present study fills the gap in qualitative research on pedagogical video game usage in the K-12 classroom, specifically teacher reported practices in using video games, the intent of the usage, the perceived value of game-based learning, the perceived effectiveness of video games as an instructional tool (e.g., due to increased student engagement and increased academic performance), and the perception of video games in student culture. and the methods in which they can be integrated.
Chapter 3: Research Methodology

3.0 Introduction

This qualitative study investigates the use of video games in the elementary school classroom. I start this chapter by reviewing the general approach, procedures, and data collection instruments, then I expand upon participant sampling and recruitment. I describe data analysis procedures and review the ethical considerations related to my study. Furthermore, I identify methodological limitations, but I also note strengths of the methodology. Lastly, I summarize my critical methodological decisions and my rationale for these decisions given the research purpose and questions.

3.1 Research Approach & Procedures

This research study was conducted using a qualitative research approach including a literature review and semi-structured interviews with three teachers. Quantitative researchers focus on finding generalizable results whereas qualitative researchers prioritize the understanding of complex psychosocial questions (Marshall, 1996). Indeed, “findings from a qualitative study are not thought of as facts that are applicable to the population at large, but rather as descriptions, notions, or theories applicable within a specified setting” (Malterud, 2001, p. 486). Denzin and Lincoln (2000) propose the following definition of qualitative research:

Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that makes the world visible. These practices ... turn the world into a series of representations including fieldnotes, interviews, conversations, photographs, recordings and memos to the self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of,
or to interpret, phenomena in terms of the meanings people bring to them. (p. 3)

From this definition, people’s experiences can be collected as data and analyzed to gain meaningful interpretations. However, a researcher’s social positioning affect everything about the topic they are investigating thereby causing their findings to be subjective. The process of reflexivity is used by some qualitative researchers to acknowledge and mediate the effect of a researcher’s perspectives and biases (Malterud, 2001). This study was conducted using qualitative research because each teacher has their own unique and similar experiences that contribute to a holistic understanding of the topic.

3.2 Instruments of Data Collection

The primary tool of data collection used in this study was the semi-structured interview protocol. Interviews are a way to access other people’s stories or ways of knowing (Seidman, 2013). Therefore, interviews are epistemological in nature because they relate the storyteller’s experiences in their words and their own stream of consciousness since they have to reflect on their experience to tell their story with a beginning, middle and end (Seidman, 2013). However, semi-structured interviews guide the storyteller towards the research problem at hand. Semi-structured interviews are “simply conversations in which you know what you want to find out about – and so have a set of questions to ask and a good idea of what topics will be covered – but the conversation is free to vary, and is likely to change substantially between participants” (Fylan, 2006, p. 65). In contrast, unstructured interviews are “guided conversations…to [elicit] information about the meaning of observed behaviours, interactions, artefacts, and rituals, with questions emerging over time as the investigator learns about the setting” (DiCicco-Bloom, 2006, p. 315). In structured interviews, much of the interview process is standardized with little variation (DiCocco-Bloom, 2006).
The main purpose of my interviews was to investigate the use of video games as an instructional tool in the elementary school classroom including the teacher’s purpose in the use of video games, educational games or game-based learning, student reception, and gaming in student culture. The semi-structured interview was used in this study because “rich descriptions of phenomena” can be gained from teacher experiences by having set open-ended questions, but allowing for the variability that may be apparent between participants (DiCocco-Bloom, 2006, p. 314).

The interview protocol consisted of 19 questions that guide the teacher towards answering the subquestions outlined in Chapter One; however, there was the opportunity for the interviewer to ask the participant to expand upon or re-direct attention to topics that the interviewer did not foresee. For example, to better understand the teacher’s perception of student culture in the context of video games, one of the questions was “What is your perception on the role and prominence of gaming in the student culture?” The open-endedness led to teacher experiences with specific genres of video games or the behavioural or academic impact of video games.

3.3 Participants

Here I review the sampling criteria I created for participant recruitment and I review the sampling techniques used for teacher recruitment. Also, I have included a section that introduce each of the participants.

3.3.1 Sampling criteria. The following criteria was applied to teacher participants:

- Teachers currently using video games in the elementary classroom.
- Teachers have more than three years of teaching experience.

To answer the central research question, the participants who I interviewed currently use video
games in the elementary school classroom. The alternative would have been to interview participants who do not use video games in the classroom but given that this is the majority of teachers, it would be difficult to pinpoint participants that can give meaningful answers to interview questions on why they do not use video games in the classroom. Furthermore, another criterion was for the teachers to have three or more years of teaching experience. This was because I am also interested in the student culture with regards to video games therefore the teacher needed to have been exposed to student culture for a moderate amount of time.

3.3.2 Sampling procedures

The sampling method used to recruit participants was purposeful sampling. This method “involves identifying the characteristics of interest along which your population is likely to vary, and choosing the people who will give you the maximum variation, regardless of the relative frequency at which the characteristics occur within the population” (Fylan, 2005, p. 68). Patton (2002) describes the strength of purposeful sampling “lies in selecting information-rich cases for study in depth ... [which] yields insights and in-depth understanding rather than empirical generalizations” (p. 230). An obvious limitation of this type of sampling is that there will be participant bias because the researcher is purposefully recruiting participants based on certain criteria. Therefore, another type of sampling used was criterion sampling. This approach is used “to construct a comprehensive understanding of all the studies that meet pre-determined criteria” (Suri, 2011, p. 6). As noted above, the main criterion was that the teacher participant is using currently using video games in their classroom. The last approach used was snowball sampling. Defined as “when the researcher accesses informants through contact information that is provided by other informants”, snowball sampling utilizes the use of one participant to find others (Noy, 2008, p. 330). This sampling method was used because it allows access to otherwise
hidden populations as not many teachers advertise that they use video games in their classroom.

### 3.3.3 Participant bios

Sue initially aspired to be an architect after completing her Bachelor of Architecture, however became more interested in teaching. She graduated from the Ontario Institute for Studies in Education (OISE) with a Master of Education. To obtain her certificate to teach, she also attended OISE to complete her Bachelor of Education. After a total of 18 years of teaching, she currently teaches Grade 3-6 at an elementary school in inner city Toronto. She herself does not play video games outside school but she created a Minecraft Club for students to participate in after school and regularly uses video games in her classroom.

Ann graduated from the concurrent education program at York University in 1996. She also completed her Master of Education in 2010 at University of Alberta. Currently, she is in her 20th year of teaching at an elementary school in Scarborough. Outside of school, she plays video games with her family of four. Initially, her attempt to bring games into her school began with a role-playing game club in a similar style of Dungeons and Dragons. The first video game that she used in the classroom was Webkinz in 2007 for media literacy and has been using Minecraft for a few years.

### 3.4 Data Analysis

The researcher’s task is to organize, compare and validate different interpretations and data (Malterud, 2001). Furthermore, the analysis of qualitative includes decontextualization and recontextualization where decontextualization involves extracting subject matter and exploring the content more closely while recontextualization confirms that the patterns agree and helps in preventing reductionism (Malterud, 2001).

Each of the interviews were recorded digitally and transcribed verbatim.
Decontextualization occurred by reading and discovering categories of data and various themes within the interviews. Next, recontextualization occurred by placing the categories and themes and identifying similarities or differences between interviews i.e. synthesizing the data. Lastly, I analyzed and compared the identified categories and themes and compared these with findings from existing literature.

3.5 Ethical Review Procedures

As Orb, Laurel and Wynaden (2000) indicate, research of any kind has ethical issues. For qualitative research, these issues can include how a researcher recruits participants and how a researcher can affect the participants. The underlying principles of ethics can be defined by autonomy, beneficence and justice (Orb et al., 2000). One example of the importance of ethical considerations is that information shared by a participant may cause conflict with respect to their position in an organization or community therefore participant anonymity is a critical component to consider and is accounted for in this study. Another example is the storage of the interview data where the interview is audio-recorded which could potentially be compromising if unintentionally shared. From the participant’s perspective, there is potential for the interviewer to misinterpret or take words out of context therefore the interviewer must maintain professional and ethical standards.

Each of the participant teachers was provided with a letter of consent regarding their agreement to be interviewed and audio-recorded (see Appendix A). The participants were made aware that they can withdraw from the study at any time and decline answering any of the interview questions. They were also informed that their personal and work information would remain confidential and that pseudonyms would be used instead of their real names. This ensures privacy and protection from harassment or inquiry by other persons. In addition, data would
remain on a private, password-protected hard-drive and would be deleted after five years upon participant request. There are no known risks to participation in this study.

3.6 Methodological Limitations and Strengths

One of the major methodological limitations of this study is that the interviews are only with educators instead of including students and parents. This limits enlightening perspectives that could potentially further elucidate the research question. Theoretically, it would be ideal to include students’ and parents’ perspectives because there are biases that are inherent in the research topic i.e. video games in the classroom. However, this limitation can also be seen as a strength because the study becomes narrowed down so that the researcher can delve deeper into the data and more easily find common categories and themes as opposed to possibly being overwhelmed with data and thereby minimizing the potential for reductionism (Malterud, 2001).

Another methodological limitation is that the findings are open to interpretation and that the findings are based my own constructed ideas revolving around others’ words. Given my passion for video games, I may have been biased in my analysis of the data therefore I would likely invite colleagues to examine my analysis to determine if my biases detracted from my interpretations.

3.7 Conclusion

In this chapter, I reviewed the underlying research methodology in my study. I started this by reviewing the general approach, outlining the definition and significance of qualitative research and its importance. Then, I described the instrument of this study i.e., the semi-structured interview and the strengths of this type of interview. Next, I described the participants, including the list of criteria and sampling procedure. I outlined the sampling procedures which consisted of purposeful sampling to obtain information-rich data, criterion
sampling to find specific participants that would provide specific data, and convenience sampling due to time constraints. Furthermore, I explained data analysis procedures including the collection, decontextualization and recontextualization process. Then I reviewed the ethical considerations related to my study including but not limited to consent, withdrawal rights, and rights to modify their interview answers. Lastly, I described methodological limitations such as limited perspectives and researcher bias, however I also outlined some of the strengths such as analysis depth. In the following chapter, I will report my research findings.
Chapter 4: Findings

4.0 Introduction

In Chapter One, I outlined my research question: how are Ontario elementary school teachers reportedly integrating video games as an instructional tool in the classroom? and its respective context. Next, in Chapter Two, I provided a review of the relevant extant literature on the topic of video games in education. Following that, I outlined my methodologies and why I chose them in Chapter Three. In this chapter, I present my findings and provide a data analysis of my research interviews. During my analysis, I was cognizant of my research question outlined in Chapter One and I also relate my findings to the existing literature reviewed in Chapter Two. My findings were categorized into four main themes:

1. Gaming culture is pervasive in student culture, however can conflict with school culture.
2. Teachers have to moderate the use of video games and set boundaries for students.
3. Student response to the use of video games in the classroom is reportedly overwhelmingly positive.
4. Teachers have to demonstrate perseverance to the frequent challenges they experience.

For each theme, I discuss the experiences of two elementary school teachers in Ontario, Sue and Ann, and how they relate to the literature. Lastly, I summarize my findings.
4.1 Gaming Culture is Reportedly Pervasive in Student Culture, but This can Conflict with Classroom Practices.

As previously mentioned in Chapter Two, 85% of Ontario students play video games outside the classroom (Turner et al., 2012), which is corroborated by Sue’s and Ann’s reports. According to Sue:

They probably without exception use video games and love them and are on them probably way too much. I met one kid, kid’s family, on curriculum night. They said they don’t have a TV, which was quite unusual as you can imagine. But I say without exception, they all have video games on their own time and they're very fluent.

Not only did Sue highlight the pervasiveness of video games even when students do not necessarily have the technology, she also said that students playing “probably way too much” indicated her opinion that there should be a limit to gameplay, which will be further elaborated upon in the next section.

Ann has made similar observations of her students:

I know they love video games. I know they talk a lot about video games. I used Minecraft in particular extensively… Students will talk about Minecraft incessantly, all the time…They may not actually have the game, they might be watching it on YouTube, or they’ll see it played at their cousin’s house…It’s a cultural thing they want to adopt. That it’s kind of cool to talk about.

Within Ann’s observations includes the social and cultural aspect of video games where students discuss them because “it’s kind of cool”. This idea has developed into what Ann termed “gaming culture” i.e., a culture developed around video games. And the fact that students discussed video
games all the time indicated the significant presence of gaming culture within her classroom. However, the terminology or vocabulary in gaming culture may create conflict in the classroom.

In classrooms, behaviours are required that do not interact well with norms of gaming culture. Ann described an experience of this clash with some students:

An example for instance, my students gleefully announcing that they were going to kill each other. When you’re playing video games, especially First-Person Shooters or other things like that. That’s normal talk, right? That’s not objectionable. In school, that’s a problem. That’s like oh my goodness. I’m sending you to the office. And I had to talk to my students especially because they were talking about I’m going to own you, I’m going to kill you in Minecraft club tonight. And they were talking about it in front of the principal. And we had to talk about school culture and gaming culture are two different things.

Notwithstanding the jargon used such as first person shooter (FPS), a genre of video games, the obvious violent vocabulary is not generally considered acceptable in the classroom. Indeed, these discussions can lead to the misconceptions of video games as increasing aggressive behaviour (Bartholow, Sestir, & Davis, 2005) or desensitization to violence (Carnagey, Anderson, & Bushman, 2007) as was discussed in the Chapter Two literature review. Sue, however, seemed to disagree with these findings:

Do I see a connection between the violence and their behaviour? I don’t know that’s a tricky question. That’s up for debate. You know I just read something about the violence on the internet and the effect on adults and how traumatic that can be. All of those images just in the news, right. I think that without a doubt it has an impact. Whether it’s going to be a direct line to really violent behaviour, I don’t buy that.
On the other hand, Sue did not agree with students playing “fairly violent role-playing games” because she found it “inappropriate”. This would suggest that Sue understood the importance of carefully selecting video games to be used in the classroom. For Ann, however, she chose video games that could be potentially problematic so that she could “take a critical look at them” and help her students critically think about issues such as “reinforcing gender stereotypes” or questions such as “how is this video game trying to get us to spend more money?” Ann gave the example of her approach to using Minecraft:

In my Minecraft club, we do have Player versus Player. We actually do have battle zones, we do fight. We use our swords against each other. But we talk about, before we play the game, we establish the norms, we establish the “okay so we do have a PvP arena, if you enter the PvP arena, you are agreeing that people can hit you virtually”. You agree to these terms, you abide by “that’s what we’re going to do”.

Ann indicated the need for establishing norms to ensure that students understood the boundaries required to create and maintain a positive and safe learning environment. While Sue and Ann had opposing views in the selection of video games, i.e. Sue does not condone the use of inappropriate games, Ann uses those games as a learning opportunity for critical thinking. However, both saw the pervasiveness in student culture and experienced culture clash between gaming culture and school culture. Therefore, in the next section, I elaborate on their experiences and recommendations on the moderation of using video games, and the need for setting boundaries for students.

4.2 Teachers Have to Moderate the Use of Video Games and Set Boundaries for Students.

From the previous section, a commonality between Sue and Ann regarding the integration of video games in the classroom was that moderation and setting boundaries were
critical. In the extant literature, there is agreement that playing video games can become a
behavioural addiction that elicit problems similar to substance addiction (Turner et al., 2012).
However, these effects occur through excessive gameplay and indicate the need for moderation
and boundary-setting, which both Sue and Ann corroborated with their answers. According to
Sue, for example:

I think it’s got to be balanced, I think that there’s some amazing things out there, [video
games are] incredible. If I was younger, I’d probably be doing it myself. Seems like a
tremendous amount of fun…You need to take a break; you need to find a balance in your
life. You need to get outside, need to play, need to talk to people. It’s addictive, it’s
without a doubt addictive.

This is in alignment with the literature where excessive gameplay (more than eight hours) was
found to be detrimental to mathematic achievement whereas moderate gameplay (25 minutes to
six hours per day) has been found to significantly increase mathematic achievement (Chang, Wu,
Weng, & Sung, 2012; Ke & Grabowski, 2007). While moderate gameplay can have a large range
in its definition, Sue narrows it down to a particularly time range:

The first year I did it was a double period. It was too long. By the end of it, the kids were
like [disoriented sound]. It was too long. 50 minutes is not too bad a time. Really the
game time is about 40 mins by the time they logon and logoff and put the computers
away. I wouldn’t say any more than that because then it's a really special thing and they
really look forward to it. And there’s so much other stuff that you have to cover as a
teacher and it’s not like its free play time. It isn't. I have really clear goals and
expectations and lesson plans relating to the Minecraft explorations and activities. The
kids think it's just play time, which is just pretty good because they're very motivated.
Here, Sue highlights the need to moderate the amount of time for gameplay to approximately 40 minutes, as that had personally worked for her. However, she also indicated the need for “clear goals and expectations” and that the teacher cannot “just let them do whatever they want. There has to be some controls.” Ann agreed with Sue that the teacher has to “make sure [he/she has] a pedagogical reason for playing it. That it’s not just for fun or as a reward.” However, Ann also believes that there has to be a balance of control and fun:

You have to give them time to play, to explore. One of the other big mistakes that some teachers make is that they get excited and then they decide “Yes, we’re using Minecraft, they’re going to rebuild the pioneer village” and they don’t give the students a chance to just go in and mess around… It’s important to give everybody an equal playing field to give a chance to mess up, and try stuff out, smash things, and break things.

Sue also acknowledged the need for balance between control and fun, but more reluctantly:

I mean the great thing about Minecraft is that it is so open-ended and to put restrictions on it almost goes against the creative mode, the joy of the game. You do want to just take it where you want to go as a teacher, you have to go here first, then you go here then you do that. It’s almost counterintuitive. Sometimes they would just not read the information blocks and they would just do their own explorations. So they weren’t really doing what they wanted them to. But they were still collaborating, exploring and problem solving, but it wasn’t always what I wanted. Sometimes as a teacher, you just have to surrender that.

Sue articulates that, despite her initial frustrations, she realized that sometimes a teacher has to give control to the students. However, finding that balance can be difficult, particularly when students show a strong aptitude with technology.
There will be times when the students demonstrate a level of cleverness with technology that can bypass a teacher’s authority. Ann shared a memorable example:

One time I had one kid who figured out the password and tried [the password] at home. And thankfully, one of our other members was very good on the backend and he was able to prove that this kid had been on for like 2 hours. And when I confronted him the next day at school with he was like “I just wanted to try and see if it worked.” “Yea for two hours?” So he got kicked out [of the club] temporarily and we talked about respecting passwords and that’s when I tightened up on the password.

Therefore, Ann’s experience indicated the need for teachers to have an awareness of the technological aptitude of students and what students are doing. Sue used this need for awareness as one of the reasons why she did not use video games as a reward, when I asked her about this:

Not really. Certainly not this year. Their access to the internet, I have to be really careful with that. Like I really do need to know where they're going. It’s got to be approved sites. There was even something where one kid was on a Cool Math Game. And it said here download the free sample. And he asked and that was really good because it was just a trick to get him in and it was going to be free for a bit but then they know they're going to be bugging him to buy it.

Sue demonstrates her understanding of how some students can be lured into the dangers of the Internet and the need for vigilance in their Internet activities. These examples highlight that, as discussed in the Chapter Two literature review, not only do students need to develop digital literacy, but also digital awareness (Colwell, Hunt-Barron, & Reinking, 2013) i.e., students need to be able to critically think about and be aware of the digital technologies available to them. For this development of digital awareness to occur, the teacher has to demonstrate an awareness of
and provide guidance on the various issues that can arise from the use of ICT or video games. In contrast, Ann also did not use video games as a reward but for a different reason:

I tend not to. I know some use it as a reward, that’s okay, fine you’re finished your work, you get to go play and whatever. I tend not to do that because I think that we need to be accountable about why we are bringing, especially commercial games, into our classroom. I would not be able to justify, just say “Oh well, because this is what the kids can do during free time.”

Therefore, Ann’s concern was more regarding the authenticity of bringing video games into the classroom as opposed to preventing students from roaming the Internet. The main distinction between the two is that Sue was concerned about the safety of the students while Ann was concerned about the learning objectives of video games. However, both reasons were equally valid and were concerns that teachers should be aware of if they choose to use video games in their classroom.

Although they had different understandings of moderation and boundaries, both Sue and Ann believe that, when teachers use video games in the classroom, there has to be a moderation of gameplay, control versus fun, and purpose as well as setting clear boundaries for students for what is appropriate and inappropriate. In the next section, I address the teacher experiences that Sue and Ann observed in their students and the responses that they had when using video games in their classroom.

4.3 Student Response to the Use of Video Games in the Classroom is Reportedly Positive.

In spite of the moderation and boundaries set in place for students by Sue and Ann, both participants still report receiving overwhelmingly positive responses from students. For Sue’s
students, they “ask from day one in September ‘when are we starting Minecraft?’”. One of the main reasons Sue liked to use specifically Minecraft in her classroom is because of the creativity, the collaboration, the problem solving. It’s very good and it’s integrative. I use it for math as well as literacy. They’ll sometimes just build things and just write about it. We did a play last year and the kids designed the backgrounds for the play all in Minecraft. I’ve got a Promethean board and we projected that so that the audience got to see the Minecraft creations. ... They had a blast and [it] keeps them totally engaged.

Here, Sue articulates the ways in which students are consistently engaged with Minecraft in terms of the versatility of the game. This versatility includes what students can do with the video game, i.e., students are given a medium in which they are comfortable with and have the freedom to express their creativity.

The literature seems to agree with Sue’s assessment in that there had been increased supportive behaviour (Ewoldsen et al., 2012), or increased social interaction (Lenhart et al., 2008). Moreover, the example that Sue gave above demonstrated the utility and creativity of using video games in the classroom because video games and various technologies such as interactive whiteboards can be combined to create an engaging experience for students. As Sue describes it:

The kids could really relate to [Minecraft]. It was a real, it’s funny to say that a video game was a real life experience, but it really was for them. They’re so familiar with it and they could tell me about it and move into it seamlessly. It really made the learning come alive for them in a meaningful way.

Again, Sue reiterates the engagement that students have with Minecraft because of its familiarity and contextualization.
Ann also noticed the types of students that video games seem to reach:

Because initially when we first thought of bringing Minecraft as a club in our various schools, we were actually targeting students that were underperforming literacy, numeracy and social skills. We noticed that it wasn’t just kids that were underperforming, that wanted to be part of the club. Everybody wanted to be part of the club. And so we were having kids that were strong readers and writers, and weak readers and writers, all playing together. It was just beneficial for everyone.

Her observations support the idea that video games can promote a collaborative, positive learning environment. Furthermore, in spite of the initial reason for starting the club, Ann observed how pervasive gaming culture is in student culture, and that it accessed all types of students. Indeed, she also described an anecdote where her club did reach an underperforming student:

I know that there was one student we used to have that didn’t produce anything until this teacher said “Could he be in the Minecraft club? Then I could use this ‘Hey you got some work done’.” When this classroom teacher allowed this student to write about Minecraft, all of a sudden he was writing ten times the amount he would write if asked to write about any other topic.

While this anecdote provided a rich example of how video games could be a form of differentiated instruction in the classroom, it also suggests the need for further research, but focusing on the quantitative aspect, i.e., the relationship between video games and academic achievement.

The experiences reported by Sue and Ann demonstrate the benefits for student engagement and participation of the selective use of video games in the classroom. In part, this
was because of the familiarity that the students have with the game and the contextualization that the game provides. A quality that teachers were required to demonstrate was perseverance. In the next section, I highlight the experiences of Sue and Ann wherein they persevered through frequent challenges they encountered in and out of the classroom.

4.4 Teachers Have to Demonstrate Perseverance in the Face of Second-Order Barriers

Perseverance was the key quality of the interviewed participants in the implementation of video games in the classroom. Teacher attitudes represent the strongest predictor in future use of ICT (Palak & Walls, 2009). The findings of this study support this in that these teachers were sampled specifically for their use of video games in the classroom and have an overall positive attitude towards video games, yet have to overcome many challenges frequently. These challenges mostly came in the form of common first-order barriers such as technological support or professional development support as was seen in the literature (Chen, 2008). Interestingly, another barrier arose that was not previously discussed in the Chapter Two literature review, in the form of colleagues’ attitudes.

Sue believed that other teachers at her school felt that her use of video games in the classroom was ridiculous.

Just by using [video games], I mean it’s a hard sell to other teachers. The other teachers are like what are you doing, this is ridiculous. They don’t exactly say that to me but I know that’s what they’re feeling. What is the value of this? It’s just wasting time. And there’s not a big buy-in, to put it mildly.

In spite of her colleagues’ reservations regarding the use of video games in the classroom, Sue continued to use MinecraftEdu in her classroom because “[she] felt very strongly that it was going to be a great benefit”. Indeed, as previously discussed in section 4.3, both Sue and Ann
reported increased engagement from students, even from students who did not usually participate in activities. Therefore, Sue’s overall positive attitude towards video games allowed her to persevere through the perceived ridicule of her colleagues. While Ann did not undergo similar experiences as Sue, they both highlighted the utility of having a network of like-minded teachers that could share resources. Unfortunately for Ann, she began the use of video games at an earlier stage than Sue, and therefore did not have the full support of the school board at the time.

When we first started using Minecraft in our school, we had to spend a long time with our IT department of our board. We had to write a special proposal… So that was a challenge or barrier because we had to do that two years in a row, so we did it one year, and then we had to reapply the same thing again next year. But thankfully by the third year, we got to the point now where actually the board has opened up…because they got tired of saying “Yes we will open up the firewall for this school, and these computers. Okay we will do it for that.”

Through her perseverance of overcoming the barrier of technical support, Ann helped to set a precedent that now allows other teachers such as Sue to use Minecraft more easily. As such, Sue did not experience similar difficulties in relation to Ann because Ann and others’ perseverance “helped [Sue] a lot when [Sue] sold it initially to [her] first principal” because the policy was already created. Instead, Sue experienced many technological difficulties.

Sue’s positive attitude and her lack of fear of appearing incompetent in front of her class due to lack of familiarity with technology, allowed her to persevere through the various challenges she encountered. While Ann did not necessarily experience the numerous challenges that Sue did, both Sue and Ann demonstrated perseverance in achieving their goals, whether the challenges they met were colleague attitudes or technological support.
4.5 Conclusion

Four main themes emerged from the analysis of the data from interviews with two elementary school teachers in Ontario who use videogames as a teaching tool. First, the recognition and acknowledgement of gaming, student and school culture and their associated relationships were important. From the experiences of Sue and Ann, gaming culture was pervasive in their schools and in some cases conflicted with classroom norms and practices due to inappropriate language or behaviour. Therefore, there was a need to establish norms or boundaries so that gaming culture could be accepted in school culture, in which the second theme emerged.

In addition to establishing norms and boundaries to contextualize appropriate and inappropriate behaviour, moderation was critical in the use of video games in the classroom. This moderation included gameplay, control versus fun, and purpose, in which the teacher has to find a balance between all of these factors. Despite the necessary restrictions imposed on students, they still had overwhelmingly positive response to the use of video games in the classroom.

The third theme consisted of reported student responses to video games including increased student engagement and participation that both Sue and Ann observed.

From the frequent challenges that both participants experienced, the last theme emerged: that teachers have to demonstrate perseverance in order to sustainably integrate videogames into their teaching practice. These challenges took the form of common first-order barriers, including colleague attitudes, technological support or professional development support. The common thread of why the participants persisted was that they had a strong belief in the benefits of using video games in the classroom.
From the discussed four themes, I will be discussing the broad and narrow implications of each in Chapter Five including recommendations on multiple levels of the education system, including school boards, administrators, parents and teachers.
Chapter 5: Conclusion

5.0 Introduction

My findings, described in Chapter Four, suggest that Ontario elementary school teachers encounter many challenges when integrating video games into the classroom. However, the participant teachers have strong beliefs in the benefits that video games can provide and allow them to persevere through the associated challenges. As such, my findings provide teacher perspectives on the benefits and challenges of integrating video games, about which there is little literature on the local level. In this final chapter, I first give an overview of my findings, followed by suggesting implications on a broad and narrow scale, and offer recommendations for multiple levels of the education system, including school boards, administrators, parents, and teachers.

5.1 Overview of Key Findings and their Significance

Two elementary school teachers in Ontario related their experiences in integrating video games into their classroom and four main themes emerged from the findings. First, they both understood that there is gaming, student, and school cultures that can sometimes clash, particularly when there is a contrast between acceptable language use in the various venues. In the experiences of Sue and Ann, gaming culture was pervasive in their schools and reportedly resulted in cases of conflicts with regards to classroom norms and practices. For example, while it was acceptable to talk threateningly in gaming culture, it was not acceptable if it was said within the classroom. Therefore, both Sue and Ann stressed the importance of establishing norms or boundaries from the start so that gaming culture could be accepted in school culture.

The importance of moderation was also stressed by Sue and Ann, which included gameplay, control versus fun, and purpose. To reiterate, gameplay was defined by the amount of
time spent playing video games, control versus fun was the balance of teacher control and student exploration, and purpose was the learning objectives. While each participant had their own style of integration, it signified that the teachers themselves have to find a balance between all of the aforementioned factors, though they also need to take into account the students as well. According to both participants, one period (40-50 minutes) seemed to be a comfortable amount of time for students to explore and engage with the curriculum content. In spite of the restrictions placed on students, the teachers still perceived an overwhelmingly positive response to video games in the classroom.

Even with clear restrictions imposed on students, the reported positive student response to video games included increased student engagement and participation, as reported by Sue and Ann. In part, this was because of the familiarity that the students have with the game and the contextualization that the game provides.

Both participants experienced many different challenges from which the last theme emerged: that teachers have to demonstrate perseverance to sustainably integrate video games into their teaching practice. Perseverance reportedly allowed Sue and Ann to overcome challenges that took the form of common first-order barriers including colleague attitudes and the lack of technological support and professional development support. Their strong belief in video games and the benefits that they can bestow upon students reportedly contributed to their ability to persevere.

Therefore, the main recommendations that stemmed from the two teachers’ experiences were to set norms and boundaries from the beginning, and to use moderation in finding the balance between gameplay, control vs. fun, and purpose. Furthermore, the underlying qualities that both teachers had is perseverance, which reportedly allowed them to overcome the
challenges met with using video games in their classroom. The participants have contributed local teacher experiences that further the literature regarding the integration of video games into the classroom and the associated challenges that teachers may face.

5.2 Implications

In this section, I will be discussing the suggested implications from my findings on two scales, that is, broad and narrow. First, I will be discussing broad implications which involve the education community including school boards, administrators, parents, and teachers. Second, I will be discussing the narrow implications for my professional identity and teaching practice.

5.2.1 Broad implications: The educational community

In Sue’s experience regarding receiving professional development for the use of video games in the classroom or any technology-related workshop, there is extremely high demand without the necessary supply. This is in agreement with Ann’s experience where she also hosts these workshops. Therefore, this would imply that there may need to be more workshops available so that any teacher or educator that wants to can attend them and learn more. In this case, the school board would be responsible for the provision of more workshops which might be a challenge due to lack of expertise and funds.

Another area where school boards can have an effect is providing more access to teachers that want to use newer technology but cannot access it due to school safety security reasons. By making the process more convenient or accessible, there may be more avenues for teachers to creatively engage their students, particularly when using new technology.

In this study, both participants reportedly had the support of administration and they felt that had a strong influence on their perseverance. However, this may not be the case for many teachers attempting to use video games in the classroom because as described in the literature,
video games still have a general negative perception to them. This would imply that teachers may have to be aware of the benefits of video games and be ready to communicate that to their administration in case there is pushback.

Given that Sue and Ann recognize the importance of moderating the amount of gameplay, this would imply that parents may have a role in limiting how much students play in their household. As mentioned in Chapter Two, video game players are comparable to substance abuse users if the games are played in excessive amounts. Therefore, it may be important to regulate the amount of time that students can play video games. Since gaming is often deeply embedded in student culture, there is a likelihood that students will be playing games at home, which indicates that parents can play a significant role in monitoring their gameplay.

For teachers, one implication of these findings is that the teacher does not necessarily have to understand video games in order to integrate them into their classroom, although they may need to have some knowledge of the mechanics of the game and experiment with the games themselves. It would not be ideal to be entirely dependent on students to navigate around a game, in spite of the potential benefit of student empowerment. Another implication that can be derived from the findings is that teachers may need to have some pillar of support that can allow them to persevere through second-order barriers, whether it be other like-minded colleagues, parents, or administration.

5.2.2 Narrow implications: My professional identity and practice

Playing video games is an active hobby of mine and being able to incorporate that into my professional identity would be ideal because it would allow me to not only relate to students with a topic that they are interested in, but also bring in specialized knowledge. From my own personal experience, I understand the social aspect of video games and how they can promote
unity and teamwork, particularly with cooperative games. Concurrently, I also understand how situations around equity may arise given the nature of violent video games but strongly believe that I am well-equipped to handle the situations from a teacher standpoint and instead turn them into learning opportunities.

With regards to integrating video games into my teaching practice, I realize that video games are just a single instructional tool that can be used in the classroom and that they are not to be used exclusively. This is in line with Sue and Ann’s experience where they moderate the amount of time students spend on a game, such that it maintains its novelty. Moreover, particularly given the experiences that Sue and Ann went through, I understand the need for communication between students, parents, teachers, and administration and that setting norms and boundaries is extremely important.

5.3 Recommendations

From Section 5.2, the implications of my findings suggest that there need to be changes on multiple levels of the education community. First, school boards that have gaming technology should provide more professional development opportunities for teachers interested in integrating video games into their classroom. While this may not feasible at first due to a lack of expertise and funding, over time there should be an increasing number of experienced educators that use video games in the classroom as it does seem to be becoming increasingly popular.

Another recommendation for school boards is to make the use of newer technology more accessible such that teachers do not have to write proposals to bypass the firewall security for each new technology they wish to use. This tedium can be prohibitive for teachers that want to engage their students using new technology, but find that they cannot use it because of security reasons. It is likely that the security is based on protocols developed by the Information
Technology department therefore it may require time to process any changes, however it seems feasible in the immediate future for the proposal process to be made more convenient.

Ideally, teachers would not have to buy video games themselves and it could be part of their teacher budget. However, both participants felt that their budget is not nearly enough to cover their expenses even for other supplies, therefore the cost of including video gaming in the classroom can be prohibitive. One alternative would be for administration to collaborate with the teachers and discuss what video games could benefit students the most with regards to sustainability and engagement, and purchase a supply of those games so that it is a one-time cost. Understandably, the discussion and school budget alterations may require a significant amount of time, however the overall idea seems quite feasible.

Parents have a critical role in their children’s education and in their activities outside of school. Therefore, they should have an active role in regulating their children’s hobbies and ensure that there is not an excessive amount of gameplay. Although not experienced by Sue or Ann, parents may be initially skeptical about the use of video games in the classroom, therefore there should be open communication between parents and teachers to ensure that there are clear learning goals and that parents understand that their children are learning through gaming. Ideally, this recommendation would not be difficult and should be quite feasible immediately.

As noted in the previous recommendation, open communication is critical and teachers have to ensure that they are openly communicating with their students, students’ parents, and administration so that there is a level of accountability. Furthermore, communication with other interested teachers is also important because collaboration allows teachers to share resources and ideas that can further benefit students. Another recommendation for teachers is to explore and experiment with the games that they plan on using so that they understand any issues that may
arise and have an idea on how to address them. In spite of the limited hours in a day that a teacher has, these recommendations should be considered by any teacher wishing to implement gaming in their classroom.

5.4 Areas for Further Research

While this research focused upon the experiences of elementary school teachers in Ontario, having the perspectives of students and other stakeholders would be useful as well. The next logical step would be to understand the student perspective as it would be useful to know their own experiences and perceptions of bringing video games into the classroom. Furthermore, to go beyond the concept of video games holistically, it may be beneficial to delve into what specific video games are most useful in terms of cost and sustainability. From the findings of this study, Minecraft appears to be a viable option and more extensive research into its use in the classroom may be warranted.

5.5 Concluding Comments

Student engagement is important to ensure that students are active in their learning and video games provide an avenue for this engagement because they are deeply embedded in student culture. Therefore, I believe that understanding how we can integrate video games into the classroom and the challenges that may arise is extremely important because we, as teachers, become more aware and better understand how to overcome the challenges. However, the success of the integration is dependent on all of the educational community to actively participate and I hope that everyone can collaborate together to make the endeavour possible across Ontario. My passion for video games led me to research this topic and the findings reinforced my belief of the potential of video games in the classroom. However, we have seen that we as teachers do not necessarily have to have passion for video games in order to integrate
video games into their classroom, but simply have to believe that video games can benefit our students.
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Appendices

Appendix A: Letter of Consent for Interview

Date: ______________

Dear ___________________,

I am a graduate student at OISE, University of Toronto, and am currently enrolled as a Master of Teaching candidate. As a student interested in integrating video games into the classroom, I am interested in learning how a sample of Ontario elementary teachers are using video games in the classroom. Findings gathered from this research study may prove to be enlightening for current as well as pre-service teachers because they shed light on video games as an instructional tool that they may wish to use in the future. I think that your current knowledge and previous experience will provide insights into this topic.

I am writing a report on this study as a requirement of the Master of Teaching Program. My data collection would consist of an approximately 60 minute interview that will be audio-recorded. I would appreciate it if you would allow me to interview you at a place and time convenient to you. The contents of this interview will be used for my report, as well as informal presentations to my classmates and/or potentially at a conference or publication. Your name will be anonymous throughout all my works including my written work, oral presentations, or publications. This information will remain confidential. The only people who will have access to my work will be my course instructor. You are free to change your mind at any time, and to withdraw even after you have consented to participate. You may decline to answer any specific questions. I will destroy the audio recording after the paper has been presented and/or published which may take up to five years after the data has been collected. There are no known risks to participation in this study. I will share with you a copy of my notes to ensure accuracy. Please sign the attached form, if you agree to be interviewed. The second copy is for your records.

Thank you for agreeing to help.

Sincerely,

Simon Chiang

MT Program Contact:
Consent Form
I acknowledge that the topic of this interview has been explained to me and that any questions that I have asked have been answered to my satisfaction. I understand that I can withdraw at any time without penalty. I have read the letter provided to me by Simon Chiang and agree to participate in an interview for the purposes described. I agree to have the interview audio-recorded.

Signature: ______________________________________

Name (printed): __________________________________

Date: _____________________
Appendix B: Interview Protocol

Thank you for participating in my research study. The goal of this research is to learn more about how teachers integrate or understand the role of video games in the classroom. This interview should take approximately 60 minutes, and consists of 19 questions. The interview protocol has been divided into four sections:

- your and the school’s background information,
- your perceptions of video games in student culture
- your purpose in using video games in the classroom,
- your opinion regarding supports, challenges and next steps for teachers.

You may choose to not answer any question you wish and can remove yourself as a participant from the study at any time. Do you have any questions or concerns?

To start, can you state your name for the recording?

Section A – Background Information

1) Can you tell me about your education and training to become a teacher?

2) How long have you been teaching?

3) Could you describe the school where you currently teach?

4) What grades and subjects do you teach?

5) Do you play video games outside of school?
   a. (If yes) How do you think video games have affected your life?
   b. (If yes) How long have you been playing video games for?
Section B – Student Culture

6) Can you tell me about your students’ use of and access to video games outside of school time?
   a. Have you noticed any video game use in the school but outside of the classroom? (e.g.,
      discussion in hallway, extra-curriculars)

7) What is your perception on the role and prominence of gaming in the student culture?
   a. What genre of games seem to have the most impact on students?
   b. Do you try to account for this in your instruction? How?

Section C – Teaching with Video Games

8) How long you have been using video games in the classroom?

9) Do you integrate educational games, commercial games or both?
   a. Which do you prefer and why?

10) Can you walk me through a successful lesson, unit or activity where you used a video game?
    a. What game?
    b. Inspiration?
    c. Why do you think it was successful?

11) Can you walk me through a lesson, unit or activity that you consider to be less successful?
    a. What game?
    b. Inspiration?
    c. Why do you think it was less successful?

12) In addition to teaching with video games, do you use video games in other ways in your
    classroom? (e.g., reward)
    a. Why or why not?
13) What kind of responses have you had from students when you use video games as an instructional tool?
   a. Have you noticed any changes in student engagement? Academic achievement?

14) How have your experiences affected your perception of how video games should be used in education?

**Section D – Supports, Challenges, and Next Steps**

15) What kinds of supports and resources are available to you for integrating video games into your classroom?
   a. What is your opinion on said supports and resources?
   b. Have you received any professional development relating to the use of video games? If not, do you think there should be available?
   c. Have you collaborated with other teachers?

16) What challenges and barriers have you encountered as a result of your use of video games as an instructional tool?
   a. At what level did you experience them? Institutional, administrative, collegial, parental?
   b. How did you get past those challenges or barriers?

17) What kind of feedback have you received from people outside the classroom regarding your use of video games in the classroom?

18) What advice would you give to a beginning teacher looking to include video games in their classroom?

19) Do you have any final thoughts?
Thank you so much for taking the time to come to this interview. Just a reminder, your name will be anonymous and all information will remain confidential. Only my course instructor would have access to the information. You are free to contact me if you no longer wish to be a participant.