Using Commercial Games to Support Teaching in Higher Education

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ABSTRACT

Using Commercial Games to Support Teaching in Higher Education

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Commercial games are those that are distributed primarily for entertainment. Because of their immersive and engaging characteristics, they are often used as teaching tools in Higher Education. However, it is not clear exactly how faculty members incorporate the games to their courses. This study analyzes the way commercial video games are used as an instructional tool in Higher Education.

This study took a qualitative multiple-case approach. Three cases were studied pertaining to the games Minecraft, World of Warcraft, and SimCity. Fourteen faculty members who have used commercial video games as part of their courses were interviewed. Courses' syllabi, calendars, and descriptions of assignments were also considered.

Results of this study show that participants are influenced by their experience, personal and research interests, perceptions, and popularity of the games. Participants used the games as different types of media such as video, virtual environments or simulations. Participants tended to choose the game first, then figured out the pedagogy. They integrated the games at different levels: to illustrate something, as an object of study, as a context for class related activities, as a production tool, and as a context to apply theory. Overall, participants' experiences using the games for teaching was positive but the majority only used games to support the teaching of lower order thinking skills

and many did not proceed with game play according to pedagogical practices recommended by education specialists. Opportunities and limitations were specific to each game with the exception of technical issues and lack of informational resources on how to play the games.

Keywords: video games for learning, video games for teaching, Higher Education, Minecraft, World of Warcraft, SimCity, Commercial off-the-shelf video games

DEDICATION

Jose Manuel Cordoba Gonzalez (1979-2010)

Jose Manuel was a very good friend of mine, a doctoral fellow, an excellent researcher, and an exceptional student. He was studying for his doctoral degree in Computational Finance in University of Essex, England. He held a bachelor's degree in Actuarial Science and a Master's degree in Economy. He also held the Consejo Nacional de Ciencia y Tecnología (CONACYT) scholarship. I was always impressed by his determination, his strong beliefs, and his joy of life. Thank you for being with me all this time. I will never forget you.

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Dr. Boyd was my co-supervisor for four years. He was a wise professor who always provided me good advice at a professional and at a personal level. He constantly encouraged me to stand up when falling and reminded me about the beauty of being a researcher. I will never forget our meetings and discussions nor the good advice that he gave me. He always believed in me regardless all circumstances. It was my honour to be his student.

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CHAPTER 1: INTRODUCTION

> Games are thus the most ancient and time-honoured vehicle for education. They are the original educational technology, the natural one, having received the seal of approval of natural selection. We do not see mother lions lecturing cubs at the chalkboard; we don't see senior lions writing their memoirs for posterity. In light of this, the question, "Can games have educational value?" becomes absurd. It is not games but schools that are the newfangled notion, the untested fad, the violator of tradition. Game-playing is a vital educational function for any creature capable of learning.
>
> (Crawford, 1984, p. 17)

Studies show that video games provide engaging experiences that help players develop practical, cognitive, social, and decision making skills (Foster & Mishra, 2009; Ma, Williams, Prejean, & Richard, 2007; Susi, Johannesson, & Backlund, 2007) and that playing a video game can also increase players' motivation to learn (Malone, 1981; Provenzo, 1991). Authors such as Annetta (2010) and Susi (2007) suggest that these characteristics of video games can also be used to increase students' interest in subjects such as math or science. Hence, it is not surprising that video games are often used as an instructional tool at all educational levels, from pre-school through adult education.

Much discussion has occurred in the past decade or two about the use of games in learning, but much of the research focuses on new games specifically designed for the purpose of learning (Annetta, 2010; Doucet & Srinivasan; Gros, 2007) or the integration of existing games

that were specifically designed for educational purposes (Salomon, 1989; Tuzun, 2007). What is not as clear, however, is how teachers integrate existing, general use, commercial games designed for entertainment purposes into their teaching. This study explores that issue. Specifically, it explores the issue at a particular level: Higher Education.

This chapter introduces the study. The first section provides a background of the phenomenon of games and Higher Education. The next section discusses the purpose of studying the phenomenon. The following section introduces the games of interest for this study and presents the research questions underlying the study. The chapter closes by clarifying the significance of this study, discussing its limitations, and defining key terms used.

Background

Higher Education refers to formal schooling that occurs after high school. Because educators refer to high school as secondary education, other terms for Higher Education include post-secondary education and tertiary education. A key distinguishing feature of Higher Education is that it supports the development of the higher-order thinking skills (World Bank, n.d.). Higher-order thinking skills refer to skills involving analysis, evaluation and synthesis of new knowledge (Bloom, 1956b). Some Higher Education programs are primarily academic, focusing on the development of broad intellectual skills that have wide application. This typically occurs in programs in the humanities and some of the social and pure sciences, and some of the fine arts. Other Higher Education programs focus on applied knowledge, which may lead directly or indirectly to professional careers. This typically occurs in programs in commerce, some of the fine arts, and some of the social and pure sciences. Still, other Higher

Education programs provide preparation for specific vocations, such as medicine, law, architecture, engineering, nursing, drafting, mechanics, and culinary arts (World Bank, n.d.). Higher Education is considered important to both individuals and the societies in which they live because of its perceived and actual contributions to the personal and social development of individuals (Gale, DiRamio, Groccia, & Witte, 2011). Some of these contributions include giving to the students' knowledge and experience that which they were unable to receive from secondary education, personal development and lifelong income earning capacity, and development towards career and social status that could contribute to society (Rizvi & Lingard, 2011).

Several groups of people play roles in Higher Education, including students, teachers (called *faculty* and often include professors—or full-time scholar-teachers and adjuncts or part-time faculty*),* researchers (lead researchers are usually faculty members; other members of research teams may or may not have faculty status), administrators (who oversee the management of the institution and its major operating units), and counsellors (who encourage and support students to foster a positive academic, professional and personal development)**.**

Supporting teaching activities in Higher Education institutions are faculty development specialists. These people work with faculty to strengthen their teaching and assist with the development of instructional materials. Among those who work as faculty development specialists are consultants, who advise faculty on ways to strengthen their teaching; evaluators, who review individual and institutional faculty performance to identify strengths and areas for improvement; and instructional designers, who prepare instructional materials for use in the

classroom and online, and assist teachers with integrating technology into their courses (Terlouw, 1997).

Several types of institutions are considered institutions of Higher Education, including trade schools, professional schools, community colleges (called Cegeps in Quebec), and universities. Community colleges and universities are the institutions of interest to this study.

Reputations play a major role in determining the perceived value of these institutions and are measured by a variety of surveys, such as the QS World Rankings and the Times Higher Education World University Rankings. The reputations of most universities and community colleges are based on a number of characteristics, which are all considered to be inputs to instruction. These characteristics include facilities, quality of research, and faculty qualifications, (Buela-Casal, Gutiérrez-Martínez, Bermúdez-Sánchez, & Vadillo-Muñoz, 2007). Faculty are the teacher scholars who form the backbone of Higher Education institutions; they conduct research and contribute to knowledge in their field, then share that knowledge through their publications and especially their teaching.

In addition to faculty, part-time instructors, also called adjuncts, and graduate students also have teaching roles in Higher Education institutions. Universities usually offer a general framework of guidelines, resources, and broad expectations to faculty members about the courses they teach. These include a course description, which is a brief (usually no more than 100-word) description of the course content, academic guidelines that specify the rights and responsibilities of students, a classroom for the class where the teacher and students regularly meet, and grades reporting on student performance, which involves a teacher evaluation of students' progress and

an assessment, given in the form of the grade, of formally submitted student work (Svinicki & McKeachie, 2011).

Beyond these general expectations, teachers have final authority for what occurs in their classrooms. This is the result of a concept called academic freedom, which refers to the right to determine who teaches, what is taught, how it is taught, and who is admitted to study (Hill, 2011) Academic freedom guides the design of all courses in Higher Education. The use of any instructional approach in a Higher Education classroom, then, results from the conscious choice of the teacher. Therefore, understanding how teachers make instructional decisions plays a key role in understanding teaching and learning in Higher Education. In such, in this study, I primarily concentrate on the role of teachers in determining what to teach and how to teach it.

Higher Education classrooms represent the educational philosophy and pedagogical approach of the teacher. Many teachers see their primary role as being the transmission of knowledge. In this teacher-centered approach, teachers control what is taught. Teacher-centered instruction is the dominant teaching approach in Higher Education (Fries, 2012; Stes, Gijbels, & Van Petegem, 2008) and contrasts with a learner-centered approach, in which students construct knowledge on their own, under the guidance of teachers who have a degree of responsibility for what is taught and how it is learned (Fries, 2012; McCarthy & Anderson, 2000; Svinicki & McKeachie, 2011).

As noted earlier, Higher Education is supposed to prepare students directly or indirectly to assume their roles as productive citizens in society upon graduation. But a frequent criticism of universities and colleges is their failure to prepare students to think critically about real-world

issues (Feiertag & Berge, 2008). Some of the reasons for this are that students are disengaged with the education system (Hirschy & McClendon, 2011; Tinto, 2012), and lack of motivation to learn (Brewer & Burgess, 2005). Higher Education teachers share this concern and try to adjust their teaching in response by using different teaching methods in their courses. In the past decade or so, the emphasis has been on integrating technology into the classroom. For example, some teachers use Web 2.0 tools, which support the creation of Web pages focusing on content and social connections between people (Alexander, 2008). For instance**,** blogs and wikis are used to encourage students to write in more depth than traditional formal essays (Warlick, 2006). Other teachers use video podcasts as part of the lecture and ask students to create 'video mashups', which allow students to mix video content from several sources and to share with others (Bowness, 2008). Teachers also incorporate mobile devices into their courses, such as classroom response systems in which students answer multiple-choice questions using their own personal devices during the course. Some studies suggest that using these devices increases student interaction in the classroom (Fallis, 2011).

One technology which provides particularly engaging experiences that help students develop practical, cognitive, social, and decision making skills is video games (Foster & Mishra, 2009; Ma, Williams, Prejean, & Richard, 2007; Susi, Johannesson, & Backlund, 2007). For example, Squire (2004) and Whitton (2009) propose using commercial video games to counter the increasing motivational problems affecting the existing educational system. Although some teachers have tried to develop their own games or integrate games specifically designed for educational purposes, others have tried to integrate commercial games into their courses.

Commercial games are the ones that are primarily intended for entertainment. They typically present engaging experiences in which the main focus is to have fun (Hirumi, Appelman, Rieber, & Eck, 2010; Susi et al., 2007). For instance, Civilization is a commercial game in which players lead a civilization from prehistory through to the future (Squire, Giovanetto, & Shree, 2005) and has been used in history courses in schools, colleges and universities.

Beliefs and Evidence about the Role of Learning in Video Games

Video games have emerged as one of the most popular of all entertainment media. Video games are a leading form of entertainment, surpassing movies in terms of consumer spending. In the United States, for example, the film industry has reported generally flat growth in the past five years. In 2008, for example, industry revenue was $US 9.85 billion. Although revenue grew to $US 10.65 in 2009 it decreased to $US 10.47 in 2010 ("US Movie Market Summary 1995 to 2012," 2012). In contrast, the video game industry continues to grow and generates more revenue than films. The industry reported $US 11.7 billion in sales in 2008, $US 16 billion in 2009, which remained constant in 2010 despite the global recession ("Essential facts about the computer and video game industry," 2011).

Given the size of the industry, a strong interest in the use of video games for purposes other than entertainment exists. Examples of this are *gamification* and *games for change*. Gamification refers to the introduction of gaming elements into non-gaming systems, especially software. The goal of gamification is to improve the user experience by making technology more engaging and encouraging users to adopt desired behaviours (Deterding et al., 2011). For instance, gamification is often used in marketing through rewards and loyalty programs that

operate much like prize winnings in some games (Bunchball, 2010). Others use games for broader societal purposes. Games for change, for example, are intended to sensitize players to social issues such as war (Gavrel, 2012) and discrimination (Anthropy, 2012), change attitudes about these social issues, and perhaps promote social action (Waddington et al., 2014).

Still others attribute educational value to video games. When discussing about learning and video games, Mark Prensky (2005) states:

> Although computer and video games are most often thought as pure entertainment, it is important to understand that they are enormously powerful learning tools as well. Realizing this will not only help us to design better games, but will allow us using computer games as a medium that can express many different messages - to create effective new learning opportunities and tools for those raised on a heavy computer and video game diet from an early age (Prensky, 2005, p. 1).

Some researchers have identified the characteristics of games that facilitate learning. For instance, Gee explored how video games support learning and suggests 36 principles of self-directed learning that players undertake when mastering a new game (2003). He suggests that adopting these principles could transform learning for teachers and students. These principles include active learning, systems thinking, and problem solving (Gee, 2003, 2005a). Dickey demonstrates how the characteristics of games, such as narrative and interactive design, that are associated with learning are actually aligned with principles of engaged learning that are appropriate in all educational contexts (Michele D. Dickey, 2005). Sardone and Delvin-Scherer (2010), Yee (2006), and Hoffman and Nadelson (2010) have demonstrated that video games also

contain elements that can be intrinsically and extrinsically motivating. For instance, based on data collected from a survey with 30,000 users of Massively Multi-User Online Role-Playing games such as World of Warcraft, Yee revealed a model of user motivations that includes factors such as achievement and immersion (Yee, 2006). Such elements can be used to engage learners in other contexts (Gale, 2011). Still other researchers and experts advise that corporate training should be designed like a game (Donovan, 2012; Zyda, 2005). For example, Donovan (2012) argues that video games have considerable potential to "engage, motivate and influence the behaviours of a corporate workforce." As a result of such findings, video games are often used for instructional purposes such as in military training and health care training (Annetta, Murray, Laird, Bohr, & Park, 2006; Becker, 2010; Michael & Chen, 2006; Susi et al., 2007).

In universities and colleges, teachers integrate video games as part of their courses by using them as an environment to encourage cooperation among the students, as a context for the activities of their lessons, as a context for developing creative writing, as tools for creating new digital media, and by adapting them to the content of the courses (Younis & Loh, 2010). Creating a video game from scratch may be challenging and expensive; so educators often use existing games as they are or by 'modding' them. Modding is the process that allows people to modify existing games by providing different experiences through the creation of new worlds of exploration as well as the modification of the behaviour of the game (Bayliss, 2012; El-Nasr & Smith, 2006). For example, Minecraft has been used as an environment to implement algorithms taught in Artificial Intelligence (Bayliss, 2012). 'World of Warcraft', one of the most successful a massively multiplayer online role-playing games, has been successfully used as a venue for

second language socialization (Palmer, 2010). 'Portal 2', a strategy and adventure game, has been used for teaching "Enduring Questions", a course about what it means to be human. Students used the game to explore philosophical issues about the desire to present different versions of themselves. Students' reactions varied according to individual perceptions about the game. But that was part of the goal: give students something provocative to think about (Klepek, 2011).

The empirical literature and statistical data has tempered some of this enthusiasm about using games for other purposes than entertainment. For example, the evidence presents a different picture of who gamers are. Popular perception is that all younger people are active gamers, which refers to people who play frequently video games for entertainment purposes (Prensky, 2001). Although many younger people play videogames, active gamers only account part of the population. According to Nielsen Games (2008), only 37 % of the European population aged 16 to 49 describe themselves as active gamers. Similarly, empirical studies also suggest that certain games appeal to certain demographics. For example, social games like Farmville appeal to women in their forties (Ingram, 2010). What this suggests is that there is a stratification of the gaming market: different games that appeal to different audiences and large numbers of people that are casual or non-users of video games.

Although researchers have identified the characteristics of games that facilitate learning (Becker, 2008; Michele D. Dickey, 2005), and teachers at different levels are actually using games as an instructional tool (El-Nasr & Smith, 2006; Klepek, 2011; Palmer, 2010), no consensus exists on the best ways of using video games for teaching in Higher Education. Indeed

little is known about the opportunities and challenges such use of games might represent. When compared with the literature in traditional learning in Higher Education, Gale (2011) notes that gaps still exist in the empirical research investigating the use of video games for instructional purposes.

In particular, few studies explore how teachers use these games as part of their instruction and limited evidence exists about the effectiveness of using video games in Higher Education courses. Therefore, an empirical investigation exploring the use of games in Higher Education courses advances the research in the use of video gaming as an educational tool. Furthermore, because so few studies exist about the use of commercial video games in the classroom, an understanding of why teachers in Higher Education choose to use them and how they integrate them into their courses is needed to inform other studies about the effectiveness of commercial video games as teaching tools. Little is known about the specific pedagogical practices of instructors who use commercial video games in their classes, nor of the extent to which they have consulted and applied the research and pedagogy on games in their courses.

This study is intended to address these issues from the teachers' perspective. Specifically, it explores why and how teachers in universities and colleges use commercial, general-use video games (as opposed to educational games) in their classrooms and describes their experiences in doing so. Specifically, the goals of this study are to:

- Find out why teachers use commercial video games in their courses.
- Describe how teachers use commercial games as part of their teaching.

- Investigate teaching practices and decisions related to the design of course instruction using commercial games.
- Study teachers' experiences when teaching with commercial games.
- Analyze opportunities, challenges and limitations when using commercial games for instructional purposes.
- Contrast the application of games in these classrooms with pedagogical recommendations from educational technology and related fields.

Games of Interest in this Study and Research Questions

In this study, I focus on commercial games, also known as Commercial-Off-The-Shelf games, which are distributed primarily for entertainment, but that have been adapted for instructional purposes. Specifically, I am interested in those games that John W. Rice defines as 'cognitive virtual interactive environments' (2007) because they encourage higher order thinking levels such as knowledge, comprehension, application, analysis, synthesis, and evaluation (Gee, 2005c; Rice, 2007). Such games include Civilization (Squire, 2004), Black and White (Becker, 2008), Neverwinter nights (Gee, 2003), Full Spectrum Warrior (Gee, 2005b) and Portal (Schiller, 2008). I do not consider less complex games for entertainment such as Super Mario Bros, Tetris or Pac-Man; they have a simple set of game mechanics. Nor do I consider educational games such as *Mathblaster*, *My English Coach*, or *Where in the world is Carmen Sandiego?* as these are designed for educational purposes and would not need to be repurposed for the classroom.

My main interest in games with cognitive virtual interactive environments is, that besides providing compelling gaming experience to players and being often used for teaching, evidence

suggests that these type of games provide engaging experiences that help users develop practical, cognitive, social, and decision-making skills (Foster & Mishra, 2009; Ma et al., 2007; Susi et al., 2007) that transfer outside of the gaming context. But is that how teachers in Higher Education use them? If not, for which types of instructional objectives do teachers use these games? How do they integrate these games into their teaching? What results and reactions do they observe?

These concerns, in turn, generate the research questions guiding this study:

- Who uses commercial video games for teaching?
- For what type of courses, objectives, and students do teachers in Higher Education integrate commercial games?
- Why do teachers in Higher Education use commercial video games as part of their courses?
- How do teachers in Higher Education use commercial video games as part of their courses?
- What are the main opportunities and challenges when teachers in Higher Education use commercial videogames as part of their courses?

The study primarily focuses on the emic perspective: that of the instructor. But the last research question considers the etic perspective: How does the use of commercial video games by teachers in Higher Education contrast with the recommendations of educational technology and related fields? The answer to this question suggests whether the research and guidance provided by this specialized field have transferred to teachers in Higher Education.

Significance of the Study

Providing a portrait of the way that teachers in Higher Education teachers integrate commercial video games in their classrooms provides insights not only into who is adopting

these games, but also rich detail about their motivations for doing so, the ways they integrate the games into their courses, the techniques they use to administer the games in their classrooms, and the means they use to assess the effectiveness of these activities within the broader scopes of their courses

These insights can be contrasted with the research and theory on the benefits of games, as well as recommended practices for integrating them into classes. The resulting conclusions can provide insights into a number of issues. At the forefront, to what extent is the research and recommended pedagogy on games in Education in general transferring into practice. More specifically, this study will provide insights into the effectiveness of models that describe various aspects of game use in classes. From this, strengthened recommendations on the uses of games in higher education might emerge, as well as strengthened recommendations for pedagogy.

Definitions of Terms

Commercial Games or Commercial-off-the-Shelf. Games that are distributed primarily for entertainment; they present engaging experiences where the main focus is to have fun (Hirumi et al., 2010; Susi et al., 2007); and they are some of the most influential and profitable types of digital media.

Education. "Reconstruction and reorganization of experience which adds to the meaning of experience, and which increases ability to direct the course of subsequent experience" (Dewey, 1916, p. 76)

Experiential learning. Model of learning and of adult development emphasizing how practice and previous knowledge influence the learning process (Kolb, Boyatzis, & Mainemelis, 2001).

Faculty member. **"**Any full-time employee of an accredited college or university whose reported principal activities were teaching and research" (Jayakumar, Howard, Allen, & Han, p. 546). Contrasts with *Higher Education teacher*.

Formal learning. Activities that occur within an organized and structured context such as schools, universities, and in-company training; usually leads to official recognition such as a diploma or certificate(European Centre for the Development of Vocational, 2008).

Game. An activity that involves a series of actions requiring choices and in which players receive the benefits of good choices and experience the consequences of poor choices (Greenblatt, 1987).

Gaming-simulation. An activity that occurs in a model of an environment and in which participants receive the benefits of good choices and experience the consequences of poor choices (Greenblat & Greenblat, 1988).

Higher or Tertiary Education. An institution that provides formal learning experiences following high school, that supports the production of critical thinking capacity necessary for development as its core purpose (World Bank, n.d.), that develops broad reflecting thinking processes, and that prepares students for particular trades and professions, or both.

Higher Education teacher: Person who has responsibility for instruction in colleges, universities, and other institutions of Higher Education. A teacher may be a faculty member (see definition above), a staff member who solely has responsibility for teaching (usually called a lecturer), a part-time instructor, or a graduate student who has the responsibility for teaching a course.

Informal learning. Learning that is the result of daily life activities (European Centre for the Development of Vocational, 2008).

Instruction. Any activity undertaken to purposely facilitate learning (Reigeluth & Carr-Chellman, 2009).

Instructional tools. "Any instrument or device that assists in the enhancement of learning" (Ertzberger, 2008, p. 14). Common instructional tools include chalkboards, printed materials, videos, virtual environments, tutorials, video games and other devices that assist teachers in achieving an instructional purpose (Ertzberger, 2008; Laurillard, 2002).

Serious games. Video games designed for purposes other than pure entertainment such as training for situations in the military, healthcare and education (Becker, 2010).

Simulation. A model of an environment that includes representations of the major components of the environment (Greenblat, 1987).

Situated learning. Instructional activities that are bounded in realistic settings; the case, instruction and cognition are not separated to the activity (Brown, Collins, & Duguid, 1989).

Social learning. Activities with a formal or informal instructional purpose and whose form is negotiated among the members of a group (P. L. Smith & Ragan, 2000).

Video game. A type of game facilitated by any type of computer and that is intended to strongly engage the player through the elements of a game – but, adding interaction, automation and complexity (Prensky, 2001).

CHAPTER 2: LITERATURE REVIEW

Before describing how I conducted this study, I first situate it within the larger body of literature on teaching and learning in Higher Education and the instructional uses of games. This is the purpose of this chapter. In this chapter, I first describe how I selected literature to be included in this literature review and I then report on key themes. These key themes pertain to teaching and learning in Higher Education, and to the instructional uses of games. I conclude by presenting an analytical framework for considering the adoption of a technology like games within the classroom.

How Literature Was Selected

Consequently, I conducted two searches for literature. The first focused on general research about teaching and learning in Higher Education. The second focused on the instructional use of video games in Higher Education, particularly regarding commercial video games.

To retrieve articles on teaching and learning in Higher Education, I searched for articles using the keywords ("*Higher Education*" or *college* or *university*) AND (*teaching*). To retrieve articles on the instructional use of video games in Higher Education, particularly commercial video games, I used the keywords *(video games or digital games or computer games) AND ("Higher Education" or "tertiary education" or "post-secondary education")* AND *(Instruct* or teach*).* I conducted both searches using scholarly databases serving the field of Education, including ERIC, Web of Science, INFORM, EBCHOST, Psychinfo, SAGE, Web of Knowledge. I limited my search to peer-reviewed articles published from 2005 to 2013.

Teaching and Learning in Higher Education

The purpose of this section is to identify from the literature in teaching in Higher Education, the main areas providing a rational for the use of commercial video games as educational tools. To do this, literature was classified in two main categories: effectiveness in Higher Education and engagement and motivation in Higher Education. As it will be discussed in the second part of this chapter, these themes are two of the main arguments underlying the use of games in education.

Effectiveness in Higher Education

Authors such as Gale (2011) and Rizvi and Lingard (2011) say that one of the main goals of Higher Education is to prepare students to become productive citizens and contribute to society. Along the same lines, Harvey (2000) and Barnett (1992) indicate that students, after graduating, should have the necessary frameworks and thoughts of action for a successful integration in the world. From a different perspective, Ranson (1998) and Hudson (2010) suggest that the main purpose of Higher Education should be the development of people, society and the economy. Although these different perspectives, there is a general consensus that Higher Education should promote reflective learning experiences that support the development of all the skills that a learner needs to be an informed citizen (Boud, 2000; Castelli, 2011; Harvey, 2000).

Feiertag and Berge (2008) question the effectiveness of education received from universities and colleges. They argue that Higher Education fails to prepare students to think critically about real-world issues. Students are often disengaged with the education system

(Hirschy & McClendon, 2011; Tinto, 2012), and lack of motivation to learn (Brewer & Burgess, 2005). They challenge the effectiveness of Higher Education.

Befor elaborating further on this argument, it is first necessary to define effectiveness in Higher Education and, to most importantly, differentiate it from efficiency in Higher Education. Effectiveness in Higher Education refers to the outcomes and achievements of Higher Education (Bruinsma, 2003; Lockheed & Hanushek, 1994). It questions whether or not resources have a positive effect on achievement and how large the effect is (Lockheed & Hanushek, 1994). Efficiency, on the other hand, refers to the optimal use of resources, which is a nonetheless very desirable goal for educational systems (Lockheed & Hanushek, 1994). For instance, using technology for educational purposes and innovative teaching methods can be effective. As a consequence of this, students could develop additional skills and positive attitudes towards work. However, using expensive technologies may not be efficient as it could constrain the budget of an educational institution.

Effectiveness and efficiency in Higher Education can be seen from two perspectives: internal and external (Lockheed & Hanushek, 1994). In an internal effectiveness perspective, outputs are measured in purely educational values such as test scores. Inputs that generate these outputs include textbooks, classrooms, and interactions of teachers and students. In this perspective, internal efficiency refers to the comparison of learning to the costs of educational inputs. It includes how funds are allocated or costs of activities. External effectiveness refers to the relation between non-monetary inputs and monetary outputs. In an educational context, it could relate to the degree to which pedagogical practices affect student post-graduate salaries.

External efficiency is similar to a cost-benefit analysis or the ratio of monetary outcomes to monetary inputs. For instance, an analysis of external efficiency could help to know the right allocation of funds across different sectors in education in a given country.

The main focus of this study relates to addressing effectiveness in Higher Education at an internal level in terms of student outcomes. Bruinsma (2003) suggests that student outcomes can be of three types. The first one refers to the domain-specific knowledge and abilities. This includes facts, principles and procedures that are the basis for expertise in a domain. At an individual level these outcomes are usually assessed and measured through tests and grade point average (GPA) (Petkovic et al., 2006). At a group level it refers to the number of students that succeed to pass a course, finish a degree or to the dropout rate (Bruinsma, 2003; Street, 2010). The second type of outcomes include application of effective strategies for problem analysis, knowing when to use different learning approaches, and self-regulation strategies (Bruinsma, 2003; Fischer & Fischer, 1979; Zimmerman, 1990). The last category refers to the beliefs, attitudes and emotions towards a task (Benton & Richardson, 1990; Bruinsma, 2003; Papalewis, 1990).

Effective Higher Education should therefore enable reaching these outcomes. It therefore becomes pertinent to identify the characteristics of effective Higher Education. Characteristics may be grouped in two categories: effective teaching and engaged learning. Effective teaching is a broad term that has not been clearly defined in the literature. However, many authors agree that effective teaching is composed of different attributes or factors (d'Apollonia & Abrami, 1997; A. Harris, 1998; Tomic, 1992). These attributes vary according to the teaching goals, the

perspective of analysis, and the discipline (Neumann, 2001). Factors that that contribute to effective teaching can be viewed from five perspectives: (1) teaching behaviours, focusing mostly on the personality of the teacher and related characteristics; (2) teaching skills, the ways that individual skills are used in teaching; (3) teaching styles, teaching strategies or best practices; (4) effective teaching models, particular types of learning environments and approaches to teaching; (5) and teacher artistry, the personal responsibility for creating the conditions for effective learning undertaken by the teacher (A. Harris, 1998).

The second category, engaged learning, includes characteristics that promote effective learning keeping students engaged and motivated. For example, these may be providing constant feedback of students' progress, students providing feedback on effective teaching (Ali, 2005; Carbone et al., 2007; Ditcher, 2001; Krause & Coates, 2008), putting theory into practice in and outside of the classroom through experiential learning (Kolb et al., 2001), community involvement and support (Brewer & Burgess, 2005; Chickering & Gamson, 1987; Jenkins & Walker, 2014), and, self-learning and motivation to learn (Deci, Koestner, & Ryan, 1999; Elger et al., 2003; Lee, 2001; Naceur & Schiefele, 2005; Schmeelk & Hodges, 2008).

As previously discussed, one of the main arguments for using video games for instruction is their ability to support a context for engaged learning. This is a key factor of effective Higher Education. In the next section, I will further develop and discuss literature related to engagement in Higher Education.

Engagement in Higher Education

When trying to understand what is student engagement, the literature is ambiguous; there is not a clear definition (Korkmaz, 2007; Lester, 2013). For instance, Southerland (2010) defines it as "the degree to which a student is involved in a variety of educationally purposeful activities" (p. 34). Along the same lines, Krause and Coates (2008) define it as "the extent to which students are engaging in activities that Higher Education research has shown to be linked with high-quality learning outcomes" (p. 493). Similarly, Hu and Kuh (2002) define it as "the quality of effort students themselves devote to educationally purposeful activities that contribute directly to desired outcomes" (p. 555). From a different perspective, Lamborn, Newmann, and Wehlage (1992) define student engagement as "the students' psychological investment in and effort directed toward learning, understanding, or mastering the knowledge, skills or crafts that academic work is intended to promote" (pp. 12-13). Combining various perspectives, Kuh (2009) defined student engagement as "the time and effort students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities" (p. 683). Similarly to this definition, in this study I use the term student engagement to refer to the interest, time, commitment and effort of students to participate in activities related to their courses inside and outside of the classroom.

Growing research shows the importance of engagement on the outcomes and performance of students who attend Higher Education institutions (Carini, Kuh, & Klein, 2006) (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Pascarella, Terenzini, & Feldman, 2005). For instance, Carini et al. (2006) have demonstrated that increased level of engagement, have a positive influence on student learning. Similarly, there is evidence that there is a link between

engagement and learning outcomes such as critical thinking, and in a measurable way, GPA and grades (Carini et al., 2006; Kuh et al., 2008).

Other studies show that first year engaged students minimize obstacles, such as inadequate academic preparation, lack of an educational plan, and required social adjustments to Higher Education, in their transition into Higher Education (Clounch, 2010). It also has been shown that engagement is a key factor to prevent drop-out rates (Byrne & Flood, 2005; Street, 2010) and that students who are engaged and committed to their institution have higher retention and greater academic success (Clounch, 2010). Research also shows that effective staff and faculty practices that increase student engagement help them develop intellectually and personally (Pascarella et al., 2005).

Another stream of research in the literature discusses characteristics of effective engagement in Higher Education courses. For instance, based on Parsons and Taylor (2011) classification, factors that influence students' engagement can be categorized in eight groups:

- Interaction. This refers to face-to-face or virtual communication between the students. Through interaction, students can learn from each other, connect to the experts, and engage in dialog, conversation, social engagement and learning (Parsons & Taylor, 2011).
- Exploration. Students should find answers and solutions by themselves, get outside of the classroom and learn, question what they learn, and see how things work in real life (Parsons & Taylor, 2011).

- Relevancy. Apply knowledge to real life situations, working in authentic problems, and putting learning in context (J. Anderson, L., & H., 1996; Ben-Ari, 2004; Lave & Wenger, 1991).
- Multimedia and Technology. Use of innovative, effective, and adequate educational technologies (Laurillard, 2002).
- Instruction. It includes both, engaging teaching practices, and motivation for teaching (Blumberg, 2009; Elger et al., 2003)
- Authentic Assessment for Learning. Effective students evaluations and alternative forms of assessment (Ali, 2005; Ditcher, 2001; Petkovic et al., 2006).
- Institutions. The way that institutions deploy resources and organize the curriculum, support services for students, and extra-curricular activities that lead students to succed (Hu & Kuh, 2002).
- Student satisfaction and learning environment (Pascarella et al., 2005).

Games as Teaching Tools in Higher Education

Higher education is intenfed to prepare students in assuming their roles as productive citizens and to develop critical thinking. However, students are often disengaged with the educational system (Hirschy & McClendon, 2011; Tinto, 2012) and lack motivation to learn (Brewer & Burgess, 2005). In response to this concern, Higher Education teachers have started to update their teaching methods and to integrate educational technology into the classroom. Using video games for instructional purposes is considered to be a response to this need for effectiveness and engagement in Higher Education (Foster & Mishra, 2009; Ma et al., 2007; Susi

et al., 2007) as it is believed that they have characteristics which can engage and motivate students in learning (Squire, 2004; Whitton, 2009).

In the remainder of this section, how and why video games are used for instruction in Higher Education will be discussed. Then, research that demonstrates the impact of games on the effectiveness of learning in Higher Education will be presented.

Instructional Uses of Video Games in Higher Education

This section discusses the actual use of video games as a type of educational tool. Video games are used for educational purposes in two ways: introduction of games developed from scratch (instructional games) and introduction of games for entertainment purposes (Billing, 2007).

The first approach refers to the introduction of customized games; these games fit with the content and the context of the course. More specifically, instructional games refers to those video games created mainly to facilitate learning (G. Salomon, Perkins, & National Institute of, 1985). These types of games allow learners to experience situations that are impossible in the real world for reasons of safety, cost, and time (Van Eck, 2006 as cited in Tuzun, 2007). Instructional games are often applied to areas such as military training, government, health care, and teaching particular subjects such as math or science (Hirumi et al., 2010). The latter is one of the most-researched topics in the literature. This approach also refers to learning through designing and developing video games. This idea was introduced by authors such as Symeour Papert and Lloyd Rieber, who introduced logo, an educational constructivist environment for learning programming (Susi et al., 2007).

The second approach, using commercial games for instructional purposes, the type of games of interest in this study, refers to introducing commercial games for instructional purposes. Commercial games are defined as games that are distributed primarily for entertainment (Annetta, 2010; Susi et al., 2007). Instructional uses of games are but one part of a larger use of games. Games in this category are those designed for entertaining but are believed to have some instructional value; these games are often adapted or modified according to the content of the course (Becker, 2010).

Commercial games, besides being one of the most influential and profitable types of digital media(Tuzun, 2007), present immersive experiences where the main focus is to have fun (Becker, 2010). In addition to the games developed by big publishers such as Microsoft, Sony, or Ubisoft, this category also includes independent games, informally known as *indie games*. These types of games are those usually developed without the financial support of a publisher, and by a smaller number of developers (Hirumi et al., 2010; Susi et al., 2007).

There are many types of commercial games varying in design strategies, goals, game mechanics and other characteristics.

In such, games can be classified in the following major categories (Apperley, 2006):

- Simulation Games. This is a combination of simulations and videogames. These games attempt to replicate situations in real life, but include elements of gaming such as goals and scores. Games in this category are The Sims and the Rollercoaster Tycoon series.

- Strategy. With the emphasis on careful thinking, players have to think about different strategies to win the game. Civilization and Starcraft are two of the most successful games in this genre.
- Action/Shooter. In this type of game the player controls an avatar that explores levels avoiding obstacles, and defending and defeating enemies in different battles. The main goal is to 'shoot' the opponent without dying. Games in this category are Doom, Half-Life, and Quake.
- Role play. The player assumes the role of one or more characters in the setting. In this type of game, the narrative element is fundamental, and the player takes the responsibility of acting in the role of the character. Examples of games in this category are the Final Fantasy and Zelda series.

Overall, perspectives between teachers and learners about incorporating this type of video games for instruction are positive. According to Standford et al ("Indie Games," 2011) both teachers and students believe that playing commercial games improves computer skills and general problem solving abilities; however, teachers are more likely to believe that students gain knowledge of specific subjects (E. Adams & Rollings, 2010; Foster & Mishra, 2009). Research supports this point. For example, Squire studied what happens when Civilization III is introduced in formal learning environments; he concluded that students were engaged through the game play and that it affected students' understanding and interpretations about history (2006).

However, the integration of commercial games in the classroom or in the workplace might be challenging. It is necessary to consider school or workplace infrastructure, individual

differences among learners, costs, physical arrangements of the classroom, and the role and perceptions of teachers (Sandford & Futurelab, 2006). Additionally, other authors point out that often there is just an initial enthusiasm, and that by end of the course it is often decreased; that many times there are not any learning differences between learners who use versus those who do not use video games (Squire, 2004). Also, when results may be positive, there can be contradictions between learners' preferences (Barab et al., 2009; L. Chen & Liu, 2009; Dipietro, Ferdig, Boyer, & Black, 2007; Hamalainen, 2008). Hence, games are often introduced as an optional resource to learners (Annetta, Murray, Laird, Bohr, & Park, 2008)

Using Commercial Games in Higher Education

Commercial games are used in six ways in Higher Education: as a context for conducting research, as an instructional context, as a "modabble" environment, as a production tool, as a simulated world and as a simulation tool.

- Context for Conducting Research. Teachers use games in this way for two different scenarios. In the first one, they incorporate the game as part of an experiment that students have to observe and analyze. For example, in a Research Methods class for psychology undergraduate students, Standbury and Munro (H. Chen & Huang, 2008) used "Dance Dance Revolution," a rhythm and dance game, as an activity that added a practical component of a lesson in "Factorial Design." First, students developed a factorial design using the game. Scores were the dependent variables. Students created two scenarios for the game using different game-modes and songs. Then, randomly, students were assigned to play each scenario. Afterwards, students analyzed their data and interpreted their results. In addition,

commercial video games are also used to conduct research in virtual worlds. For example, in a research and writing course, Shultz-Colby and Colby (Tuzun, 2007) used World of Warcraft as a context in which student can conduct research inside of a virtual environment. In different classes, the teachers introduced the different types of research traditions. Then students had to play the game, propose a problem and research it. Students assignement's consisted in writing about it.

- Instructional Context. Commercial video games are also used to illustrate the content of a course. Often the teacher shows the game in class, the teacher and students together analyze specific moments of it, and the teacher relates it to the learning objectives of the course. For example, in a Physics undergraduate level class, Nordine (2013) used "Mario Bros" as a context to illustrate the basic concepts of "Calculus-Based Kinematics." He showed the game in class and analyzed with the students aspects of the game that related to the learning goals of the lesson. In other cases, students are asked to play the game and carry-out an extensive analysis of it, so that they experience what the teacher wants to illustrate. For example, in a Software Architecture course (2008), students had to choose a commercial video game and do a deep analysis of its software architecture.
- 'Moddable' Environment. In some cases, especially in software development and game design courses; students have to modify games and apply what is covered in the course (2011). For example, in an Artificial Intelligence course (Wang, 2011) students had to develop extensions and plugins that could add artificial intelligence based functionalities to Minecraft. They had to use algorithms covered in class and develop a completely new

gaming experiences. Similarly, in a Game Design and Programming course (Bayliss, 2012; El-Nasr & Smith, 2006), students had to modify "Unreal Tournament," a first-person shooter game, and develop a new game using the Unreal engine, which is a game development environment developed by Epic Games. Unreal Tournament was built using this engine.

- Production Tool. In addition, in other courses students can use video games to build different types of media. For example, in digital-media courses, students can use video games to create cinematic productions (Bayliss, 2012).
- Simulated World. Commercial games are also used as a virtual representation of a real-life or a fantasy world. In this virtual world students can interact with other users, analyze different aspects of the game, and do activities that connect the experience with the learning objectives of the course. A common game used in this category is World of Warcraft. It has been used as a context in which students can practice their second language skills (El-Nasr & Smith, 2006); as well as explore the game's design elements (Barwell, Moore, & Walker, 2011),
- Simulation Tool. Games are also used to simulate theoretical concepts of the content of specific courses. For example, Gaber (Rama, Black, van Es, & Warschauer, 2012; Zheng, Newgarden, & Young, 2012) has used SimCity to simulate the theory of a Planning class. Students had to work on two simulations for three hours for each and then, write a paper about their experiences. The teacher also evaluated the simulated cities.

Regardless of the means in which a faculty member integrates a game, most game-related activities are considered to be a form of discovery learning. In discovery learning, learners encounter a situation and are given the opportunity to explore so that they might unearth—or

discover—key concepts and lessons. The discovery process is especially useful for learning about systems and relationships among facts, and applications of concepts (Carliner, 2003). Sweller, Kirschner, and Clark (2007) note that discovery learning can be guided or not. In guided discovery learning, instructors play an active role in introducing, scaffolding, and debriefing the learning process. In discovery learning that is minimally guided, students are primarily left to their own devices to work through the activity and determine what was learned. In their meta-analysis of different guided learning situations, Sweller, Kirschner, and Clark (206) noted that minimally guided teaching techniques do not work.

Greenblat (1988) and Carliner (2003) suggest similar structures for desigining discovery learning activities that provide the level of guidance recommended by Sweller, Kirschner, and Clark. Such activities begin with an introduction, which introduces the objective of the lesson and the activity. The introduction also provides students with instructions for completing the activity and, if needed, a demonstration of it. As students go through the activity, they are provided with various types of assistance, such as hints. A central feature of discovery learning activities is the debriefing that follows completion of the activity. Greenblat (1988) and Carliner (2003) both recommend that the debriefing include an interactive discussion with students to elicit the tangible lessons learned from it. In some instances, students might have learned the content correctly, but do not know what is correct about it or why. The debriefing provides an opportunity to make the learning concrete and specific. In other instances, students might have mislearned the concepts. The debriefing provides an opportunity to identify what was learned in error and correct it.

Games and the Effectiveness of Learning in Higher Education

Regardless of the positive or negative effects of playing video games, there is a common agreement that learning occurs in video games (Garcia-Martinez & Jong, 2012). This section synthetises claims regarding the use of video games for learning in Higher Education while connecting them to existing theory in learning and teaching. Literature in this section is divided in four parts: video games as a context for social learning, video games as a context for experiential and situated learning, video games and the development of cognitive skills, and engaged learning through video games.

From a social perspective, games can present a simulation of a social context, allowing players to interact with each other or with intelligent agents (Rice, 2007). Players have to think as members of a community in a specific context, enact as authentic professionals, experience the sort of expertise that learners might transfer from one context to another, and develop a way of thinking that allows them to see the world in a new way (Squire et al., 2005).

One of the main advantage that different authors cite in the literature of using videogames for teaching, is that they provide a context in which students can situate experience in a meaningful way (Gee, 2003; Whitton, 2009). Playing video games for educational purposes fits in the context of experiential learning (Dieleman & Huisingh, 2006; Gale, 2011) and situated learning (D. Harris, 2008). When playing games, students can simulate a context and learn by doing; they can experiment and experience without consequences that may affect the real world (Dieleman & Huisingh, 2006). These experiences can provide contextualized learning

experiences that can provide opportunities to problem solving representations, analysis of complex learning situations, scaffolding of learning, and reflection through rich narratives (Whittington, 2010). Students can analyze games and their virtual environments, formulate hypothesis and test them; students can see how changing variables affect the environment, investigate the causes and reflect on them (Gee, 2003). For example, in SimCity, a city-simulation game, students can build a city, simulate their main functionalities, modify variables, and reflect on the city as a system (Gaber, 2007). In addition, one of the main benefits of using video games for learning is that they provide immediate and constant feedback (Dipietro et al., 2007; Tannahill, Tissington, & Senior, 2012; Whitton, 2009), which is also a key factor of the experiential learning cycle (Whitton, 2009).

Another stream of the literature related to video games and learning conveys claims pertaining to the cognitive skills that students develop when playing video games for educational purposes. From this perspective, video games can help develop lower and higher-order thinking (Rice, 2007). Lower-level thinking involves recalling previous situations, understanding instructions, or interpreting problems; examples of lower-level skills are learning the alphabet or reciting poetry (Bloom, 1956a). To develop lower-level thinking, it is common to use "drill-and-practice" approaches, which train the player to acquire skills through the continuous repetition of mechanical operations, memorization, and reward (Egenfeldt-Nielsen, 2006). Examples of games that can help to develop low-level skills are Mathblaster, where students learn arithmetic rules, and My English Coach, which teaches English through mini-games that are based on repetition. Higher-order thinking include the application of concepts in new situations, synthesis

and analysis of concepts , and evaluation and judgments of ideas (Bloom, 1956a). Developing higher-level thinking involves the use of highly cognitive environments (Rice, 2007). An example of a game that has been used for developing higher-order level skills is Civilization, where the player has to lead a civilization from prehistory to the future (Squire et al., 2005).

Finally, regarding the impact of video games in students' engagement and motivation, early studies show that video games use challenge, curiosity, and fantasy to motivate players in gaming activity (Malone, 1981; Provenzo, 1991). Even though results from these studies come from experiments with games from the 80's and early 90's such as a digital hang-man, darts (Malone, 1981) or Super Mario Bros 2 (Provenzo, 1991), they are still present in modern video games. Because of the complexity that new video games bear, other factors should be considered, such as the player, game mechanics, and game aesthetics (Cowley, Charles, Black, & Hickey, 2008; Kiili & Lainema, 2008; Renshaw, Stevens, & Denton, 2009). However, the success of video games at motivating adults remains unclear. Some adults may perceive using video games for learning as a waste of time or limit their use in their leisure time; other adults may not find video games motivating or do not play them at all (Whitton, 2009).

An Analytical Framework for Considering the Adoption of Classroom Practices

Trigwell and Prosser (2006; 2004; 1999) proposed the Presage-Process-Product (3P) model reports the differences between deep and surface approaches to learning (Trigwell et al., 1999) and the relation between learning and the context, and provides a strong basis for evaluating the adoption of classroom practices by instructors. This model is based on the students' learning model proposed by Biggs (1993). This model for learning is composed of five

elements: students factors (abilities, prior knowledge, motivation), course and departmental context (course design, teaching methods), students perceptions of the context (good teaching, clear goals, workload), students approaches to learning (deep and surface learning), and students outcomes of learning (what they learn) (Biggs, 1993).

Prosswell and Trigwell extended this model by mapping it to teaching. They argue that learner's and teacher's perceptions of their learning and teaching are connected to their prior experiences, their approaches to learning and teaching, and the related outcomes. Even more, they showed that there is a relationship between teachers' approaches to teaching and how students approach learning (Trigwell et al., 1999). Additionally, in early research, in a qualitative phenomenographic study, they explored the key aspects of the variation in the approaches of teaching adopted by science teachers at a university level. First, they identified five approaches to teaching in a spectrum from teacher to student-oriented learning (Trigwell et al., 1999). They also showed that teachers' approaches of teaching are influenced by the strategies they adopt for their teaching and the intentions underlying the strategies (Trigwell et al., 1999). This model of teaching has the following elements: course and department learning context (course design, assessment), characteristics of the teacher (previous experiences, current understandings), teachers perceptions of context (class size, teacher control, teacher workload), teacher's approaches to teaching (teacher/student-focused), and teachers' outcomes of teaching (satisfaction, what they learn) (Prosser & Trigwell, 2006).

For those who perform quantitative research, Trigwell and Prosser (2004) developed an inventory that measures the different aspects of teaching (Trigwell & Prosser, 2004) and later

validated it (Prosser & Trigwell, 2006). Researchers can use this instrument link approaches to teaching with factors that might affect it, such as the teaching context (Trigwell & Prosser, 2004). But the model also proves valuable as a means of conducting analyses of qualitative studies of teaching, as it provides a means of classifying both teaching activities and the factors affecting them.

Summary

The main goal of this chapter was to situate the study within the larger body of literature on teaching and learning in Higher Education and the instructional uses of games. In order to achieve this, the literature was divided into two parts. The first part focused on general research about teaching and learning in Higher Education. The second part focused on the instructional use of commercial video games in Higher Education.

In the first part of this chapter, I introduced the main goal of Higher Education. It was concluded that, regardless the different perspectives, there is a consensus towards the fact that Higher Education should promote reflective learning experiences. These experiences support the development of the required skills for the learner to be an informed citizen. After, I discussed the characteristics that make for effective Higher Education. I talked about the importance of Higher Education and about the characteristics of effectiveness in Higher Education. A key characteristic is that it should be engaging to learners. This was further expanded on.

Then, student engagement in Higher Education was defined as the outcomes and achievements of Higher Education (Bruinsma, 2003; Lockheed & Hanushek, 1994). After, I

discussed the importance of Higher Education, and identified the characteristics that compose effective engagement in Higher Education courses.

In the second section, I condensed the main findings and evidence regarding the use of games as teaching tools in Higher Education. First, I described why games are considered to be a response to the need for effective and engaging Higher Education. Next, I provided a summary of how they are used and why they are used, I also described research that shows the impact games can have on student engagement and the way video games are used for teaching present the basis for the research questions. The chapter closed by describing the Presage-Process-Product (3P) model for analyzing the introduction of innovations into the Higher Education classroom, which consists of the following elements: course and department learning context (course design, assessment), characteristics of the teacher (previous experiences, current understandings), teachers perceptions of context (class size, teacher control, teacher workload), teacher's approaches to teaching (teacher/student-focused), and teachers' outcomes of teaching (satisfaction, what they learn) (Prosser & Trigwell, 2006).

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CHAPTER 3: METHODOLOGY

As noted in Chapter 1, this study is intended to explore which teachers in Higher Education choose to integrate commercial video games into their courses, why and how they do so, how students respond to the games, and the broader lessons from these experiences that might inform the use of commercial video games in Higher Education classrooms. The research questions that guided this study include:

- Who uses commercial video games for teaching?
- For what type of courses, objectives, and students do teachers in Higher Education integrate commercial games?
- Why do teachers in Higher Education use commercial video games as part of their courses?
- How do teachers in Higher Education use commercial video games as part of their courses?
- What are the main opportunities and challenges when teachers in Higher Education use commercial videogames as part of their courses?

This chapter describes the research methodology used to conduct this study. It first explains the selection of the research method. Next, it details the research design, including the strategies used for choosing participants, collecting and analyzing data, and ensuring qualitative rigor.

Selection of a Research Method

Because little research has been conducted on the use of commercial videogames in Higher Education courses, research at this point in time should focus on describing the phenomenon and generating conclusions possible hypotheses. Future researchers might use this

and similar studies to explore aspects of this phenomenon and assess the extent to which certain causal relationships exist, including a link between games and student success. But such a causal study is premature at this time. Indeed, we have little or no empirical evidence explaining why and how teachers in Higher Education use commercial video games.

Conducting an exploratory study of why and how teachers in Higher Education use commercial video games requires a thick description of this phenomenon. Qualitative methods are best suited to this type of research task because they explore how meaning develops within groups and cultures (Strauss & Corbin, 1998). Then, I chose to use qualitative methods to conduct this study. Qualitative methods are a set of "interpretive, material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, readings, and memos to the self" (Denzin & Lincoln, 2005, p. 3).

More specifically, because I was trying to describe a specific, complex phenomenon (commercial video games) in the context in which it occurs (Higher Education classrooms), case study research seemed particularly appropriate to this project. A case study is an in-depth exploration of a bounded system (single case) or several similar bounded systems (multiple cases) (Yin, 2009). A bounded system is specified by time and place; it can be a program, an event, an activity, or individuals (Creswell, 2007). A case study is explored through detailed, in-depth data collection involving multiple sources of information such as observations of the environment (system), interviews with one or more stakeholders in the situation, and various types of documentary evidence used internally and externally including audio-visual material,

documents, reports, and examples of completed work. The report of a case study first presents a thick description of the situation followed by a description of the key themes emerging from an analysis of the case(s) (Creswell, 2008). Stake (1995) adds that, by studying cases, researchers might be able to uncover issues and themes that could shed light on similar situations through naturalistic generalization by identifying issues that recur across the cases.

In this study, one commercial videogame used in Higher Education courses forms the basis for a case. Each class in which the game is used constitutes an instance of the case. For example, the use of a game called World of Warcraft might constitute a single case in this study. Each course in which the teacher uses this game is considered an instance of the case.

Herriott and Firestion (1983) suggest that studying more than one case gives a better understanding of the phenomenon and increases the confidence in the robustness of the theory (as cited in Yin, 2009). So when studying a new phenomenon, a researcher might consider using several cases to ensure as robust a discussion of the phenomenon as possible. The use of several cases in a single study is called a multiple case study framework. To ensure that this study is as robust as possible, it, too, uses a multiple case study framework. That is, it explores the use of more than one game. As just noted, each case in this study explores several teachers and courses who use the game.

There are different approaches for conducting a multiple case study such as the ones proposed by Merriam (1998), Stake(2006), and Yin (2009). Merriam (1998) suggests the choice of a case study as a way to understand in detail a specific situation in which the researcher is especially interested in the process of inquiry rather than the outcome of the research. Stake

(Stake, 1995, 2006) suggests that the researcher has an active role as an interpreter and proposes detailed guidelines for conducting case studies (Stake, 1995). Yin (2009) suggests and extensive and systematic outline to design and conduct a case study. He especially focuses on the skills of the investigator and proposes a strong strategy of research. This study follows the advice of Stake (2006) and Yin (2009). Both provide detailed guidelines that complement each other. For instance, Stake proposes detailed advice to conduct and write single (1995) and multiple case studies (2006).

Research Design

This section describes how I conducted the study. It first explains how I selected the cases—the games to be explored—and recruited participants to explain how they use the games in Higher Education courses. Next, I explain how data was collected and analyzed.

Selection of Cases

As just noted, I intended to conduct a multiple case study of how teachers use commercial games in their Higher Education courses and one commercial game would form a single case, I first had to decide how many games to study and which games to specifically explore. Within each case, I would study how several teachers used the games in their courses.

In terms of the number of games, I chose to study three. Studying just one game would only provide perspectives on a single game and provide no point of comparison between games. Studying two games (cases) would begin to blunt criticisms and can produce an even stronger effect (Yin, 2009). By studying three cases (games), however, I could expect to receive a

broader range of perspectives (Carliner, 1995) and would have a richer base of data on which to reach conclusions. So I chose to study three cases.

In terms of selecting the games to study for the cases, the selection will be purposeful to ensure as rich a set of data as possible. Stake (2006) suggests selecting cases according to their relevance to the phenomenon of study, their ability to represent diversity of contexts, and the potential they offer to learn about complexity and contexts.

With this guidance in mind, I selected the games using the following criteria to ensure the broadest cross-section possible:

- Games must be commercial games currently used for instructional purposes in Higher Education or recently used. To increase the likelihood of recruiting enough participants, I considered games that are commonly used in Higher Education, based on information about their use found in the literature and in online discussion forums about Higher Education.
- Recency of the use of the game as part of a course. Because the study relied on teachers describing their experiences of using video games in their courses and seeing that teachers retrieve these experiences from their memory, it follows that the more recent the memories, the more reliable and rich the descriptions offered. Therefore, use of the game must have occurred five years before the date the study was proposed (2012) or earlier. .
- Access to participants and their willingness to participate in the study. To consider a game for this study, I needed to interview several Higher Education instructors who use the game in their Higher Education courses. To increase the likelihood of recruiting a sufficient number of participants, I considered an initial list of five popular games that are widely used

in Higher Education and about which several people have contributed to online forums, an indication of the likelihood that people would participate in the study. The games included Minecraft, World of Warcraft, SimCity, Civilization and The Sims. Although I intended to study just three games, I wanted to recruit for five in case I did not receive a sufficient number of participants for one of those games. I would recruit for all of the games until I had found enough participants for any three on the list. I would stop recruiting and release participants for the other two. As it turns out, I recruited enough participants for Minecraft, World of Warcraft, and SimCity, so I did not need to interview participants who use Civilization and The Sims in their courses.

Recruitment of Participants

As noted earlier, I wanted to learn how teachers incorporate these commercial video games into their courses. Although the student perspective is important, it was not the perspective sought by this study. So I recruited participants who teach in Higher Education and who use the commercial video games already identified as the basis for cases in their courses: the World of Warcraft, Minecraft, SimCity, Civilization and The Sims.

Next, I had to determine how many teachers to interview about each game, from which types of institutions to recruit participants, and which courses, if any, instructors needed to teach. In terms of number of teachers, I chose to interview at least three and ideally five about a given game (case). Participants in this study had to represent a wide spectrum of experience in teaching using commercial video games. At least I aimed to find three participants with limited, intermediate and advanced experience respectively using each game.

In terms of types of Higher Education institutions, I wanted to focus on ones that offer degrees, which would limit the study to universities, colleges, and community colleges, called Cegeps in Quebec and colleges elsewhere in Canada, but community colleges in the United States. I also wanted to limit the situations to courses that would only include students who are 18 and older, to avoid addressing a vulnerable classroom population. In terms of Cegeps, which cater to 17- to 19-year-olds and include a level of instruction that corresponds to the twelfth grade of high school, that means instructors must be teaching courses intended for students in their second year and later.

In terms of subject matter, I wanted to learn about the variety of uses of games, so I did not limit the subjects of the courses taught by faculty.

In terms of faculty status, I was only concerned with the fact that teachers taught courses in Higher Education; I did not care about their employment status other than the fact that they were paid to teach the course. So I recruited any teacher, including faculty, lecturers, and part-time instructors.

After determining whom to recruit and how many people needed to be recruited, I actively recruited participants. To do so, I prepared a Call for Participation. See Appendix A for an example of a Call for Participation that I sent to individuals and Appendix B for a Call for Participation that I sent to groups. I shared the Call for Participation as widely as possible to reach as many potential participants as possible. Specifically, I shared it with:

- Personal contacts who might assist me in finding participants.

- Teachers who publicly posted on the Internet syllabi of courses in which the games were used.
- Social media services, including forums, blogs and LinkedIn groups related to video games, learning and education.
- Video games research groups of a number of English-speaking universities, colleges and Cegeps in North America. In such instances, I would contact a lead researcher and ask for authorization to use the mailing lists of the groups.

When teachers responded to this Call for Participants to express interest in serving as a participant, I responded by sending a follow-up letter with details of the study. See Appendix C for a sample letter sent to interested teachers.

In addition, I asked these participants to invite their friends, colleagues, and peers who use commercial games for educational purposes to participate in the study (a snowball sampling approach).

To protect the identities of participants, their participation would be confidential. All identifying information about them was masked. To mask the names of participants, I used pseudonyms, to mask the names of the courses, I gave them new names. To mask the identity of the educational institution, I only identified its size, general geographical location and type (private, public, research intensive, and teaching intensive). All participants also signed an informed consent form before I began collecting data from them.

In all, I recruited fourteen participants: five for Minecraft, five for World of Warcraft, and four for SimCity. One additional participant who participated in a pilot study dropped out of

the study. Ten of the participants were male and four female. Twelve were teaching in institutions located in the United States, and two in Canada. Eleven participants were in their 30's and three were over the age of 40. Table 1 shows a summary of the basic demographics of the participants.

In addition, one of the participants' have done research related to the results of this study and wanted me to publicly identify them. I received written permission from each to disclose their identities.

Table 1

Participants' Demographics

Participant	Game	Age	Gender	Field of expertise	Faculty or Department	Level	Teaching experience in High Ed	Degree	Games as a research interest
Adam	Minecraft	50	Male	Educational Technology	Computer Science	Undergraduate	1	Master	Yes
Jake	Minecraft	Early 30s	Male	ESL	Modern Languages	Undergraduate	5	Master	No
James	Minecraft	Early 30s	Male	Arts and Art Education	Art Education	Undergraduate	2	PhD	Yes
Minerva	Minecraft	N/A	Female	New media	Film Studies	Undergraduate	15	PhD	Yes
Peter	Minecraft	Mid 30s	Male	New media	English Language and Literature	Graduate	3	PhD	Yes
Brandy	World of Warcraft	Early 30s	Female	Arts and Video Games	Arts and Technology	Graduate	9	PhD	Yes
Brendan	World of Warcraft	Mid 30s	Male	Learning and Video Games	Computer Science and Software Engineering	Undergraduate	7	PhD	Yes
Renatta	World of Warcraft	Mid 30s	Female	Writing	Writing	Undergraduate	4	PhD	Yes

Sam	World of Warcraft	Late 30s	Male	Educational Technology and Video Games	Education	Graduate	2	PhD	Yes
William	World of Warcraft	Mid 30s	Male	Digital Arts	Digital Arts	Undergraduate	2	Master	Yes
Chad	SimCity	Late 50s	Male	Environmental Planning	Architecture and Planning	Graduate	16	PhD	No
Dennis	SimCity	Late 40s	Male	Urban Planning and Geography	Arts and Media College	Undergraduate	10	PhD	Yes
Donovan	SimCity	Early 30s	Male	Game Design	Media and Design	Undergraduate	7	PhD	No
Jane	SimCity	Late 30s	Female	Urban Planning	Architecture	Graduate	10	PhD	Yes

Data Collection

Several sources, including documentation, archival records, physical artefacts, observations, and interviews inform case studies (Yin, 2009). In fact, data from several sources strengths the qualitative rigor of the study (Thurmond, 2001). Each participant provided two types of data for this study: interviews and documents

Data Source One: Interviews

The first source of data about each use of the game is interviews with the teachers. Interviews provided the largest volume of data for this study. In qualitative research, an interview occurs when researchers ask participants open-ended questions, record the answers, and transcribe the data for analysis (Creswell, 2008). When interviewing, the researcher or interviewer asks participants about the phenomenon under study, the thinking and physical processes underlying the phenomenon, relationships that are essential in realizing the phenomenon, and opinions and feelings about the phenomenon (Yin, 2009; Lincoln & Guba, 2985).

I interviewed each participant in the study. The interviews followed a three-part framework proposed by Carliner (1995). Depending on the availability of the participant, I completed the interviews in one, two or three sessions. Each session lasted between 45 minutes and one hour and a half. The following sub-sections describe each part of the interview process, as well as preparations for the interviews.

Before the Interviews: Before starting the study, I familiarized myself with the games under study. I was familiar with Minecraft so I focused my time on the games about which I knew less. I developed sufficient skill with World of Warcraft that I achieved a level 10 in the game. When players reach this level, it means they know the

basics and can start an advanced quest that may require cooperation among different players**.** I spent playing SimCity for approximately 10 hours. For both I also consulted video-tutorials and available walkthroughs of the games.

I handled the logistics for the interviews with participants through e-mail exchanges. I confirmed each interview to make sure that participants would be available when I expected them. Then, I confirmed with participants the purpose of the study, the expectations of their participation, and the protection available to them, namely confidentiality. I also informed participants that they would have the opportunity to review the transcripts and a draft of the research report. After sharing this information, I asked participants to sign the consent form. See Appendix D for an example of the consent form.

When I could conduct them in-person, I scheduled the interviews in a location where the participant would feel comfortable and at ease. But it was not possible to conduct most of the interviews in-person, and I conducted those using Skype, an internet-based communication tool that allows participants to see one another, at a mutually convenient time.

Part One of the Interview—The Background: The semi-structured interviews began with a discussion of the background of the participants and an exploration of why and how they employ the game in their courses. Specific issues explored included the types of instructional objectives the games attempt to address, the way in which participants employ video games to achieve these objectives, the designs of lessons in which participants use video games, and opportunities and limitations participants perceive when using video games.

Part Two of the Interview—Description of the Game Use: The semi-structured interviews continued with a walk-through of the lesson in which participants employed a game, including a walk-through of the use of the game. Through this, I could see the game through the eyes of the participants, and learn about the choices made when using the game as well as the most and least effective parts of the lesson and game use as perceived by the participants.

I asked the participants to specifically describe in detail how they incorporated the games and their different experiences when they and the students were using them. I also asked participants to explain any issues of learning or education relevant to the gameplay.

Initially, I planned to play the game with the participants. But technical difficulties made this difficult and this approach could not recreate specific moments in the game that illustrated the points participants were trying to make. I found that detailed descriptions and, when they were available, screen shots and videos of specific parts of the game, more than sufficed.

Part Three of the Interview—Closing Open Issues: The interviews concluded with an unstructured segment of follow-up questions raised during the first two parts of the interview. The questions asked during this part encouraged participants to reflect on the impact of the use of games with their students and the meaning of their experiences.

Appendix F provides the interview guide for the three parts of the interview.

Data Source Two: Documents

Physical and virtual documents were the second source of data for this study. They, provided background information about the use of commercial videogames in the

courses and expectations of the ways that students might use them. These documents included:

- Course syllabi. A syllabus describes the purpose of the course, describes the expectations of students, and provides a summary of each lesson in the course. Among other functions, a syllabus sets the tone of the course and serves as a contract between the teacher and the students (Slattery & Carlson, 2005). More specifically, a syllabus includes information that identifies the teacher and the course, the rationale about the course explaining the importance of the course, motivational messages, a formal course description, a list of goals or objectives of the course and how students can meet these objectives, the grading system, the course schedule, and a description of the university support services related to learning (Slattery & Carlson, 2005).
- Descriptions of assignments. Sometimes provided in the syllabus and sometimes provided as a separate document, these descriptions provide in-depth explanations of assignments and their requirements.
- Course website and other online resources. Websites that includes all information related to the course. Often it includes the syllabus, descriptions of assignments, a place for submitting assignments, forums and blogs to explore class-related issues, and educational resources used during the course, such as readings and similar materials.
- Screenshots and videos of specific moments of the game used during the class or that relates to its use.
- Assignments submitted by the students.

- Articles and presentations written by participants explaining their experiences using the games as part of their courses or related information to this study.
- Table 2 shows a summary of the type of documents that were analyzed for each participant.

Table 2

Types of Data

Participant	Game	Syllabus	Description of Assignments	Course Website	Others (Screenshots, video, students' assignments, articles, etc.)
Adam	Minecraft	Yes	Yes	Yes	Yes
Jake	Minecraft	Yes	Yes	No	Yes
James	Minecraft	Yes	No	Yes	Yes
Minerva	Minecraft	Yes	No	Yes	No
Peter	Minecraft	Yes	No	No	No
Brandy	World of Warcraft	Yes	No	No	No
Brock	World of Warcraft	Yes	No	No	Yes
Renatta	World of Warcraft	Yes	No	No	Yes
Sam	World of Warcraft	Yes	No	No	Yes
William	World of Warcraft	Yes	No	Yes	Yes
Chad	SimCity	Yes	Yes	No	No
Dennis	SimCity	Yes	No	No	No
Donovan	SimCity	Yes	No	No	No
Jane	SimCity	Yes	Yes	No	Yes

Pilot Study

To validate the methodology, I conducted a pilot study consisting of a preliminary interview with one of the participants. I conducted the pilot to uncover issues that would arise in the field but could not be anticipated such as, possible challenges with finding participants, the viability of the structure of each interview, and the ability of the

questions to elicit useful information. The pilot, too, could help me verify the length of the interview process as well as overall quality of the methodology.

For the pilot, I recruited a participant by following the procedure described earlier and conducted the interview using the interview guide just described. The participant from the pilot interview was intended to be considered as part of the study; however, he preferred not to be included.

From the pilot study, I realized that I did not calculate the time required for the interviews properly. I spent too much time asking the participant about his/her background, while the main focus should have been the use of the game. Then, the time planned for each section was adjusted. In addition, I noticed that it was challenging to share screens and walk through the game with the participant. I decided to exclude that part and focus in a more detailed description of the gameplay. My experience playing the games helped me to understand easily what the participant was talking about.

Data Analysis

In a qualitative study, data analysis serves as a framework for conducting inductive reasoning from which theoretical constructs that describe relationships among the phenomena observed can emerge (Strauss & Corbin, 1998). In a case study, data analysis consists of "examining, categorizing, tabulating, testing, or otherwise recombining evidence to draw empirically based conclusions"(Yin, 2009). Given that case study designs are eclectic in nature, researchers are encouraged to contemplate different strategies of data analysis (Creswell, 2007). In a multiple case study, data analysis occurs on two levels: first within the case and then across cases (Stake, 2006).Such an approach adapts the grounded theory approach to analyzing data (Strauss

& Corbin, 1998). The first level of analysis involves describing the case and identifying recurring patterns among participants in it. From these recurring patterns, theories begin to emerge. Patterns first start to emerge after the analysis of the first few participants and suggest emergent theories; researchers continue to collect data for the first case and subsequent cases and constantly compare the additional findings to determine whether they can support the theory not only within a case, but across the cases. This process continues until a strong theoretical understanding of the phenomenon has emerged (Corbin & Strauss, 2008). Araki(2011), Carliner(1995), Guloy(2007) and Macmillan (2009) have used this approach to analyze multiple case studies.

Specifically, the data analysis process consists of three phases:

- Open coding, which refers to initially breaking down, examining, combining, comparing, conceptualizing and categorizing data (Strauss & Corbin, 1998). To facilitate the identification of open codes (the first level of patterns in the data), I wrote up three descriptions of each participant in a case following a parallel structure. Doing so allowed some of the recurring patterns to emerge within cases and later, across cases and I assessed the strength of these patterns as shown in Table 3.

Table 3

Type of Patterns

Game / Type of pattern	Dominant pattern	Strong pattern	Weak pattern	Interesting pattern
Minecraft	5 participants	4 participants	3 participants	2 participants
World of Warcraft	5 participants	4 participants	3 participants	2 participants
SimCity	4 participants	3 participants	2 participants	1 participants
Cross-case	13-15 participants across at least two cases.	11-12 participants across at least two cases.	8-10 participants across at least two cases.	5-7 participants across at least two cases.

- Axial coding, in which researchers put the data back together in different ways by making connections between categories. This is done using different conditions, contexts, action and interactional strategies, and consequences (Strauss & Corbin, 1998). These categories will be generated as a result of the review of the open coding.
- Selective coding, which identifies the core categories---the highest level of categories—and the relationships among them (Strauss & Corbin, 1998). Selective coding and the related relationships are generated from open codes.

Assuring the Credibility and Trustworthiness of the Data

Four types of qualitative rigor were used to ensure the credibility and trustworthiness of the data: member checking, triangulation, external audit, and clarifying the role of the researcher and minimizing research bias..

The first measure to ensure qualitative rigor is member checking. In it:

> The [participant] is requested to examine rough drafts of writing where the actions or words of the [participant] are featured, sometimes when first written up but usually when no further data will be collected from him of her (Stake, 1995, p. 115).

I conducted two member checks with each participant. The first involved asking participants to review transcripts of their interviews. I asked participants to read the transcripts and, if needed, correct them for accuracy. The second member check involved asking each participant to read a draft of the entire case in which they participated. That included the descriptions of their uses of the games as well as the cross-case analysis. I asked participants to read the report and correct them for accuracy or additional insights.

The second measure to ensure qualitative rigor is triangulation, which refers to the use of data from two or more sources, investigators, methodological approaches, theoretical perspectives and analytical methods within the same study (Thurmond, 2001).I employed two types of triangulation in this study. The first involved triangulation of data, relying on several sources of data to construct the descriptions of uses of games in individual classes. These data sources included interviews, courses' syllabi, and descriptions of assignments. Because I had several sources of data about a particular use of games, I compared statements related to the use of the games in an interview with the information provided in the course syllabus, the description of an assignment, and other parts of the interview. The second type of triangulation involved the perspectives of several participants on the use of each game. A phenomenon observed with one participant does not constitute a pattern, but becomes more prominent when observed in several participants in the same case. The more frequently a pattern is observed, the stronger it becomes. The stronger the pattern across cases, the more likely the pattern has some significance to the use of games in Higher Education courses.

The third measure to ensure qualitative rigor is an external audit. In such an audit, a researcher who has not helped to design or conduct the study reviews a draft of the study and, if needed, the original evidence to assess the plausibility of the conclusions given the data that was reported and collected (Creswell, 2008). In this case, an experienced researcher verified the methodology, results and interpretations made. This was intended to ensure that the conclusions are supported by the results.

The fourth type of qualitative rigor is clarifying the role of the researcher and minimizing research bias. In terms of the role of the researcher, the primary role is to

collect data through interviews and documents, analyze that data, and generate hypotheses grounded in the data. Therefore, as a researcher, I must be able to ask questions that elicit extensive information about the research topic from participants and interpret the answers, be a good listener, effectively record what I have heard, and have a firm grasp of the issues being studied. Furthermore, because of the emergent nature of qualitative research in which the initial plan for research was made might require an adjustment given the emerging conditions in the field, the researcher must be adaptive and flexible to new situations (Yin, 2009).

In addition, because bias can influence the collection and analysis of data, researchers must become aware of their biases and cognizant of when the biases might affect the research processes. During this study, I was concerned that, as a result of my entering beliefs on the potential of videogames as learning environments, I would identify practices when using them, and the existence of learning principles that are not necessarily present in the games under study, biased questions or biased interpretations might result. One way to avoid this is conducting a frame interview at the beginning of the study. A frame interview identifies entering biases. By explicitly identifying these biases, I expected to be more aware that they exist and that I should be able to identify how they have affected me. This interview was conducted by Saul Carliner, the supervisor of this project, before the first interview of this study. See Appendix E for the interview guide for the frame interview.

From this interview, I realized that I had preconceptions about the profiles of teachers who use video games for teaching: young, male, teaches in arts, communication or media related studies, and, even though they may not be gamers, they may believe in

their potential as learning tools. I also had preconceived notions that teachers use games because they are trendy for teaching, are interactive in nature, and see games as other types of media. I learned, too, that I have a predefined classification about the use of games that I was expecting to find: using games as case studies, as context for activities, and as examples. Finally, I realized in the frame interview that I do not enjoy playing two of the games that I was studying, SimCity and Civilization, because they are open-environments with a lack of structure. I thought these characteristics might also be an issue for the students.

CHAPTER 4: MINECRAFT

This chapter describes in detail the first case, Minecraft, and the five participants who used this game as part of their courses. So that readers have an understanding of the goal of the game and how people play it, the chapter starts by describing Minecraft Next, it describes how five teachers in Higher Education use the game in their courses. The chapter closes with an analysis, showing the characteristics of using Minecraft that are similar across the different participants.

About Minecraft

Minecraft, developed by Mojang, is an open-world, sandbox-building, and survival game. The main objective of this game is to collect cubes made of different materials, build shelter, start arming yourself as to survive enemies, and build creative structures in a 3D world. Minecraft is available for a wide set of systems such as PC, Android, iOS and for the Xbox 360.

Unlike standard games in which the player has to achieve specific goals such as reaching the end of a stage, in Minecraft there is no story line or objectives that players have to complete. “Completion” of the game depends on the personal goals of the players and the way they play the game. In fact, the game has four modes that determine the way that it is played: creative, survival, adventure and hard-core. In creative mode, the player has to build structures using all types of available resources. In this mode, the players do not have to worry about the creatures that inhabit the world. In survival mode, the player can be injured by creatures that come out at night. It is nonetheless possible to build shelters and to create armour as to mitigate the attacks. In adventure mode, players can interact with objects and with the non-playable characters; however, block objects can

only be broken using the right tools. Finally, the hard-core mode is similar to the survival mode but with an increased level of difficulty.

In addition to all of these features, Minecraft has been praised for its interactive capabilities, its collaborative features, the possibility of modifying or *modding*it, and because of the thriving community of players who have created many tutorials, YouTube videos and wikis about the use and modification of the game.

- Interactivity. In Minecraft, users can also build structures capable to perform actions. For example, players can add switches that can open the doors of their buildings, or enable powered transport rails.
- *Collaborative Capabilities.* In addition, users can gather in the same world and collaborate simultaneously building sophisticated worlds. Individuals can host local servers and invite other players to collaborate in the construction of the world. On the internet, it is possible to find very complex worlds that built through the collaboration of hundreds of players. For example, *Project City Build*isa collaborative server that aims to construct complex and detailed modern cities.
- *Modding Minecraft.* This game can be modified or *modded*adding new elements or plugins developed by the users. For example, in Minecraft, users have developed the *Milllenaire and Better than Wolves plugins*that add special functionalities to the game. Millenaire populates the world with 11th century villages; Better than Wolves adds new armours, tools and blocks that allow the creation of sophisticated objects such as windmills. Minecraft is a game relatively easy to modify and it has an extensive community of users who have created tutorials and all types of information

to help other users to modify the game. There is a huge database of plugins adding new capabilities to the game.

- *The Minecraft Community*. Part of the success of Minecraft is due to the the significant role of social media. Minecraft-related videos have gained high popularity on sites like YouTube. In these videos, players develop tutorials, narratives using elements of the game, walkthroughs, and parodies of popular culture. Indeed, the developers did not integrate any type of tutorials or guides into the game or on the game's web site; however, the community of players managed to construct and share a plethora of knowledge that other members can use.

The alpha-version of Minecraft was released in 2009 and since then it gained an increased popularity among the players. By the time it was released in November 2011, Minecraft had already surpassed 4 million copies sold (Davidson, 2011). This game has also been critically acclaimed, reaching a 93 out of 100 score in Metacritic.com, a website that incorporates reviews of video games and other types of media ("Minecraft," 2011). In addition, this game has won many awards such as the Seumas McNally Grand Prize and the Audience Award in the2011 Independent Games Festival Awards (Orland, 2011). Specialized magazines, such as GameSpot and IGN, often compare Minecraft to a giant "Lego set" where the players can destroy, add, and play with the elements of the game in any way.

Scholarly research about teaching and learning in Minecraft is scarce because this game is relatively new. Some reports show its use for teaching subjects such as English in schools (Hausrath, 2012; Schifter & Cipollone, 2013) or Artificial Intelligence at a

Higher Education level (Bayliss, 2012), though it is not clear how it supports learning and the development of transferable skills.

Regarding to the use of Minecraft for teaching, there exists a wiki anda Google group in which teachers propose different lesson plans and uses of the game mostly for school activities. There is also an educational version of the game being developed by MinecraftEdu, and educational organization that works collaboratively withMojang, to make the game accessible to schools. According to statistics found in the MinecraftEdu website approximately 250,000 students around the world have access to this version of the game. Among other features, this tool allows teachers to write assignments, instructions and to control the game ("MinecraftEdu," n.d.). In addition, this version of the game incorporates enhanced tools such as the ability to freeze students so the game pauses and to teleport students to specific locations("MinecraftEdu," n.d.).

How Participants Integrated Minecraft

The goal of this section is to provide a detailed description of each participant, Adam, Jake, James, Minerva and Peter, and the way they used Minecraft for teaching Digital Storytelling, Writing and Rhetoric for English as a Second Language, Computer Art Applications, Virtual Worlds, and Fundamentals of Video Games Studies respectively. Each description starts introducing the participant and the course that they taught using the game. Then, it details how participants used the game. Finally, it describes the main opportunities, limitations, and ways that the course and the use of the game could be improved.

Adam: Digital Storytelling

> I've been in touch with other teachers using it. Someone just made it as a suggestion or just threw it as a question in an open community - whether Minecraft could be a medium for creating digital stories. I believe, same as some colleagues, video games may do a rich narrative. And part of this whole class, what it teaches is, we really want to explore more technologies, not just use the ones that we are familiar with; so it was really a chance to experiment with it, with this kind of virtual space (Adam).

About Adam

Adam is a 50 year old, part-time teacher at a medium sized (5000+ students), private liberal arts university in the South Atlantic region of the United States. He teaches in the department of Computer Science, which belongs to the College of Arts and Sciences. The courses that he teaches always involve the use of digital and social media for creative expression.

During the scholar year when this interview was conducted, Adam taught "Digital Storytelling", course that he teaches online during the summer session and face-to-face during the fall or spring sessions. He has been teaching this course for one year. In the past, he also taught a course in Computer Animation Arts. Besides teaching, Adam also works as an independent consultant under his own company. His expertise is the application of new technologies to education. Additionally, he has more than 20 years of professional experience creating and designing interactive content in both multimedia and for web-based environments. Adam has spent many of these years also as an instructional technologist.

Adam has bachelor and a master degree in Geology. His research and personal interests relate to web-based storytelling, digital photography, educational technology and blogging. More recently, he has explored new forms of storytelling and tools for connecting people online. In addition, Adam enjoys sharing his ideas and discoveries onhis own website.

Regarding his gaming experience, Adamdoes not consider himself as a "gamer."In the early 80's, he used to play around two or three hours per week. He used to play games, such as Pac-Man, that were popular at that time. Presently, he just plays between one and two hours per week. However, he has experience using virtual worlds such as Second Life. Adam started playing Minecraft in the 2012 because he got intrigued about it. His colleagues and friends, especially those with children, encouraged him to try it.

Adam's Teaching Style and Philosophy

In Adam's courses, students are free to choose their activities, they choose their own assignments, and to learn in their own way. He also likes to encourage students to answer each other's questions, to collaborate, and to peer-review each other's work. These teaching characteristics indicate a strong preference for a student-centered teaching approach.

In addition, Adam believes that as a teacher he can answer some questions, but there are big probabilities that he may not know the answers. Students have to figure things out by their own and to practice what they are learning in the course – all of this with the support of the teacher. This indicates a strong tendency, for Adam, to act as a facilitator:

> I try to give them (students) a lot of attention, yeah. It is through the comments of the site and a lot of social media. Because we encourage them ... 'you can ask me a question whether it is a creative one or a technical one. Chances are that I may know the answer, but likely I don't.' So when they learn how to ask the question they open, other people will answer before I do. Then students learn how to answer to each other. So kind of getting out that 'I create that for you, my teacher, as a single audience.' It is a pretty radical change for them. Iam trying to prepare them and rethink the future or visualize how they are going to be. It is chaotic and it interferes, it is not as neat as 'Blackboard' or 'Microsoft Word.' They have to learn to figure things out and that's what they do in my courses.

Finally, even though Adam has experience integrating educational technologies such as video, websites, blogs and forums in his courses, he does not have previous experience using video games as part of his teaching; however, he finds them interesting for education. He believes that video games are a good tool for creating media, or as in the case of Minecraft, to build things.

About the Course Using Minecraft: Digital Storytelling

Digital Storytelling is a term-based course offered face-to-face during the winter and online during summer. Adam used Minecraft for the very first time during the 2012 summer session. During this session, the course lasted ten weeks and it was taught by two teachers. Digital Storytelling is an undergraduate elective course. Students from all majors and all years can take it in order to fill the general elective for "creativity."

During the summer session, ten students registered to the course. However, it was open as a non-credit course to everyone who wanted to take it. Around 200 external students participated in the course. From the registered students 65% were female and 25% male; all of them were between 18 to 20 years old. Students take this course because it can be taken as a general elective and because students like the flexibility of an online class. In addition, the course has a good reputation. It is one of the most popular elective courses in the college of Arts and Sciences. For the external participants, Adam did not have demographic information.

Adam was not aware of the gaming habits of his students. However, from his personal experience teaching this course and his own observations, Adam concluded that most of his students are "casual" gamers. They are familiar with video games and they may play a couple hours per week. However, during this course, he noticed during the gameplay that the students' experience playing Minecraft was rather limited.

The main goals of this course are to develop a better understanding of the concept of storytelling and to develop an appreciation of the use of technology for creating narrative:

> It (the course) is an entire exploration into students learning how to create and express themselves in all forms of media. They do it on the web, so they learn how to publish and manage their own digital space. The framework of a digital story telling is pretty broad, anything from a remix video to an animated gift. We also have done projects doing a radio show in audio form.

By the end of the course, Adam expected that students should have developed critical thinking to understand technologies as emergent narrative forms. In addition,

students should have also developed enough technical skills to communicate narrative using different technologies.

Adam, with the help of the teacher who teaches the other section of the course, developed the content and the syllabus of the course. During the first week, Adam introduced the basics of the course. Then he moved to the development of stories using different types of media such as images, audio and video. Around the fourth week, once students became familiar with the most important types of media, he introduced Minecraft as a tool for creating media. However, at the end of the course, students focused on their projects using their preferred tools.

As part of the course, Adam created two websites, the course's website and a 'virtual camp.' In the course's website, Adam included the course description, syllabus links to resources, students' blogs and assignments. Each student had to create a blog in order to post their assignments, answers to in-class activities, and participation for the discussions. Feeds from all students' blogs were also included in the main website. In addition, Adam created a 'virtual camp', which was a simulated camp that gave the context for the activities of the course. This camp was taking place in a fictional place and had all elements from a real-world camp such as leaders, equipment and meeting places. According to the lessons, the teachers incorporated a set of activities and challenges that students had to solve. For instance, in one activity, students had to create publicity material for the camp using *Photoshop*.

During this course, Adam graded the students through assignments, participation and activities related to each lesson. For each lesson students had to choose an assignment from a 'bank of assignments.' Students had the freedom to choose whatever

they wanted according to the lesson. In these assignments, students had to develop a project and solve challenges using a variety of tools, techniques, and technologies.

As part of the assignments, students also had to write posts in their blogs. In these posts they were required to write about their success and challenges when completing the assignments. Additionally, students also had to create two new assignments and two tutorials for new or existing assignments. New assignments were tagged and posted in the assignments' database.

For the participation part, students had to post their experiences from different activities and lessons. They also had to comment on their classmates work. In addition, for every class the teacher posted some activities. Students had to do them and post their comments.

Adam used Minecraft as a virtual representation of the simulated camp that was used through the course. It was also used to create some videos that were used to support some lessons and as an optional tool for developing some assignments.

How Adam Used Minecraft in the Course

Adam chose Minecraft because it is engaging, has building capabilities, a peer-teaching culture, and popularity. Adam is aware that video games are engaging and he believes that Minecraft has succeeded in immersing users into the gameplay. In addition, he really likes the game's building capabilities. He thinks that it could be interesting for students to create media, such as movies or to build structures, using this game. Adamalso admires how users teach to each other to use the game. Adam is impressed about how it is not a problem that Minecraft does not include any type of tutorial or guidance. The community of players created all types of content to support other players.

Additionally, Adam is aware of the popularity of Minecraft. Most of his friends at least have one kid that is an expert in Minecraft.He is aware that Minecraft is becoming part of the culture of his students.

After having some discussions with his colleagues and through his personal experience, Adam saw Minecraft as a tool that could be useful for this course. He found it ideal for having a virtual version of the simulated camp that was used during the course:

> In that place (the virtual camp) we wanted them (students) to experiment with learning the basic building skills. We used it (Minecraft) as a part of a metaphor for the class that was a virtual summer camp. So the idea was that, they were to build their mutual groups. For the instances of the group, we call them bunkhouse, like a summer camp has. The idea was to build a place in Minecraft that represented their team names. So we had one group's name was [deleted name], so they had a big rabbit team card in the design of a mountain.

As an alternative, Adam thought about using Second Life. However, from his perspective, this tool is out-dated. Other tools are overhead. He also saw Minecraft as a good tool to create videos to enhance some of the course's activities, and as an optional tool that students could use for their assignments.

Around the fourth week, Adam decided to introduce Minecraft to his students. At this point, he expected that the students should have become familiar with the basic content,the way that the course works, and some tools that could be used for the assignments. The main goal of using Minecraft to simulate the camp was to put students together in a virtual environment and to experiment. Adam expected to have students try things that they have not done before and toexpose them to new environments. He

considered the activity as something experimental that could lead to something innovative. He was expecting that many of the registered students would be motivated to participate in the activity and maybe to use Minecraft as part of their assignments. This activity could put in context the camp simulation making some of the exercises and assignments more engaging.

In order to achieve that, using Minecraft, Adam created a virtual camp that included a 'fireplace' as a meeting point. He also designed a set of tasks that students had to do within the virtual world. For example, at the beginning of the experience students had to build a house. In order to do that, they had to communicate using an external audio tool and via the chat embedded in the game.

Then, he set-up the game and the server, and designed more tasks that students would do in it. He also designed a quick introduction to the experience using the game. He explained the goals of the activity and introduced the tool that the students would use to communicate.

Adam was also aware that many students do not like video games. Therefore, he decided to make this activity optional. Just students interested in these types of activities would participate. Before starting the activity, he clarified that it was optional.

In addition, by using the game, the teachers created a set of videos that supported some parts of the course. In these videos, the teachers showed key moments in the camp. The main objective of this was to recreate specific moments of the camp in a visual way. For example, for the last lesson, they pretended they were part of the virtual world. They made the camp explode and showed that they survived so they were ready for the next course.

Students also had the option to use Minecraft as a development tool for some of their assignments. For example, in one of the assignments students had to create a digital postcard. One student created a fountain in Minecraft. She took a screenshot, and using an image-editing tool, she created the final version of the postcard.

As part of the syllabus, the teachers indicated that students have to buy their own copy of Minecraft. However, Adam was not aware if there were limitations when using this game for educational purposes. He thinks that, at least for this game, there are no limits regarding the user-generated content.

Reflecting on the Experience of Using the Game

According to Adam, the first thing that worked in the experience was the smooth learning curve and the support community of the game.

> To me, what worked was the kind of the logic and the way that things scaffold each other in terms of when you learn the basics, you combine things to make other things. Also the fact that there is a pretty reach outside of the game a whole, Wikipedia, the wiki resources, and the videos out there.

From Adam's perspective, students definitely succeed in learning how to use the game and becoming familiar with it. In addition, the game was easy to use for the teachers. They did not need advanced technical skills in order to design and set up the experience.

Additionally, the social interaction during the gaming experience was very successful. Using the external audio tool and the chat system, participants were able to communicate and collaborate. In addition, external participants played an important role during the experience. Experts supported novices and encourage them to build

sophisticated structures. Minecraft was also a very engaging environment. Some people, especially non-registered students, where doing complex structures outside of the course-lesson. Some participants even brought their kids into the game. The kids were collaborating with them and helping them with complex tasks.

However, the main challenge that Adam faced was the limited amount of time available for the activity. It was not enough for attracting a massive amount of people, which could make the experience more interesting. The heavy workload of the course does not allow students to do much experimentation with the game. In addition, Adam, through his personal observations, has noticed that a 3D space can be very disorienting for people who are not familiar with this type of environment. This is why he was expecting that not everybody would want to participate in the activity. Finally, there were also some technical issues. For example, after using the game for the activity, the server crashed. Therefore, it was not possible to extend the experience. It became available again towards the end of the course, but it was already too late.

Overall, Adam achieved the objectives of the course and the objectives for using the game: experimentation and participation. Students were able to become familiar with a new environment, put the camp experience in a more concrete way, and, for those who were interested, use Minecraft as part of their assignments:

> I think we achieved what we wanted. We had a little bit of experimentation; we exposed a fair number to the environment that has not been before. You know, a lot of people participate, a lot of participants are teachers themselves, and we had some K-12 teachers as well. Some of them already have classes that are doing a lot of Minecraft.Some of them are just learning about it. I

> think we had low expectations, we definitely met them. For us it satisfied the thing about experimenting with technologies. I think most of people like myself, we did not have enough time to focus on getting better at it, and didn't really to get that kind of critically mass of people where you can at any time and probably find something going on.

However, Adam was expecting that more registered students would be connected in the server at the same type. That did not happen. Because there were many guests connected, the experience was not isolated, but ideally more registered students should be participating. Additionally, just one student incorporated Minecraft as part of her assignments. Adam was disappointed about that.

Because this was an optional activity, compared to previous versions of the course, Adam was not sure if there was a change on the performance of the students. He was not sure if students will be able to transfer any of the skills, such as digital production, which Adam considers they developed, to other contexts. Regardless, he believes that students may transfer this experience to another time or context but he was not sure how.

From students' posts in the blog, Adam noticed that students appreciated the experience and that they enjoyed trying something different. At the beginning, they were cautious to use the game; some students did not understand the game at all. However, after a while they became comfortable with it. Students also appreciated the social aspects of the experience; that helped them to have a sense of presence in an online course.

In order to improve the course, Adams feels that he needs to organize the course in a way that there is more time for this activity. Additionally he believes that it may be a good idea to incorporate games as a tool for creating new media as part of the course. Through this experience, Adam learned a new technology for teaching. He was not familiar with the game, now it is on the back of his mind as a teaching possibility. However, because of the lack of interests of registered students in the game, he was not sure if he is going to use it next time that he will teach the course.

Jake: Writing and Rhetoricfor English as a Second Language

> When we use textbooks in class, each exercise inside the textbook has a completely different context. The readings are really varied. I always question whether or not my students are spending all the time trying to understand the context, activating different backgrounds, knowledge, and understanding vocabulary in the meaning of these readings.When we are doing the activities, are they really getting where I need them to get out of it? How much is their working memory being spent understanding the material? How much has been spend working on the material? That is the reason that I choose games. With games they (students) can be agents of change, so they can make things.If they want to build something, they can build it; if they want to do something, they can do it. They cannot change a YouTube video, they cannot change a textbook. In a game they can actually change things.

About Jake

Jake is a passionate English part-time teacher and a very enthusiastic video games player. Presently, he teaches part-time in a large (20,000+ students), public, research-

intensive university in the north-west region of the United States. He is in his early 30's and he holds a bachelor and a master degree in Linguistics. As a full-time faculty member, he is the assistant director in the Language Resource Center at theDepartment of Modern Languages of the same university. His main roles are to support, train and advice faculty members of this department.

Jake has been teaching for ten years. He used to teach in conversation schools for English as a Second Language (ESL) learners for three years. At a Higher Education level, he has been teaching ESL courses for two years. Jake likes to teach because he really enjoys it; however, it is not part of his full-time position. Additionally, he also has experience as an educational games designer.

His experience playing videogames is also quite extensive since he has been playing them from childhood. In the past, he used to spend a big part of his spare time playing video games. He likes playing them so much that he accepts that he used to be "addicted" to games such as World of Warcraft. Presently he does not play as much as before, playing between 6 to 10 hours per week. His experience with Minecraft is quite advanced. He has been playing it since its first release in 2009; however, it was not until two years ago that he started playing it more frequently.

Jake agrees about the potential of video games as learning tools. His gaming experience and his interest in using them for teaching has lead him to incorporate them as part of his courses. Besides that, he likes to incorporate games with non-traditional ways of teaching. From his perspective, his teaching philosophy is highly influenced by "constructivist approaches":

> I will say I am definitely very much a constructivist in terms of the way that I teach my class. I am really trying to make it a student-centered classroom where they are generating ideas and, you know, kind of helping to shape context to the class. My reason is:language is for communicating. If the students have no motivation to communicate, then we are losing sort of very good learning, contextualized learning opportunities.

For his courses, Jake creates the elements and the activities that support learning, but students construct it. He likes to minimize lecturing time. He likes to encourage inter-students action and to use innovative teaching methods and technologies, such as social media technologies, to support his teaching.

Presently Jack teaches two courses, English Writing and Computer Assisted Language Learning, one course per term. The course under analysis for this study is *Freshman Composition: Writing and Rhetoric*, which is an English writing course for English as Second Language students.

About the Course Using Minecraft: Writing and Rhetoricfor English as a Second Language

This is a first year, undergraduate, composition course designed forstudents who speak English as an additional language. This 15-weeks course is required for all new undergraduate students who speak English as a Second Language. It is offered during the fall and winter terms. There are around five sections of the course per term; Jake teaches one of them three times per week, one hour per session. This is the second time that Jake teaches this course.

According to Jake, students register to this section mostly because it fits their schedule. Last time that Jake taught the course, 15 students registered to it. All the students were in their first year and they were 18 or 19 years old. From these students, six were female and nine were male. All the students spoke English as a second language. In addition, based on Jake's personal observations and discussions with the students, at least six students called themselves video gamers. Among these students, just few had experience using Minecraft.

When Jake started teaching this course, his department gave him the content that he should cover during the course. However, he was free to incorporate his preferred teaching style and to design the course syllabus. Until now, Jake has not modified the content of the course; however, he updated the schedule, forms of assessment, and designed the assignments.

The main goal of this course is to instruct students in higher-level writing skills:

> With this particular class, our goal is not actually teaching grammar. We are working on writing style and arguments structures, arguments and their logic, so getting them not using the language mechanically. But what they are doing is, you know, writing, right? You know, writing styles.

After completing the course, students are expected to reflect on the writing process, organize meaningfully their essays, develop critical reading and thinking skills, become familiar with the different rhetorical styles, and understand the research process. The course starts covering the basic of writing and then it focuses on developing a narrative. After, the course focuses on topics related to English structures and the

research of specific phenomena. Then, the course covers advanced topics such as rhetorical writing and arguing a position.

For each lesson, Jake designed specific activities that were complemented with short lectures. These activities were designed in the context of Minecraft, which students were using during the entire course. Students had to experiment and write their assignments using this game.

Jake designed four major assignments, papers that students had to write over the course and several activities and small assignments. For that, students had to play Minecraft during class time and at home. Based on their gameplay and experiences using the game students had to answer the assignments.

For the first paper, students had to introduce, describe, and show their character and their experience to a reader. For the second paper, they had to research a phenomenon that happened during the gameplay. For the third paper,students had to look a problem and propose a solution.In the fourth paper, students had to argue why their solution presented in the third paper was the best solution to the problem that they were looking at. For example, a resulting paper of the first assignments was a document of approximately 900 words. In this paper, the student described the background and history of his character, who was a 7 years old boy from a small village. The student wrote with a deep level of detail the history of his character and some of his experiences in his life – which were some of the events that the student was experiencing during his gameplay.

In addition, Jake incorporated *Blackboard,*a learning management system, as part of the course. He set up a blog, a wiki and a forum. The students used the blog to create journal entries in which they reflected upon their experiences during the class. They used

the wiki for some collaborative assignments and the forum to post questions and comments. Students also had to peer-review and leave comments in the assignments of the other students.

Additionally students also had to write some of their assignments using shared documents (Google Docs). Informally, the teacher was following-up students' progress through the constant reading of students' shared documents. In a daily basis, he was giving feedback and the necessary support for the improvement of students' work. In that way, he was also verifying what was working and what was not. Finally, the department of English has a writing center that offers support to the students. Attendance to this center was also considered as part of the assignments.

How Jake Used Minecraft in the Course

Jake incorporated Minecraft in this course because of four main reasons: It fits with the context of the course, it is a good alternative to textbooks, there is an educational version, MinecraftEdu, and because he feels comfortable with the game.

First, Jake sees video games as a good technology that fits within the scope of this course. Video games can motivate students to create things. That is what Jake was looking for in this course. Minecraft allows students to make and do things that are not possible using textbooks. For example, students can write about moments that occur within the game. In addition, through his experience, Jake has found that some students have difficulties with some readings of the course's textbook. Students tend to find them uninteresting and unrelated to other parts of the textbook. Using Minecraft, all the writing occurs in the context of a shared virtual world. Additionally, even though at the beginning he was not sure if Minecraft was something that he wanted to bring in the

classroom, when he saw the educational version, he was convinced. Finally, Jake has a vast experience playing Minecraft. He feels very comfortable using it in the class.

Based on his experience playing Minecraft and his familiarity with the course's content, Jake found that Minecraft is a good fit for the course. However, he was aware that some students may not like game but he really believed in the potential of the game as an instructional tool. In such, from the very beginning, he explicitly stated the use of the game during the course. If students did not like his teaching approach, they could have the option to drop-out from that section and to choose another one. Jake was not sure about how many students opted out and why they did it.

With the integration of the game in the course, Jake expected to havea context in which the students and the teacher couldinteract and do different activities together. He wanted to encourage students to have a shared discussion and to develop critical thinking. Students could discuss different topics in-class and using the courses' discussion boards, blog and wiki.

Initially, Jake considered other games and virtual environments such as *World of Warcraft*, *Second Life, or The Sims.* However, he found that they have some limitations. For example, The Sims may be good to foster vocabulary; players have to interact with different objects and characters in order to reach some goals. For that, they have to be familiar with the vocabulary of the game. However, that is not enough for developing complex narrative.

After taking the decision of using the game for this course, the first thing he did was to design the learning experience using the game and incorporated the assignments, readings and other resources. For that, he decided to use the game as a virtual

environment with a narrative that he created. While students were playing the game,they were describing their experiences and studyingspecific phenomena, artefacts and other things happening in the game. Most of the gameplay took place in-class and, if necessary for the assignments, at home.

Then, he created the virtual world and the narrative that the class will use for the semester. For that, he integrated the City of Stormwind, the capital city from the game *World of Warcraft*. This world was created collaboratively by the Minecraft community. This city was not created with a functional intention; it was an artistic creation of the author's. This city was built with a higher level of detail; every district inside of the original city was constructed. It provided a good space for the activities of the course. Jake also built a nearby village, which played an important role of the story. The narrative, about a tyrant king that was unfair with his people, was loosely scripted. The main intention of this was to give more control of the story to the students, so they can be more creative when playing and writing.

In addition, Jake also decided to use the game in the *survival multiplayer mode.* This added gaming elements to the experience making it more engaging. Incorporating enemies to the experience also enhanced the narrative. Finally, multiple players at the same time in the virtual world encouraged discussion and interaction.

Then,the teacher put all four papers, readings and other resources into Minecraft and the experience started.

For the in-class activities, Jake incorporated some writing prompts in a shared "Google document." Students used this document as a basis for their assignments, which they also shared using "Google documents." During the class session, Jake was freezing

the game using the MinecraftEdu capabilities, so students had to stop the gameplay and do their writing. After students were done with their writing, Jake was reviewing the shared documents and reviewed the students' progress giving them immediate feedback.

The course had a slow start. Jake started introducing basic grammatical structures and small activities, so students could become familiar with the game and the course. For example, during the first week students had to post a paragraph describing the course. During the second week, students had to create their character, profile it, and write theessay paper in which they had to describe the character and what happens with their character's life. Once students felt more comfortable, the core part of the course started and students had to play the game more thoroughly. During class-time, students were playing the game, doing their assignments, and discussing topics related to the content of the course. Often, before using the game, the teacher was giving small lectures, proposing activities, and discussing situations that were happening in the game.

In order to use Minecraft in the classroom, Jake bought a license of MinecraftEdu. This tool was installed in one of the computers of the laboratory, which was used as a server. In addition, students bought their own licenses in order to play the game. Jake's perception was that, as long as he got an educational license for the server and the students have their own licenses, he did not have to worry about anything else. However, he was not aware of the specific limitations of the educational or standard licenses of the game. In general, copyright issues are not something that he thinks about when incorporating a game as part of his teaching.

Reflecting on the Experience of Using the Game

The major things that worked were the structure building capabilities and openness of the game, the development of critical thinking and writing skills, the virtual shared context that the game presented, and the easy learning curve for the teachers.

In Minecraft, students can do and build anything. They can also create their own goals and choose what they are going to write. In addition, the game provided the necessary elements to examine a specific situation, research a phenomenon in detail, and write about it. All students were able to write about specific events sharing a common context. That really supported the development of writing and critical thinking skills. Students had to analyze what was happening, formulate a critical opinion, and develop their own ideas:

> I was really expecting them to, you know, have the shared context where we can talk about issues and we all understand the context […]. When students are all writing about different topics, one kid is writing about something, one kid is writing about businesses in country X. It was hard to get to share discussion; and so, but in this class there is definitely a shared discussion, and I'm really loving that part of what Minecraft is allow to use, with have done things, we perform these actions and now we have the shared discussion about them, and it is really kind of helping to develop critical thinking with leads to a more critical writing.

Additionally, the game presented a good platform for social experimenting. Students had to interact with the world and their classmates; they had to share discussions and be actively involved in the experience. Finally, the teacher praised the learning curve for the teacher.MinecraftEdu is easier to use than the normal version, it implies less

technical skills. The installation was relatively easy, and added features, such as the ability to freeze the game, enhance the game's use in the classroom.

The main challenges were related to his teaching approach, the achievement of the right balance between fun and learning, students' interest in playing the game, technical issues, and students' feeling of isolation when playing from home.

The first challenge related to the way the course was taught; not necessarily to the game. Students are not used to take the lead of the game or goals in the course; they feel that the teacher is the one that should lead them. The teacher was expecting that students would take control of the experience; however, that did not happen. Jake was expecting that students would take more initiative, at least during the gameplay. Students could start to create their own stories and gameplay and to see Jake as another player, not as an authority inside the game. However, students were not feeling comfortable with that, so Jake had to switch his teaching reducing the level of control on the students designing more instructions for the activities and providing more guidance.

In addition, because the openness of the game, students did not follow the rules according to what the teacher planned. For example, at some point an experienced student started to play in a different way destroying some of the existing structures. Then some of the students in the village became very apathetic. They started stealing, destroying other resources and never building anything again. The village slowly deteriorated until it became decadent. However, the teacher took control of the situation, talked to the students, and suggested this phenomenon for one of the assignments.

> What happened was, one of the students inside of the game, he'd been on my class last semester in he had played Minecraft, so he got pretty good at it. So

he came in this class and he got very powerful very quickly, and he stole some things from my castle, I tried, I set up a trap to try to kill him, he set up trap to kill me, and in short, he went into war, and what was interesting was that, we were around the server one night, I was setting a homework assignment, he was playing, and he sends a message on the server and he says "Jake I don't like being evil but it is good writing." So he understood that this whole world thing that he was going through was kind of making the story more interesting. And we found out it was that, while this was going on, some of the students in the village they became very apathetic, and they started stealing, so they just will destroy a building and keep the resources and never spend them, and they will never build anything, and we saw the village slowly going into this. […] It just deteriorated, and none of the students were doing anything, and so immediately I said, "the researching phenomenon paper is going to research that, why is this apathy sell over the village", so we started looking at player behaviour, and what was interesting was, originally was supposed to take place inside the game, but then this level of classroom behaviour, why are the students creating a community inside of the classroom, why they are not creating a community inside of the game? So that was the question I started to ask, you are going to research this phenomenon, the village is falling apart, people are stealing things in the building, why? And they became..., so basically the whole Minecraft became just hits area for a social experiment and an area for critical thinking about our own behaviours (Jake).

Similarly, students were unhappy to the direction that the narrative was taking. The role of the teacher in the story was a king; however, even though he was being tyrant because that was the role of his character, students were seeing him as a teaching authority. Jake is trying to make students see that they can have control of the game. In order to reach a solution to this problem, Jake had a discussion with his students:

> I said “guys, if I am such a bad king, if you are unhappy with my rule, why don't you get rid of me?” One student said “you are the teacher.” It is funny because they are bringing this classroom into the game. “He (Jake) can do whatever he wants inside the game, and we have to deal with that because he is the teacher”. I am trying to push this idea: “If you do not like what I am doing inside the game, you can make it change.” This is something that I am, sort of, struggling with. Their feedback is:“we do not like the way the game is going, we think it is a bit unfair.”My responses are always been “if you do not like it, change it”.Theydo not because Jake is the instructor and we are doing what Jake want us to do.

Another challenge was to achieve the right balance between fun and learning. Students can get distracted very easily with the gaming part of the experience and ignore the serious part. However, MinecraftEdu has the right tools to control the game. For example, there is a tool that allows the teacher to see how much time each student is playing the game. Using this tool, Jake noticed that that some students were spending too much time playing the game, but not doing their homework. That gave him the opportunity to intervene and talk to the “distracted” students. He emphasized that they should do their assignments and to spend less time playing the game.

In addition, even though many students play video games, at least in a casual manner, and students know that they will be using the game from the start of the course, few students presented lack of interest in the game. In this situation, the teacher and the students negotiate alternatives that can be done without the need of being proactive in the game. For example, in once the teacher suggested to a student to do more work outside of the game. She analyzed the classroom dynamic of the students playing Minecraft and wrote about it.

Additionally, students could not play successfully the game at home. One of the reasons is technical; students can connect to the school server just from the classroom. In order to solve this, it is possible to distribute copies of the MinecrafEdu to students so they can connect to the server from home. According to the MinecraftEdu website

> Under certain circumstances, you are allowed to give students license codes to redeem the original Minecraft game at home. But you must never sell the game to students for money. You are, however, allowed to give or sell copies of the MinecraftEdu Personal Edition to students so that they may connect to a school server from home (http://minecraftedu.com/page/purchase-faq#7).

A last challenge was, the need of having many players at the same time in the virtual environment. When students were working from home, usually they would cross with few of their classmates, and in such were feeling isolated. It is not possible to ask them to connect at the same time because that is out of the requirements of the course. Consequently, most the gameplay happened in-class, so students could experience the multiplayer dynamics of the game.

Overall, Jake felt that the objectives of the course were achieved. Definitely, he felt that the writing of the students went better. Compare to previous versions of the course, using Minecraft made the writing more specific. Students were able to examine something very closely and that helped them to develop a better critical thinking and writing skills.

Jake was satisfied with the experience of using Minecraft as part of his course. Definitely, he will use the game next time that he is teaching this course. However, Jake believes that the course needs a more structured approach, especially to what is going on inside the game. Initially, he gave students the freedom to, inside the game, play as they wanted and to write about what they were experiencing. However, that freedom was not that effective. Jake felt that students need more directives inside the game. Jake is still trying to find out how much control students are willing to accept and based on that he may lead more the experience. Jake's main concern is that students are not ready for his type of teaching.

At the moment of the interview Jake was still teaching this course and it was the first time that he was teaching it using Minecraft. In such, it was not possible to explore whether students had successfully transferred knowledge about writing in the context of Minecraft to other types of writing challenges, such as writing about politics, engineering, and science.

Finally, although Jake's teaching style remained the same as previous experiences, with Minecraft he found it easier to teach and develop skills, such as thinking critically, that before were more challenging. From a reflective teaching

position, he feels that he is doing better job of improving issues of the course that he used to have when using a textbook.

James: Computer Art Applications

> We were talking about Second Life in the class that I teach. I had them (students) doing a project on Second Life, they were just exploring Second Life. Then one of my students negotiated with me that he wanted to use a different program. Then I said 'sure, let's do something different if you not into Second Life.' He said, 'I want to use Minecraft', and I told him 'I never heard about it before.' Then he showed me several YouTube videos of people playing Minecraft and it just blew my mind. How simple, but really complicated it can get at the same time.

About James

James is a part-time teacher and doctoral candidate in the faculty of Visual Arts in a large public university in the Southern United States. James has a bachelor and a master degree in Art Education. He currently teaches and pursues his doctoral degree in the department of Art Education and Art History. His teaching subject areas are Computer Arts and Arts Teacher Training. Presently he teaches Computer Art Applications at an undergraduate level.

Hehas teaching experience at a high school and at a Higher Education level. In high school education, he taught art courses for four years. He has been teaching at a Higher Education level, for two years presenting such courses as"Issues and Applications of Technology in Art", "Computer Art Applications", and "Student Teaching Secondary

School - Art." In addition, his research interests gravitate towards the fields of Technologies in Art and Arts Teachers Training.

James has played video games since he was a kid but does not play that much anymore. He has extensive experience using virtual environments such as Second Life, which he considers to be a game. His experience using Minecraft is rather limited. He started playing this game a year ago after one of his students mentioned it in class. This game was part of the class discussion and the student used in one of his assignments in which the goal was to propose a lesson plan for the k-12 system using any type of technology. Since then, James has been experimenting with this game and appreciates and enjoys its creative aspect.

James usually teaches following an "inquiry based-learning approach":

> The way that I run all the classes I teach is, I'm not necessarily coming with information to tell them, I prefer that they interact with some sort of resource, like Minecraft and then they tell me what they are learning. And then, I learn as a teacher through them telling me what they are learning. I can enhance what they are learning if I know what they are learning. I call it inquiry-based education. (James)

James encourages discussion in the classroom and pays extra attention to what students do. The pace and content of the class varies according to what students want and how they react. He likes to act as a resource, he is very "hands-on" oriented, and he always tries to reduce lecturing as much as he can.

James has been used Minecraft in the Computer Art Applications course for two terms. He does not have other teaching experience using other video games in the

classroom; however, he had used virtual environments such as Second Life. He likes to use video games because they are a big cultural phenomenon, powerful learning tools, and they reflect their students' interests.

About the Course Using Minecraft: Computer Art Applications

This is a15-week course offered twice per week; each session lasts three hours. The course is required as part of the Art Education and Art History undergraduate program and there is only one section. Last time that James taught this course, 18 students registered to it. From these students, thirteen were female and five male. Most of them were in their early 20's, and few of them were older than 30. Most of the students were in their second or third year. Students usually take this course because it is required as part of their program.

Based on the teachers' observations and informal questions he asked to students about their gaming habits, it would appear that most students are interested in gaming and can speak eloquently about games. However, only a few of the students were familiar with Minecraft but. James did not expect them to be familiar with the game.

Quoting the words of James, "the course's objectives are basically to expose pre-service educators to new ways of thinking with technology, and to, I guess, inspire them to use technology in the art classroom." In this course, it was expected that students would increase their technological literacy and learn how to use different technologies in K-12 Art education. After completing the course, students should become familiar with a diverse range of technologies and should be able to incorporate them as part of their future teaching.

In this course, there are five major assignments and a final project. In the assignments, students have to create something using the tools that introduced in each lesson. For example, a major assignment is to create a short film using elements of a virtual environment.

For the final assignment, students have to create an interactive *WebQuest* designed for K-12 art education classroom. In this WebQuest, K-12 students should be introduced to art-making using different types of media and experience interactive technologies. K-12 students should also become familiar with artists that use these types of technologies. Students have to develop a lesson plan to accompany this project. They also have to participate in the course's blog in which they have to write their comments about what wasdiscussed in the class.

The course content was provided by Jame's department. It was based on an existing course; however, it was out-dated. James had to update it and create a new syllabus. He adapted the content to more contemporary technologies. During the course, students analyzed different types of educational technologies. Videogames was one of them.

James startedthe course introducing the main concepts and history of animation. Then, he moved to animated ethnography and digital photography. Around the middle of the course, he covered more advanced topics such as educational frameworks, contemporary artists, virtual environments and visual culture. By the end of the course, James introduced other types of media and technologiessuch as podcasting and interactive media boards.

It was at the middle of the course, after introducing Multi-User Virtual Environments, that James used Minecraft as part of the "Discussion of Video Games and Visual Culture in K-12" lesson. The main goals of this lesson were to introduce the *Video Game Assessment Model*and to introduce artwork of contemporary artists who have used video games for creating art. After completing this lesson, it was expected that students would become familiar with Minecraft and that it would serve as an example of a game that could be incorporated in the classroom. Another goal of this lesson was to expose students to artwork created with video games.

How James Used Minecraft in the Course

James sees himself as an advocate for learning and teaching with games. He has always contemplated games technology as part of his teaching. In a previous course, one of his students asked permission to use this game in an assignment. Once that James inquired more about the game, he approved the suggestion and started to experiment thoroughly. Then, he started to think about the possibility of creating a virtual classroom within this game.

Two elements of the game convinced James to use the game: the sculpting capabilities and the community around the game.

> I guess I really enjoy that you can start from nothing, literally nothing, and make anything. I am just amazed by the different things that I've seen online, that people have created, I mean, exact replicas of the Eiffel Tower, you know, fully functional with the real elevator, you know, stuff that just shocks me that you can do. And I love that you can share with other people, that you can connect your world with other persons' world on Minecraft, and that I feel it embraces our, this

> new generation of students that had grown-up with Internet. I feel like I want to make Minecraft and a lot of technology-based art making, I want to make that equal to thinking and drawing. That is one of my crusades, and I think Minecraft has the capabilities, the sculpture capability that does make it equal to a traditional art form, in my opinion (James).

Before introducing Minecraft, James also considered other alternatives. For example, Second Life, which was the core part of the previous lesson on Multi User Virtual Environments. However, he noticed that students were struggling using Second Life. In addition, through his experience he had found that students have negative pre-conceptions about this environment. Students do not find Second Life as appealing as other options:

> (Referring to the previous lesson) I'll have them experiment on Second Life and do a couple blog assignments about Second Life. Then, once the kind of get the hang of Second Life I have them, I think is the next class period. I have them try out Minecraft. I noticed that, people that don't like it, a lot of my students kind of think Second Life is creepy at times, and you know, they are kind of sceptical of what it is. They have heard some negative things about it. But then, Minecraft, they don't feel that way at all. You know, and they actually dig into it a lot more, and do not have those barriers that they think it is weird (James).

James expected that students would find Minecraft more engaging than other platforms He expected that students should have less difficulties building sculptures, and through experimentation, they will uncover the potential of video games as educational tools.

James incorporated the game in the class as part of in-class ‘lab-time’ that students use to experiment with different technologies. He let the students do whatever they wanted. However, in order to provide some ‘inspiration’ to the students, he showed some videos on YouTube with sculptures created in Minecraft, so students could get to know what it is possible to do using the game.

James usually adapts the lessons of the course in an iterative way. Generally, he decides the content of each lesson in the course based on his observations and discussions with the students. Being aware that his students are interested in Minecraft, his personal experience using the game, and some personal research, he designed the lesson and the incorporation of the game.

James was not expecting that everybody would enjoy the game. However, because the topic of the lesson involved the use of video games for teaching, he encouraged all the students to experiment with the game. Students were free to build whatever they wanted. At the beginning, they were doing very simple structures. Once they became more familiar with the game, they were creating complex buildings. Often, students were replicating what they were seeing in the YouTube videos. During this time, the class was getting loud and students were sharing what they were doing. In the meantime, James was walking around the class providing support when necessary.

James used the free demo of the game in all available computers of the laboratory assigned for the class. Students had to register their own accounts. The main constrains of this version is that it just haves the creative mode and it lasts for 1 hour and 40 minutes. However, James considered this enough for achieving the goals of the lesson. In addition,

even though James was using the free version of the game, he was not aware or concerned about the possible fair use limitations that this version may imply.

Reflecting on the Experience of Using the Game

Overall, James felt that Minecraft provided a hands-off virtual environment in which students could experiment. Students effectively built structures and interacted with the environment.Students became familiar with the game; this was one of the main objectives of the lesson. In addition students were able to create art. They could use this game as a sculpting tool for other courses and for other projects. Finally, the game also helped in starting and supporting the discussion on the lesson topic:students were talking and sharing their experience while the teacher was providing feedback. Despite the fact that many students enjoyed the experience, some of them remained uninterested:

> I guess initially there is a few people that are just not interested in it, so they will go through the motions and do it, but you know, they`ll be honest and say, “you know, this isn't really my style […] it's usually, there is a couple people that don't like. But there are a lot people that think that think it's pretty cool and there is a few people that will quit their job and will do Minecraft all the day along.”

James has not found yet a solution for this challenge but seeing that the game is just used in one lesson, it is not a big problem.

Additionally, some students were sceptical about the use of games for learning. It is hard to convince them that games are important for learning. Through the discussion and readings, some students changed their mind, but others did not. Nonetheless, the goal of the lesson was not to convince them; it was to familiarize them with the technology.

Students are the ones who will decide if they want to incorporate it as part of their future teaching. There were also some technical issues. Some computers did not work and there were not enough computers in the computer laboratory. James resolved the situation by pairing-up students.

James felt that the objectives of the lesson were achieved. Students became familiar with a new instructional tool and were exposed to a new type of artwork using video games. Students' performance was similar than in previous version of the course, however he observed that they were more engaged in the activity. He received positive comments via email. Even some of his students expressed explicitly that they shared their work with their family and friends.

James would definitely use the game again; however, he would like to acquire more experience using it. He would also like to integrate more prompts that guide the use of the game and the discussion.

Minerva: Virtual Worlds

I've done some writing in World of Warcraft and I'm currently playing Starwars: The Old Republic. My experience is that I play with friends in my guild, I regularly play. I don't play every day, obviously I have some constrains in terms of getting work done, but I regularly play. (In World of Warcraft) I have a level 95; I have two characters that are. Wait a minute, 90, that is the limit. I have one maxed out, I think with the expansion it gets until level 90. I have one myself, and I have two characters beyond 85, but I am not sure if I will be able to level them up at this point, because I'm in Starwars right now. Minecraft is recent, so I just started playing with it last term, since I was assigned. But now I have friends

who have their own servers and they just invited me, so I'll probably go and play a little bit more.

About Minerva

Minerva is a full-time post-doctoral fellow at a relatively small liberal arts and science college located in the Eastern United States. Currently she teaches in the Film Studies program. Her main teaching relates to Virtual Worlds and New Media. Presently, she teaches courses such as "TransmediaStorytelling,""Virtual Worlds," and "Transcriptive Uses of Media."

Minerva has been teaching for 15 years at a Higher Education level. She has taught literature, media and technology courses, and related workshops. She also has a vast experience as an academic researcher. She has a Bachelor in English and a Doctorate in Comparative Literature. As part of her research interests, she studies the social, cultural, and economic variables that affect the production of experiences across different types of media.

Even though Minerva's courses have a very practical component, she likes to lecture parts of the lessons. Her main approach is using case studies.First students read articles and watch videos, and after they discuss them in class. She leads discussions and answers questions. She also encourages a lot of students' interaction. She likes to motivate students to collaborate and support each other. She also likes to use different types of social media technologies such as blogs and wikis.

In the past, Minervahas taught different courses at an undergraduate level such as"Introduction to Digital Cultures", "Introduction to Digital Cultures," and "Virtual

Worlds." She uses Minecraft as part of the Virtual Worlds course, which she teaches for first and second year undergraduate students.

In addition, Minerva has a vast experience playing video games; especially Massive Multiplayer Role Playing Games such a World of Warcraft. In this game, she already reached the maximum level that a character can reach. However, she does not play as much as before; presently she plays around 4-5 hours per week.

Her experience using Minecraft is rather limited. She has tried the game, but she has not played it thoroughly. However, she is very interested in this game, and if she has the time, would play it more. She likes Minecraft because it is a very different type of concept; it is something in between games and virtual worlds:

> Minecraft is definitely a very different type of experience. There are different types of virtual worlds, such as gaming worlds. World of Warcraft exemplifies them. It`s been around for so many years that I figure that World of Warcraft will be a familiar example that they [students] can build up of. Second Life is a social world where gaming is not its main components, but it has game-like qualities. Minecraft is in between; it is kind of a PVE (Player Versus Environment) on gameplay, but it also includes the creativity that Second Life has. So, it is kind of a in between game world (Minerva).

Minerva does not have previous experience using Minecraft as part of her courses; however, she has previous experience using other "gaming worlds." She has used World of Warcraft and Lord of the Rings online in previous versions of the Virtual Worlds courses, in which now she is also using Minecraft. However, she does not

consider these games as “video games”; she considers them as Massively multiplayer online role-playing games (MMORPGs) and “game worlds.”

> I did not say I do not consider them as games, I said I do not consider them as video games. It is not just me, it is the whole literature that does not consider them as video games; video games are something else. This is Massively Multiplayer Online Role-Playing games. Maybe not Minecraft, but World of Warcraft is.

About the Course Using Minecraft: Virtual Worlds

Minerva has taught this course two times and she will teaching again during the 2013-2014 academic year. Usually she teaches this course during the winter or the spring terms. The last time that Minerva taught this course, it was offered twice per week, two hours per session during a period of 10 weeks.

This course is optional and there is just one section. The last time that the course was taught, four students registered to it. In the previous year, 10 students registered to the course. Most of the students are on their 1st and 2nd year and they come from the undergraduate programs of Arts, Literature and Economy. Students’ age ranges between 18 and 20 years old and they are predominantly male.

Students take this course because they are interested in the topic. Minerva expects that at least they have a minimum interest or experience in virtual worlds or games. Based on Minerva’s personal observations and discussions with the students, their experience playing video games varies: some students are advanced players and some are more casual players. Similarly, some students are experts in Minecraft, but some have not used the game at all.

The main goal of this course is to study different virtual worlds, including gaming worlds such as World of Warcraft and Minecraft, to develop an understanding of how their designs elicit specific governance models. Minerva expected that throughout the course students will develop a deep understanding of different virtual worlds, including gaming worlds such as World of Warcraft and Minecraft.

Because this course is relatively new, based on her expertise on the domain of Virtual Worlds, Minerva created the content and designed the syllabus. She selected the readings, suggested the schedule and designed the assignments.

The course starts with an introduction of the basics concepts and history of Virtual Worlds. Then, Minerva introduces more complex topics such as Virtual Economies and intellectual property. At that point, she expects that students have reached level 15 in World of Warcraft and that she already started playing Minecraft. Then she introduces more advance topics such as gold farming and Participatory Governances.

As part of the course, there are two major assignments. The first one is a take-home essay that students have to develop. This essay is based on the readings of the first half of the course. The second assignment is a final paper in which students have to demonstrate their understanding of the material covered in the course. As part of this paper, students may incorporate topics that relate to Minecraft and the course.

In addition, there are also technical benchmarks in which students have to reach specific parts of different virtual environments such as World of Warcraft, Second Life and Minecraft. Finally, there are also in-class presentations, and students have to participate in class and in the course's wiki.

Minecraft is used in one lesson, “Creating content and Intellectual Property,” that lasts two sessions. This lesson is taught in the second part of the course, after the submission of the mid-term paper but students should start becoming familiar with the game and open their respective accounts from the beginning of the course. This lesson has a period of lab-time in which students have to play the game and construct collaboratively a house.

The main goal of this lesson is to explore and experiment with virtual worlds in which students can generate their own content. The students, all together compare Minecraft with other virtual worlds and discuss issues related to user-generated content, law, games and virtual worlds. It is expected that students should become familiar with these types of worlds and be able to build their own content.

How Minerva Used Minecraft in the Course

Minerva chose Minecraft for the course because its uniqueness as a virtual world and because its building capabilities. During the course, students have to analyze and use a wide diversity of virtual worlds. When choosing the worlds, Minerva carefully analyzed which ones illuminate aspects of what is going to be discussed in the classroom. For example, for a lesson in Virtual Economies, *World of Warcraft* could be a good fit. Similarly, Minecraft was a good fit for creating content and analyzing intellectual property.

Minerva was familiar with Minecraft and right away saw this game as a good fit for the lesson in which it is used, “Creating content and Intellectual Property.” Minecraft allows users to develop content, 3D structures, and it is common that users share their creations in the web. Minerva found that Minecraft could help students to make the issues

discussed in the lessonmore concrete in their minds. As an alternative, Minerva thought about using Second Life for this lesson; however, she realized Minecraft was a better fit for the lesson and easier to use. Through the incorporation of Minecraft, Minerva was expecting that students could become familiar with the game, able to experiment their capabilities and mechanics, and create content collaboratively. In addition she incorporates a set of readings in order to provide a background for each topic. The virtual environments and games help studentsin making the issues concrete in their minds.

From the start of the course, Minerva wanted to make sure that students were aware that they will be using Minecraft and other games in different points of the course. Therefore, she mentioned Minecraft as part of the list of games and virtual environments that students will be using during the course so they they could start opening their accounts and start playing. During the first half of the course, Minerva introduced the basic concepts required for following advanced lessons such as “Creating content and Intellectual Property,” in which Minecraft was used.

Similar to other lessons, she divided this lesson in two parts, lecture and laboratory time. During lecture time, she planned to introduce related theory. She also prepared a case that students could discuss during class-time. Then, during the laboratory time and at home, students played the game as to experience what was discussed in class. Minerva planned to follow-up on the laboratory experiences during discussion time in the next class. Students could come up with stuff that they experienced and then, they could relate it to the content.

Before the lesson, Minerva designed the lecture and the case used for discussion. It included readings related to the use Minecraft as a creative tool and readings about

"user-created content." For the laboratory time, she designed a collaborative experience; all students had to build a house together. In order to make the experience more engaging, Minerva incorporated the survival mode instead of the creative or hard-core mode. Minerva explains:

> Some people are more geared towards the creative part, some people towards the gaming part. For example, for a hard-core World of Warcraft player, being stuck in the creative mode, I'm pretty sure he won't experience it. He likes the challenge. If I have this other student that is really into the creative mode, if I would stick into this hardcore mode, he won't enjoy it that much. So I was looking for an environment that was challenging and creative at the same time. Something that was not too easy neither too difficult, so they can help each other too.

Because it was not possible to install the game in the computer laboratory, students used the game at home and at the installations of the "gaming club" that belongs to Minerva's institution. Then, they altogether started to build the house. They were communicating face-to-face and using the build-in chat tool. In the meantime, Minerva was walking around helping students and verifying that everything was running smoothly. In addition, students from the gaming club were special guests in the class. Many of them were experts in Minecraft, so they were also coaching students from the class.

Regarding the fair use of the game, Minerva explicitly indicated in the syllabus that students have to buy a license of Minecraft. Even though the software was installed in the "gaming club," students had to use their own account. In addition, Minerva

discussed in class how copyright is used at the level of "virtual governance." She and her students were aware of the code of ethics and rights when using and creating content in Minecraft.

Finally, Minerva did not have issues with students that may not like using virtual environments or video games. Because of the scope of the course, she was expected that students will be at least interested in the topic. In addition, she stated explicitly in the course syllabus that students will be using virtual worlds or video games. If they thought the course would not be a right fit for them, they had the chance to drop-out.

Reflecting on the Experience of Using the Game

By the end of the lesson in which Minecraft was incorporated, students succeeded at creating user-generated content in a collaborative way. They managed to create a sophisticated house all together. The experience also helped them put theory into practice and to analyze legal and copyright issues regarding user-generated content.

One of the main challengeswas that there is not too much official information about the use of Minecraft. The creators did not incorporate any type of tutorial in the game. Most of the information comes from tutorials, blogs and wikis created by the users. In addition, Minerva was not that familiar with the game, so she could not support students with specific issues related to it. In order to leverage this problem, members of the Gaming Club supported other students and Minerva created a site with links to tutorials and other resources. In addition, because of internal restrictions, it was not possible to install the game in the laboratory; so Minerva resorted to use external servers and computers from the gaming club:

> I am really grateful with the gaming club, because we played Minecraft in their house, in their servers, so the students were helping each other out. And that was helping more; they were rotating among the students who needed help, while the gaming club students were also helping us out. So it wasn't just me who was trying to help the students out that could have been a challenge, definitely.
>
> […] (In addition) what I did we had a Moddle site and on that site we had additional links pages, wikis, and one of the wikis is the additional links page, so I put all kind of tutorials there. […] For Minecraft definitely I put a lot of stuff, you know, how to create content and we were, in Minecraft, we were also talking about the use of user-generated content, so within the context of user-generated content, these (inaudible) webpages we discuss a lot about that, because they were player created, to the players.generated by the players to the players. Mojang did nothing, absolutely nothing to facilitate the gameplay in the beginning, when Minecraft was first released. That was really kind of intuitive of how a game is released. So we talked about that.(Minerva).

Overall, Minerva felt that the objectives of the lesson related to Minecraft. Students successfully generated experienced a game in which they can generate content, they were able to compare Minecraft to other types of virtual worlds such as Second Life and World of Warcraft, and were able to discuss issues related to user-generated content, law, and virtual worlds. In the students' evaluation there were positive comments regarding the course and the use of different virtual worlds. Based on that, Minerva concluded that "students liked the games, they were engaged, and they loved the course."

In the future, Minerva will use the game again. However, she will improve the experience by creating the class's own servers, instead of using the ones of the gaming club. In addition, she is planning to add more virtual environments, such a SimCity, to the course.

Peter: Fundamentals of Video Games Studies

> I would not identify as a gamer. I prefer the term player in many contexts because it privileges interplay and exploration, rather than specialized skills. In terms of overall time spent playing games, given my teaching and different projects, I have less time to play with the intensity and frequency that was once possible. But yes, I find time to play a wide range of games, recently Super Mario Bros on the Wii U, BioShock Infinite on the PS3 — to games such as Braid and a variety of independent and art games. I tend more toward independent games now, but I really try a wide range.

About Peter

Peter is a full-time professor in anelite, large private research-intensive universityin the Midwestern United States. He is in his mid-30 and he teaches in the department of English Language and Literature, which belongs to the faculty of Liberal Arts and Science. He earned his doctoral degree in English and has experience teaching various Literature and Media courses. This academic year, he taught two courses. One was about game's theory and design , which was a mixed undergraduate and graduate level course, and the other one about American television as a type of media, which was at an undergraduate level. In the past, he has taught courses related to new media, virtual worlds and video games studies at both, undergraduate and graduate levels.

Peter has also collaborated in camps for kids and has experience as a game designer. His game design projects are very diverse; they range from card games to point and click games to, most recently, alternate reality games. He has also participated in various projects that use game production to promote health learning. In addition, Peter has many years of experience as a researcher. His research focusesin the fields of new media studies and twentieth and twenty-first century American literature. He is interested in examining aesthetics through numerous narrative forms, including different types of media such as novels, films, television shows, video games and virtual worlds.

Peter's teaching style is very diverse. He prefers to use different formats such as discussion, mini-lectures, activities, and group exercises. He always tries to minimize lecturing time. However, he is open to lecture more if it is the best method for introducing some topics, but he believes that lecturing does not adequately engage students in his classes. Usually Peter presents a minimum of information in the class and students read and do some activities in-class time and at home. However, from Peter's perspective, most of learning happensin the discussions and hands-on exercises.

In addition, Peter has large experience playing video games. He even accepts that he used to be an 'intensive player'. He plays a wide diversity of video games, but he does not play as much as before. He has some experience Minecraft, but not extensive. He also believes that video games are an important art object that people should understand as a popular art form:

> I see video games as an important art form. Analyzing a game has many parallels to analyzing a novel in a 19th century English literature courses. Games, of course, have interactive, and hands on, and dynamic and multimedia elements

> that novels do not….The reason because I use them in both undergraduate and graduate classroom has more to do with the artistic and cultural value of the form. For the same reasons English departments have historicallytaught novels and poetry, and Film departments focus on cinema, we can attend to videogames.I'm not advocating forthe rise of video game departments necessarily.But because games are one of the most popular, contemporary art forms, it makes sense to study them.

From a teaching viewpoint, he perceives games as other types of media. He would use games in a similar way that he would use films or novels; however, he believes that games provide a very different experience:

> To write about a game is a very different experience than writing about a film. If you are writing about a film, you are thinking about lighting, editing, cut types, sound effects, and so on. When you are writing about a game, you have to take in account graphics, interface, player activity, gameplay, software attributes, and platform features. In a course like that [course related to game studies], I want to help students develop a medium-specific vocabulary necessary to perform critical work around video games (Peter).

Peter's also has experience using video games as part of his courses, especially during the last few years, when he started to teach courses related to new media studies. For a course related to virtual worlds, he has used games such as *World of Warcraft*and*Cyber Nations,* and virtual worlds such as *Second Life*. In a course related to digital story class students played *Braid*, and number of other games. For a course in

Video Games Studies, he used *Breakout*, *Red Red Redemption*, *Bioshock*, *RockBand*, *Guitar Hero*, *Killer Flu* and *Minecraft*.

About the Course Using Minecraft: Fundamentals of Video Games Studies

This is a 10-weeks graduate course offered twice per week. Each session lasts one hour and a half. This course is not required and there is just one section. Peter taught this course during the winter session of the 2011-2012 academic year. This has been the only time he taught this course.

Twenty-three students registered in the class. From these students, gender distribution was nine women and fourteen men. Most of the students were from the graduate programs in Cinema Studies. However, there were also students from Anthropology, Arts, Science, Economics and Computer Science. Most of students were twenty-one years old or more, but there were also some undergraduate students below this age. Students took this course because they were interested in the topic and because, for some of them, it was part of their program.

Based on Peter's personal observations, the gaming habits of the students registered in this course were very diverse. Some of the students were 'hard-core gamers'; others did not have gaming background, but they were interested in the topic. Some of the students played Minecraft before, but some did not.

The main objective of the course was to analyze the design, formal properties, and social dynamics of video games. After the end of the course, the expectation was that students would develop a critical thinking about the field of video games studies.

In this course, there were no exams or quizzes. Students were evaluated based on five major assignments, a final project, and there was a participation grade:

- Design of a board game. In groups students had to design a playable board game with instructions and clear objectives. The games were played in class.
- Gameplay Experience Reflection. Students had to describe their experience playing a game prior 1990.
- Presentation of an independent game. Students had to analyze in detail and game and to describe its media-specific techniques.
- Video game conference paper abstract. Students had to propose a paper for a conference related to the topic of the course.
- Video game close reading paper. Students had to choose one of the games discussed in the class and perform a deep analysis of it.
- Final project. Students had to develop in groups a creative-project that couldtake numerous forms. Students could do a game-oriented website, a computer game, a text adventure, and interactive experience, or a 'machinima film'. First, theydeveloped a proposal. Once it the participant approved it, they started their projects. They also presented the project and provided feedback to the other teams. In addition, they created an individual reflexion report. Each student reflected on the theoretical concepts that related to the project and to their experience working in a group.

In this course, the department did not provide a description, so Peter had the freedom to create the content and design the syllabus. He developed the content, activities and assignments according to this course description and his expertise. Through the course, he adjusted the content according to the students' interests.

Peter started the course introducing the basics of game theory. Then he introduced game genres and more advanced topics such as games and learning. He concluded the

course discussing play and politics. After students had to do the final project presentations.

Peter decided to use Minecraft in the second part of the last lesson: This is Not a Game (Play and Politics). This lesson took place during the last two sessions of the course. In this part, students analyzed different types of research that can be conducted using games and virtual worlds. After completing this part, Peter was expecting that students would become familiar with how research is conducted in video games and other types of virtual environments.

How Peter Used Minecraft in the Course

Peter choose Minecraft because of its popularity, the amount of press that it has received, because it is easy to use, and because there was not much scholarly writing about it at the time, which enabled students to make original interventions.. He thought it could be a good idea to introduce it to his students, so they can become familiar with it. For the lesson in which Minecraft was used, Peter had to choose a game that was easy to use and easy to learn. He was also looking for a game that can impose the problem of study for the lesson about research in gaming worlds. Peter considered using other alternatives such as World of Warcraft. However, it is not possible in only one lesson to even to cover the basics of this game. Therefore, Minecraft seemed like a good fit.

With the use of Minecraft, Peter was expecting that students will become familiar with a game that has cultural impact. He also wanted students to understand how it is possible to conduct research in virtual environments and to make students think like “designers” and “analysts”.

Peter did not design the lesson and incorporate the game following a formal set of steps. Rather, Peter had in mind the topics that he wanted to explore during the lesson and the prompts that would lead the discussion.

First, he asked students to play Minecraft at home and get ready to talk about it during class-time. He broke the students into groups.Then, students had to brainstorm topics that can be researched using ethnography as if they were writing a paper using Minecraft. Then, he asked them how they could design a study using a world like Minecraft. After, the students discussed the game. During the discussion time, Peter compared ethnography versus an experimental approach using virtual worlds. They discussed main opportunities and challenges of both approaches. Finally, all together, they proposed a“meta-methodology”.

In addition, students had to think how they could produce art experiments using a world like Minecraft. Through this experience, the students were also being made aware of the potential of Minecraft as a development tool, so they could optionally use it for their final projects.

Peter uses many games as part of his courses. Generally he tries to suggest free games to their students; however, often they have to buy the license. In the case of Minecraft, they used the free version. That was enough for achieving the goals of the lesson. If they wanted to use it for more sophisticated projects, students had to buy the license. From Peter’s perspective, buying licenses is the responsibility of the students, not of the professor. Moreover, Peter was not aware about other limitations when using video games for educational purposes.

Given the scope of the course, Peter was not concerned about students who may have not liked the game. The course analyzes a comprehensive list of games, Minecraft is one of them. However, the use of the game was not graded, so if students did not like the experience, they were not affected in their final grade.

Reflecting on the Experience of Using the Game

According to Peter, the game worked successfully in two ways. Firstly, it was a good object to study research methods. Students could have access to a virtual environment, propose methodologies, and observe various phenomena. Secondly, the game provided a great opportunity for having a rich discussion. Students from different fields could discuss their experiences and results,and all together reached important conclusions while building knowledge.In addition, the game was easy to use; Peter appreciated the support crowdsourcing of content developed by the Minecraft community. In his own words:

> Minecraft allowed us to discuss independent approaches to constructing virtual worlds, which opened nicely into the production component of the course […] We also approached Minecraft as a counterexample to the big studio strategies of creating virtual worlds. Another benefit was thinking about the crowdsourcing of content and artistic creation of virtual worlds which figured centrally into Second Life, but not quite as much in games like Starwars: The Old Republic or Everquest or any number of RPGs or MMORPGS.

However, Peter found it hard to coordinate everybody in the same virtual place at the same time. The game has too many little worlds, students can get lost very easily. In addition, different students had different level of expertise using the game. It was hard to

keep students at the same pace. Finally, there was not enough time; one hour and a half is not enough time for being fully immersed in a virtual world. In such, students may have not experienced important parts of the game. Regardless these limitations, students reached the goals of the experience and satisfied Peter's expectations. The game allowed students to develop their artistic creation of virtual worlds and to think critically in an intellectual way about video games.

Because this is the first time that Peter taught the course, he did not have a point of comparison to see if students' performance changed compared to previous courses. In addition, because the experience was not graded and was incorporated in just one lesson, Peter did not have comments as part of students' evaluations or other types of assessment. Based on his observations and in-class discussion, students seemed engaged and motivated. Because the cultural value of the game, students were also excited to talk about it in an intellectual context.

Overall, Peter was satisfied with his teaching performance and the way that the lesson was. He will not do major changes to the lesson. He would use Minecraft again for the next time that he teaches this course. However, he would like to refine or choose different "lenses" to analyze the game.

Findings

This section presents the analysis across the five participants who used Minecraft as part of their courses. It presents the themes and patterns that emerged from the analysis of the interviews, syllabi, course schedules, and description of the assignments. As part of the open coding, the strength of the patterns were identified in four ways: 1) Dominant patterns occur in all people interviewed; 2)Strong patterns occur in four of the five

participants; 3)Weak patterns involve three of the participants interviewed; 4)Interesting patterns are noteworthy issues that arise in two participants.

This section is divided in five parts: about the participants, about the courses, how participants used Minecraft in the courses, and reflecting on the experience of using the game. The first part, about the participants, includes general information related to the demographics of the participants and their teaching, professional and gaming experience, their teaching style, and their beliefs regarding the use of video games, especially Minecraft, for teaching. The second part, about the courses, introduces the courses and their design. The third section, how participants used Minecraft in courses, details how the teachers incorporated and used the game. The last section, reflecting on the experience of using the game, explores the main opportunities and challenges when using Minecraft for teaching. It also discusses how the course and the use of the game could be improved from the perspective of the participant.

About the Participants

The goal of this section is to analyze the characteristics across the participants and their institutions. It is expected to identify a profile of the average participant who used Minecraft. This analysis will include elements such as demographics (age and gender), experience, and teaching style.

From the analysis of participant's demographics, it was possible to identify that participants are inclined to be male (strong pattern), they have at least a master degree (dominant pattern), are full-time faculty in the United States (dominant pattern), and have less than 10 years of teaching experience in Higher Education (dominant pattern). In addition, complementing this profile, a strong pattern indicated that participants tend to

teach courses related to new media or digital arts, which is also part of their main research interests and expertise. Participants belonged to a number of different departments and types of universities; in such, no relevant patterns were identified. Adam was part of the Computer Science department, Jake, Modern Languages, James, Art Education, and Minerva and Peter, Arts and Science.

Regarding their professional experience, no strong patterns emerged. However, it is worth mentioning that three participants, Adam, Jake and Peter, had professional experience outside of an educational setting. This was a weak pattern. Jake and Peter also had experience as game designers. This was only an interesting pattern. In addition, even though most of the participants, except Adam, were experienced long-time gamers, their experience using Minecraft was rather limited. Only Jake had advanced experience playing it.

Regarding their teaching style, four of the participants, Adam, James, Jake, and Peter, prefer to reduce lecture time. Instead, they encourage more discussions, collaboration and focus on the practical component of their courses. That hints a preference for emphasizing a learner-centered approach in which students are responsible of their own learning (Mascolo, 2009). Aligned with this, participants are also perceived as facilitators; they focus on the activities encouraging collaboration and independent learning (Grasha & Yangarber-Hicks, 2000). Unlike the other participants, Minerva prefers to follow a teacher-centered approach, which is based on lectures and where the teacher controls what students learn (Fries, 2012; McCarthy & Anderson, 2000; Svinicki & McKeachie, 2011); however, she also likes to encourage discussion and participation. The role of Minerva can be perceived as a formal authority in which teachers provide the

structure of the course, expectations, rules, provide feedback, encourage students' participation, ask students questions, and also encourage students to apply and practice the theoretical content of the course (Grasha & Yangarber-Hicks, 2000).

In addition, as a dominant pattern, participants liked to integrate different educational technologies, such as video, social media, and video games as part of their courses. For example, Adam and Minerva often used website, blogs, and other social media tools; James used video and digital production tools such as Photoshop and virtual environments; Jake shared documents, and Peter, different virtual environments and video games. As a strong pattern, participants indicated having experience using video games as part of their courses. However, only one participant, James had previous experience using Minecraft as part of his courses.

Two possibilities for explaining why teachers use video games as instructional tools are participants' interest in video games and because of their learning value. Both possibilities emerged as weak patterns. At least Jake, Minerva, and Peter had a strong interest in video games; Jake, James and Peter accept their importance as learning tools.

When asking participants where the idea of using Minecraft for teaching came from, all of them but Adam (strong pattern) concurred that their experience playing the game was a big influence in their decision. Adam, James and Peter (weak pattern), also accepted that another reason was the popularity of the game among their friends, family and students.

In summary, participants who used Minecraft as part of their courses were inclined to be older than 30, male, and have a strong interest in games as a research field. They teach in large universities and have no more than 10 years of teaching experience in

Higher Education. They are experienced gamers, but do not necessarily have advance experience playing Minecraft. They tend to have a student-oriented teaching style and to act as facilitators. Some of the key characteristics of their teaching are the encouragement of collaboration, discussions, and emphasis on the course activities. Participants also use educational technologies as part of their courses and encourage practice and hands-on experience.

They decided to use video games for teaching based on their personal or professional interest in video games and because they believe in their potential as learning tools. They came up with the idea of using Minecraft because of their experience playing it and because of its building and collaborative capabilities. Table 4 summarizes the results of this section.

Table 4

About the Participants (Minecraft)

Category	Patterns
Demographics	
Age	30s (weak), 40+ (interesting)
Gender	Male dominant (strong)
Expertise	New media (weak), Games (interesting)
Faculty	Humanities and Fine Arts (interesting), Computer Science (no pattern), English Language (no pattern), Modern Languages (no pattern).
Degree	PhD (weak), Master (interesting)
Type	Full-time (weak), part-time (interesting)
Research interests	Games as new type of media (strong), games as educational tools (interesting), research in games (strong)
Type of courses	New media (interesting), games-related (interesting)
University's size	Medium or large (strong)
University's type	Public (interesting), private (weak), liberal arts (interesting), research oriented (weak)
Experience	

Professional	Education, teaching, digital media (weak), game design (interesting)
Teaching	One to ten years (strong)
Have taught using video games	Games in general (strong), using Minecraft (interesting)
Playing games	Advanced (strong)
Playing Minecraft	Casual (strong)
Teaching style	
Approach	Student centered (strong)
Type	Facilitator (strong)
Beliefs	Students responsible of learning (strong), collaboration (dominant),
Practices	Students choose topic of assignments (dominant), discussions (dominant), short-lectures (strong), use of innovative technologies (strong), encourage practice and hands-on experiences (strong)
Beliefs about video games	
Why video games for teaching and learning?	Interest in video games (weak), learning value (weak), good case studies (weak), good tools to build new media (weak)
Reasons because they started playing Minecraft	Suggested by other people (weak), they found it engaging (interesting)
Where did the idea come from?	Popularity (strong), experience playing game (strong), fits with the content (weak)
Why Minecraft for teaching?	Building and collaborative capabilities (strong)

About the Courses

Regarding the courses, there was a mix between required and optional courses. Two of them, Writing and Rhetoric for English (Jake) and Computer Art Applications (James) were required. This was an interesting pattern. The other three, Digital Storytelling (Adam), Virtual Worlds (Minerva), and Fundamentals of Video Games Studies (Peter) were optional. This was a weak pattern. In addition, as a strong pattern, four courses were taught face-to-face; Digital Storytelling was online. The face-to-face courses were small ranging between 10 and 22 students.

All participants but Peter had previous experience teaching the courses (strong pattern). However, James was the only participant who had experience using Minecraft as

part of the course. About the content of the course, four participants created the content of the course. This was a strong pattern. The exception was Jake, the content and structure of the course was provided by the department. All participants designed the syllabus and the course according to their teaching styles and expectations (dominant pattern).

The goals across the courses were grouped in four themes:

- Familiarize. As a strong pattern, one of the main goals of the courses was for the students to become aware of different types of technologies and digital media, including games, so they can incorporate them as part of their professional practices. For example, in Adam' and James' courses, students had to become familiar with different tools that could be used to develop digital narrative or instruction.
- Analyze. A weak pattern, another recurrent objective across the courses was to examine in detail specific types of technologies or media. In this category, students actually have to gain an in-depth understanding of the technology under analysis. For instance, in Adam's course, students had to analyze video, audio and different types of social media; and in James', Minerva's, and Peter's courses, students had to analyze in detail different virtual worlds and games.
- Understand. This category includes goals related to comprehending and interpreting theory. Four participants explicitly mentioned this type of goals in the course syllabus (strong pattern). For example, in Minerva's course, students had to "develop a deep understanding of different virtual worlds, including gaming worlds such as World of Warcraft and Minecraft."

- Development of higher order skills. As another weak pattern, this category refers to the ability to judge material for a given purpose. Three courses had goals that related to this category. In Adam's Digital Storytelling course and James' Computer Art Application course, students had to become familiar with a wide range of tools and media. Both participants expected that students would able to assess in which situations different tools are the best fit. In Jake's English Writing course, he expected that students would develop the necessary skills to criticize good essays. Additionally, in Jake's and Adam's courses students had to assess the quality of other students' work and provide feedback. Finally, in Peter's course, he expected that students will see different video games from a different angle and that they will able to develop enough skills to assess their value as cultural artefacts.

Jake used the game for the entire course; the other four participants used it for a specific lesson or only in a specific part of the course. Thus, a strong pattern emerged. A common goal across the four courses that used Minecraft in a lesson was for the students to become familiar with a specific type of video game or virtual world. For example, in James' course, the game was used towards the middle of the course, after introducing Multi-User Virtual Environments. James used Minecraft as part of the "Discussion of Video Games and Visual Culture in K-12" lesson. The main goal of this lesson was to introduce the Video Game Assessment Model and to introduce artwork of contemporary artists who have used video games for creating art. After completing this lesson, it was expected that students would become familiar with Minecraft as an example of a game that could be incorporated in the classroom. In addition, another goal of this lesson was to expose students to artwork created with video games.

In three face-to-face courses, Minerva, James, and Jake, the game was used in the classroom. In the case of Adam and Peter, the game was used just at home. In James' course, students used Minecraft only during class time.

Regarding the students, in four courses they were from undergraduate programs. Thus, a strong pattern emerged. The exception was Peter. In his course, students were mostly graduate students. As a dominant pattern, the students' age ranged between 18 and 24 years old. However, in two courses, there were also students of 25 years and older (interesting pattern). As a weak pattern, students were from programs related to arts and new media; however, an interesting pattern emerged indicating that students from all programs were allowed to register in the course. Additionally, students took the courses because of three reasons: the schedule was convenient (interesting pattern), the course was required (interesting pattern), and interest in the topic of the course (interesting pattern).

Regarding the students' gaming habits, there were no patterns indicating a specific distribution. Students were a mix between advanced players, casual players, and students who did not play games at all. As a dominant pattern, teachers' knew this information because personal observations and conversations with the students.

From this part, it is possible to conclude that the teachers had taught the courses at least once but not necessarily by using Minecraft. The average course is taught face-to-face, and the class is small (no more than 30 students). Additionally, the content and the syllabus are created by the teachers; however, their departments usually provide a brief description of the course. Table 5 shows a summary of the results of this section.

Table 5

About the Courses (Minecraft)

Category	Pattern
About the course	
Type	Face to face (strong), required (weak), optional (interesting)
Times per week	Twice (weak)
Length	Two or three hours (strong)
Class' size	From one two three hours. No patterns.
Sections	Required course (interesting), optional course (weak), other alternatives not using games (strong)
Design of the course	
Experience	No previous experience using Minecraft in the course (strong)
Syllabus	Teachers created syllabus (dominant), departments provided a small description (strong).
Course goals	Familiarize (strong), analyze (weak), understand (strong), development higher order skills (weak).
Integration in course	Game used for specific lessons (strong)
Goals lesson	Become familiar with the game (strong), analyze game (strong), see games in a different way (strong)
Students	
Level	Undergraduate (strong)
Age	Undergraduate: 18-24 (dominant), 25+ (interesting)
Program	Arts related (weak), all majors (interesting)
Reasons took the courses	Required part of their program (interesting), interest in the topic (interesting), schedule (interesting)
Experience playing video games	Advance and intermediate (weak), casual (interesting)

How Participants Integrated Minecraft in the Courses

A dominant pattern indicated that participants considered other alternatives instead of Minecraft. All participants, but Peter, considered Second Life as a potential alternative (strong pattern). However, they decided to use Minecraft instead. The reasons were different for each participant. Adam found that Second Life is out-dated, James that

Second Life is hard to use, Jake that students get lost easily inside of Second Life, and finally Minerva and Jake realized that Minecraft was a better fit to their course. Jake and Peter thought about other games as potential alternatives (interesting pattern). Peter considered World of Warcraft; however, even though he agreed that it could be a good fit, in the course there was not enough time to play it. Jake considered the Sims; however, he found that it has some limitations. He explains:

> The Sims is very successful with vocabulary acquisition, but one thing that researchers found is that, some students from some cultures were really resistant to the Sims because (of) how much they push American culture. The goal is to live the American dream, big house, big car, big money; it is kind of a turn-off for some students, because they don't want to be American, they want to learn English and to get a degree in the United States, but their goal is not to be an American icon, and I really appreciate that.

All participants, but Peter, were aware that some students are not interested in video games. That emerged as a strong pattern. There were no strong patterns describing why they decided to anyway continue using the game. However, an interesting pattern indicated that Minerva and Peter decided to continue because it was related to the scope of the course. In addition, Jake also mentioned that he decided to continue because he really considers it as a good learning tool. James also commented that another reason is the importance of the game. These last reasons did not present any type of pattern.

When asking participants how they deal with students who may not be interested in video games; they explained different types of solutions. A first possible solution proposed by Jake and Minerva (interesting pattern) was to mention the use of the game

from the start of the course. James and Peter (interesting pattern) also proposed not grading the use of the game and to reduce its use to one or two lessons, so it does not take a big part of the course.

About the game's expectations, as a strong pattern, four participants, Adam, James, Minerva and Peter, expected that with Minecraft students could try an innovative game so they can extend their technological knowledge. They expected that Minecraft would inspire students to incorporate innovative games as part of their professional practices. For instance, Adam and James expected to use Minecraft as an example to illustrate how video games can be used to produce new content. James explains:

> (In Minecraft) you are also building something that is significant and it can be very aesthetically beautiful. You can actually create; you can create art in this program. So, you know, using this to teach my students that art is not just painting or sculpture can be a platter of other things that blur together.

In Minerva's and Peter's courses, they expected that students could try Minecraft in order to extend their familiarity with the most influential games in the digital media field. Minerva explains why students should try Minecraft:

> There are different types of Virtual Worlds. There are gaming worlds, which I think World of Warcraft exemplifies; it's been around for so many years that I figure that World of Warcraft will be a familiar example that they can build up of. And then Minecraft.... and then Second Life is a social world where gaming is not its main component, but it has game-like qualities. Minecraft is in between; it is kind of a PVE (Player Versus Environment) on gameplay, but it also includes the creativity that second life has. So it is kind of in between game worlds.

In addition, also as a strong pattern, Adam, Jake, Minerva and Peter, expected to use Minecraft as an environment in which students could do in-class activities that supported learning. James expected that, through the use of the game, students will uncover the potential of video games as tools for building art. In order to achieve this, they taught their courses using different methods and used the games in different ways and as different types of media.

Before using the game, as a common practice across all participants, they introduced the related theory and the game to the students. James, Minerva and Jake (weak pattern) preferred to do short lectures before or while students were playing the game. Minerva and Peter assigned related readings to the students before class. Adam created a post on his website introducing the related theory and the game. Then, participants used the game in three ways:

- As narrative media. James, Minerva and Peter (weak pattern). This type of media refers to the linear presentational media, such as video and books, that does not include any type of interactive components (Laurillard, 2002). In order to illustrate specific topics of their courses, they introduced the game in the classroom and students read related articles before the class. For instance, James used Minecraft to illustrate how video games can be used to create art, Minerva to introduce the basics of collaborative virtual environments, and Peter to exemplify innovative video games.
- As media for production (strong pattern). In all courses, but Jake's, the game was used for creating new media. Students had to build different structures ranging from simple houses to complex buildings. In Adam's and Minerva's courses, students connected at the same time in the same server and built houses together. In Jame's

course, students built individually any type of construction; in Peter's course, students had the option to produce new digital media using the game.

- As a context for activities (weak pattern). Jake, Minerva, and Peter used Minecraft as a virtual place in which the course-related activities could be enacted. Adam and Minerva, designed small activities, such as meeting in a common point in order to introduce the students to the basics of the game. Jake and Peter used it as a context for conducting research in virtual worlds. Peter describes this experience:

> I broke students into small groups and talked a little to them about the way that ethnography is used in fields such as anthropology and sociology. Then, I had them brainstorm in small groups about ethnographic topics that they could undertake if they were writing a paper about Minecraft. Then, I asked them to discuss the ethnographic topics. Finally, I added a speculative dimension by asking, 'what if you receive a research grant and had a lab of 5 to 10 people who could use big data methods to study a virtual world like Minecraft? How would you begin to design such a study to answer some significant question, using both quantitative and qualitative data?' During this part, they did a comparison of the pros and the cons of close reading, qualitative ethnographic approaches, and experimental scientific approaches to studying a virtual world.

While using the game, participants designed the following activities to support the learning experience:

- Building. In Adam's, Jake's, James' and Minerva's courses, students had to build from simple structures, such as houses, to more complex ones, such as buildings. For example, in Minerva's course, all students together built a simple house. In James'

course, students started building simple structures, and after having some experience, complex buildings and artwork.

- Collaborative activities. Adam, Jake, Minerva, and James encouraged cooperation in the activities. This collaboration happened in different ways. In Jake's and Minerva's courses, students were building structures and doing other activities together inside of the world. In James' course, students were playing at the same time, but not in the same virtual world. However, some students worked in groups as well as all together while sharing ideas during the lesson.
- Discussions. In all courses, but Adam's, during or after the gameplay time, the teachers and the students were sharing their experiences and discussing how the game connected to the content of the course.
- Mini-activities. Three teachers, Adam, Jake and James (weak pattern), also designed a set of mini-activities so students could become familiar with the basics of the game and see its main mechanics. For example, in Jake's course students had to design an avatar and explore the main parts of the virtual world.

Regarding the way participants provided support while students were using the game, Adam, James, Minerva and Jake, indicated that peer-support was a key component in the experience. The teachers were present either in the classroom or inside the virtual world assisting students when necessary. In addition, other students and other people were also helping students. For example, in Minerva's course, students used the game in the installations of her university's gaming club. Minerva and other members of the gaming club were walking around assisting students when required. Minerva explains:

> I'm really grateful with the gaming club, because we played Minecraft in their house, in their servers, so the students were helping each other out. That was helping more. They were rotating among the students who needed help, while the gaming club students were also helping us out. So it wasn't just me who was trying to help the students out. That could have been a challenge. Definitely.

In addition, a dominant pattern indicated that students had the option to use Minecraft as part of their assignments. However, this was a requirement for Jake's course. As weak patterns, two types of assignments emerged in this case. The first type emerged in Adam's and James' courses where students used Minecraft as a tool to build digital media. The second type of assignment emerged in Minerva's and Peter's courses, where students used the game as part of a research paper.

Finally, Adam, Jake and Minerva, required the students to buy the official release (weak pattern); two participants, James and Peter, used the free version (interesting pattern). The copyright limitations using this game can be viewed in two categories: using the game as a teaching tool and user generated content. Regarding the first category, just two teachers, Jake and Minerva (interesting pattern), were concerned that there may be limitations when using Minecraft for teaching. However, they were not sure about which ones. A dominant pattern also indicated that participants agreed that, from their perspectives, there are no limitations when using the game for educational purposes. Regarding the publication of new content built using the game, as a strong pattern, four of the teachers, Adam, James, Minerva and Peter, were aware and concerned that there are some limitations. In the context of the class, the work of the students was not distributed outside of the classroom; then, user-generated content was not an issue.

As a summary of this part, a profile emerged indicating that in the courses, students optionally can use the game as part of their assignments. A common use of the game across the participants was as a production tool. Students had to build structures such as houses or buildings. Additionally, the game was used in other two ways: as a different type of media and as a context for activities.

About the fair use and licensing of the game, all teachers were unaware about possible limitations regarding the use of the game in the classroom. They think that there are no restrictions because it is used for educational purposes. However, they were aware of possible limitations regarding the generation and distribution of new content using the game. Seeing that the content was not intended to go out of the context of the course, they were not concerned about the possible limitations. Table 6 shows a summary of this section.

Table 6

How Participants Integrated Minecraft in the Classroom

Category	Patterns
General	
Where did the idea come from?	Experience playing the game (strong), popularity (weak)
Alternatives	Thought about other alternatives (dominant), Second Life (strong), other games (interesting)
Aware of non-gamers in the class	Aware (strong)
Continued because…	Importance of the game as a new type of media
Solutions for students no interested in games	Mention the game at the start of the course (interesting), not grading the use of the game (interesting)
Expectations	Extend student's technological knowledge and familiarity with innovative technologies (interesting), good environment for in-class activities (strong)
Practices	Non-required assignments (dominant), research paper (interesting)

Uses	Build new digital media (weak), as a production tool (strong), as context for activities (weak), as narrative media (weak)
Activities	Building (strong), collaborative activities (strong), mini-activities (weak)
In-class practices	Discussions (dominant), short-lectures (weak)
Support	Teachers provided support (strong)
Licensing and copyright	Students paid licences (weak), use of free version (interesting), aware of limitations for teaching (interesting), aware of user-generated content limitations (strong), licensing is not an issue in class (strong)

Reflecting on the Experience of Using the Game

The main opportunities offered by the games which emerged from the data as strong patterns, are the building and collaborative capabilities of the game. Adam, James, Jake and Minerva explicitly remarked the success of activities related to building sculptures or houses in the experience and how they supported the learning objectives of the content. In Adam's and James's course, through building simple houses, students understood how a video game can be used to create new digital media. In Minerva's course, students analyzed how this virtual environment is different to others such as Second Life or World of Warcraft; and in Jakes' course, this capability made the in-class activities more engaging. In addition, Adam, Jake, James, and Minerva also praised the collaborative capabilities of the game; students were able to build houses in a collaborative way and they were helping each other inside or outside of the game to build complex structures. In addition, an interesting opportunity, altough not representing a pattern was the existence of an educational version of the game. Jake was the only participant who used this version; the other participants were not aware of it. According to Jake, this version had capabilities, such as teletransporting students to a common point,

and, freezing the game when required, to simplify the use of the game from the perspective of the teacher.

From a technical perspective, all participants agreed that one of the main advantages of Minecraft is that it is easy to use. This created a dominant pattern in the data. However, a challenge was that Minecraft did not include any type of tutorial or built-in support. In such, peer support and tutorials created by the Minecraft community were key parts of the success of the experience. However, as a dominant pattern, participants faced technical issues when setting up the game. These issues were different for each participant. For example, Adam and Jake had problems with the game's server. Minerva and James had problems installing the game in the computer laboratory.

All participants agreed that they achieved their expectations concerning the incorporation of the game. For example, as a strong pattern, participants expected that Minecraft could be a good virtual environment to put in context activities of the course. They agreed that this expectation was achieved. Adam felt that using Minecraft definitely helped to make concrete the camp, or context for activities, concept. Jake felt that using Minecraft as context, definitely helped students to start writing. From the beginning of the course, just with the creation of an avatar, they had enough information to write their first assignment. In Minerva's course, Minecraft was useful for making concrete the theories taught in class, especially the one related to user-content development. In Peter's class, students were able to apply theory related to research methods that were covered in class.

However, there were challenges when using the game for instructional purposes. Four participants found it difficult to engage all students in the game use. Then a strong

pattern emerged. For example, Adam observed that just two or three of the registered students in his course participated in the Minecraft experience. Jake pointed out that lack of interest was a big challenge. In order to reduce it, he created activities that were still connected to the game, but that did not required to actually be present in the game. For example, one of his students observed the behaviour of her classmates and she wrote about it.

Even though analysing the effectiveness of Minecraft as an instructional tool is out of the scope of this study; it is important, at least from the participants' point of view, discuss what worked and what did not in the experience. However, this evidence must be treated as the teachers' self-perceptions. Although it can hint to some of the issues which arouse, seeing that there was not access to students' evaluations, it is not possible to reach final conclusions.

As a dominant pattern, all participants felt that students liked using the game as part of the course. All participants, but Adam, agreed that they definitely would use the game again. That was a strong pattern. Adam explains that he used the game mostly as an experimental activity; he may use it again, but he is still thinking about using it:

> I may, I'm still very intrigued about the environment, you know, it is kind of refreshing to see something that is kind of low-tech technology wise but it's kind of compelling in terms of its own narrative in space; 'and the fact that it is open-ended, I really like that, I respect that.

Even though the participants discussed students' evaluation, the researcher did not have access to students' evaluations or communications. The only exception was Jake, which provided personal communications from his students. Comments were positive;

however, Jake also accepted that not all students were happy about the experience. One possibility that he expressed is because not everybody is ready for this type of learning experiences; then, there is the need of more guidance and explicit instructions.

When asking teachers about how they would improve the course and the use of the game, as a dominant pattern, teachers felt that students needed more guidance. They planned to write explicit instructions for the activities and to provide more resources.

As a summary, regarding the opportunities and limitations of the game, its building and collaborative characteristics, and the Minecraft community, were key opportunities. However, technical issues and students' engagement were major challenges. Additionally, teachers agreed that in order to improve the learning experience, they would provide more guidance to the students.

Overall, all participants achieved the expectations regarding the use of the game. Specific expectations that were reached were experimentation and a good context for activities related to the course. In two cases, two expectations were not achieved. Jake thought that the game will encourage in-class discussions. That was not the case. Adam expected that more students will use the game as part of the assignment; only one student used it. He was disappointed about that. Despite that, all participants believe that most of the students liked the experience. As a strong pattern, all participants definitely will use the game again. Table 7 shows a summary of this section.

Table 7

Reflecting on the Experience Using Minecraft

Description	Pattern
Opportunities	
Easy to play	Dominant

Building capabilities	Strong
Collaborative capabilities	Strong
Large Minecraft community	Strong
Challenges	
No built-in support	Strong
Hard to set-up	Dominant
Not all students were engaged in the activities	Strong
Weak built-in communication tools	Interesting
Expectations	
Overall expectations were achieved	Dominant
Experimentation	strong (achieved)
Motivation	interesting (achieved)
Develop higher order skills	interesting (achieved)
Put in context activities of the course	strong (achieved)
Improvement	
More guidance for students	Dominant
Improve in-class activities	Weak

CHAPTER 5: WORLD OF WARCRAFT

This chapter describes in detail the second case, World of Warcraft, and the five participants who used this game as part of their courses. So that readers have an understanding of the goal of the game and how people play it, the chapter starts by describing World of Warcraft. Next, it describes how five teachers in Higher Education use the game in their courses. The chapter closes with an analysis, showing the characteristics of using World of Warcraft that are similar across the different participants.

About World of Warcraft

World of Warcraft, developed by Blizzard Entertainment, is a Massively Multiplayer Online Role-Playing Game (MMORPG). These type of games are played by hundreds or thousands of players at the same time. In this game, players have to assume control of a character who is a part of two virtual worlds calledAzeroth and Draeonor(Branger, Lummis, Sims, Sims, & Vassallo, 2011). These worlds are rich environments full of non-player characters and quests. The main goal of this game is to complete quests in order to collect rewards. These rewards allow players to improve the required skills and armor to complete specific quests. There is no completion in this game; players can do as many quests as they want.

The setting of World of Warcraft is the fictional world of"Azeroth." Within this world, there are two types of "political factions", the Horde and the Alliance. At the start of the game, players have to choose their faction and build a character. Players also have to select a race, such as Orcs, Blood and Elves, gender, and a class such as Druid, Hunter and Mage, for their characters. Each class has certain attributes, strengths and

weaknesses. Through the game, players have to solve different quests which allow the, players to rise in level, earn money receive awards, and have access to difficult challenges. World of Warcraft is available just for PC and Mac.

In order to play, it is necessary to join a "realm" which is an instance of the game world. Realms are hosted in servers and there are four types :

- Normal or Player versus Environment (PvE). Gameplay focuses on a single player fighting other characters and solving quests.
- Player vs Player (PvP). In addition to the characteristics of PvE, in this mode the player can be attacked by other players in the game.
- Roleplaying version of a PvE (RP-PvE). Similar to PvE; however, additional role-playing rules are added. Players have to take on the role of a character and act it inside the game. For example, if a player decides to play as a pirate, she has to use expressions such as "ahoy" or "arr!"
- Roleplaying version of PvP (RP-PvP). Similar to the PvE, players have to follow additional role-playing rules.

Moreover, some of the main features of World of Warcraft are (Branger et al., 2011):

- Player vs. Environment Combat. As a central part of most of the quests, players have to fight creatures in the game. The playerscan do these quests by themselves or in other cases there is the need of collaboratingwith other players.
- Professions.Theseare optional skills that characters can learn after level 5. They increase the level of interactivity and immersion in the game and add some advantages to the player such as the creation of new weapons and armor. Characters

can choose from a variety of professions, such as tailoring, blacksmithing, or mining and learn secondary skills such archeology, cooking, fishing, and first-aid.

- Interaction with other players. Players can also interact and communicate with other players during the gameplay. Players can communicate in two ways, text and audio, using the tools embedded in the game. Players can also join "guilds" or groups to accomplish some goals of the game in a collaborative way. When solving difficult quests, players can also ask for help to other players.
- Dungeons or instances. Special areas in the game where a specific group can interact privately, without interference from other parties. Dungeons are more time consuming, enemies are more difficult, and rewards are higher.
- Virtual Community. The community of World of Warcraft players often create tutorials, wikis, videos and other types of art work such as comic strips (Blizzard Entertainment, 2013b)

The game was released on November 23, 2004 and it has four expansion sets. The first one, Burning Crusade, was released on January 16, 2007. The second expansion set, Wrath of the Lich King, was released on November 13, 2008. The third one, Cataclysm, was released on December 7, 2010. The most recent one, Mists of Pandaria, was released on September 25, 2012 (IGN, 2013). According to Statista(2013), a statistics portal, during its highest point of popularity, in 2010, it reached 12.5 million subscribers. However, in the last few years it has lost a significant number of subscribers. Presently, in 2013, it has approximately 7.5 million of subscribers.

This game has also been critically acclaimed reaching out 93 out of 100 score in Metacritic.com, a website that incorporates reviews of video games and other types of

media ("World of Warcraft," 2004). This game has won many awards such as MMO Game of the Year in different gaming magazines such as GameSpy, IGN and 1UP and as best multiplayer game in the RPGamer magazine (Blizzard Entertainment, 2013a).

World of Warcraft is a game that has been used as an instructional tool at all educational levels. In schools, it has been used for teaching Mathematics, Writing and Literacy, and Digital Citizenship (Gillispie, 2013). There is even an educational initiative, World of Warcraft in Schools, which provides all necessary information for its incorporation in elementary, secondary and high school settings. However, empirical evidence regarding its effectiveness at these educational levels is rather limited. Most of the literature is experiential or descriptive.

At a Higher Education level, research is more abundant. Some ways that World of Warcraft has been used in Higher Education are:

- As a context or virtual world in which students can practice and learn languages such as English or Spanish (Rama et al., 2012; Zheng et al., 2012).
- As an environment to foster collaboration and encourage discussion of theory that relate to the content of the course. For example, in a video games design course, Dickey (2011)usedit is to explore and discuss traditional game mechanics.
- As a context for conducting research in virtual worlds. For example, in a Rhetorical Writing course, Shultz-Colby and Colby (2008) used World of Warcraft to study and write about phenomena that occur within the game.
- As a tool to produce new digital media. For example, Barwell, Moore and Walker (2011) encourage students to create basic cinematic production, or Machinima, using elements of the game.

Results indicate that World of Warcraft is a platform that can successfully encourage communication and a sense of collaboration among the students (Rama et al., 2012; Shultz Colby & Colby, 2008; Zheng et al., 2012). Cooperation and a sense of community is something that, according to Dickey (2011), is transferable from the game to the classroom. In addition, the game has succeeded in encouraging experimentation in the game (Michele D Dickey, 2011), asa good context to encourage the production of narrative (Barwell et al., 2011; Shultz Colby & Colby, 2008), and to engage students in courses' activities (Barwell et al., 2011; Michele D Dickey, 2011).

However, as an instructional tool, it has some limitations. Rama (2012) and Barwell(2011) indicated that students became frustratedbecause the "openness" of the game; it does not have an ending which can be frustrating for students who are not familiar with this type of game. In addition, often students get frustrated because oftheir lack of experience playing the game and becauseof technical issues (Michele D Dickey, 2011).

How Participants Integrated World of Warcraft

The goal of this section is to provide a detailed description of each participant, Brandy, Brock, Renatta, Sam and William, and the way they used World of Warcraft for teaching Introduction to Massively-Multiplayer Online Games, Sensory Perception, Cognition and Human Computer Interfaces for Game Design, Writing and Research, Visual Literacy, and Art and Virtual Environments respectively. Each description starts by introducing the participant and the course that they taught using the game. Then, it details how participants used the game. After, it describes the main opportunities, limitations, and ways to improve the use of the game in the course.

Brandy: Introduction to Massively-MultiplayerOnline Games

I absolutely believe that the digital computer game is one of the most important art forms that we have. Arguably, it has been the most influential art form that we have, at least the first half of the new century. We can do things with games, from an expressive artistic stand point of view, that we cannot do with another kind of media.

About Brandy

Brandy is a 32-years old associate professor at a large, public research university located in the south-central area of the United States. She teaches in the Arts and Technology program, which is jointly run by the schools of Arts and Humanities, in which Brandy belongs to, and Engineering and Computer Science. Brandy has an undergraduate degree from a special program that combined English Literature and Liberal Arts. She has a master in Arts and Technology and a doctorate in in Aesthetic Studies with a special focus in arts and technology.

She teaches primarily at a graduate level, but sometimes she teaches advanced undergraduate courses. Her main area of teaching is Video Games Design and Development. Presently she is teaching two industry simulation courses. In the first one, students have to develop a game as if they were working in a video games studio. The second one is similar; however, as a pre-requisite of the course, students should already have a prototype of a game. Through the course, they have to refine this prototype. In the past, Brandy has taught courses in Science Fiction, Systems Design, Narrative in Games, and other introductory Game Design courses at both, undergraduate and graduate level.

Brandy has experience collaborating in the development of various video games as part of research projects or as a contractor. From an academia standpoint, when the project is part of a grant, she is the principal investigator. When it is a contract, she is the project director. Most of the games that she has worked on have been educational games and in the research space. In terms of research, Brandy is interested in educational games, serious games, and simulations. She is also interested in “art games” and often she writes about narrative, active systems, and digital ethics.

Brandy started playing video games on an "Apple II" when she was four years old. However, she really got interested in video games when her family got an 8-bit Nintendo. Since then, she plays an average of 10 hours per week. She plays more during the weekends and sometimes, when she is interested in a specific game, she may play more. She is also an experienced World of Warcraft player. She started playing it six months after it was released. She has played multiple characters and she has reached the maximum level for many of them.

Brandy is very passionate about teaching and she really likes to make her courses very practical. She is aware that many of her students will join the gaming industry, so she wants to prepare them for it. She wants them to be able to produce good quality and unique games.

> But the way that I like to teach is essentially to say 'if you are going to be in game development, you are going to have fun, but it is also going to be very hard.' And sometimes the 'hard' step and the 'fun' step are the same, but it's not just about going around playing games and having a good time. If you want to do this, it should not be about the money; it should not be about walking in the GDC

> and being able to say 'ohh I work in such as this and such as that.' You have to have a passion for game development because it is not easy. It is not an easy industry; it is not an easy set of skills. We have a lot of students who have that passion, which is really good. When we find them, when we find talent, my goal is to get them to make games that are really unique, really experimental, and really different.

In addition, she sees her courses as a space in which students can experiment, have errors, and fail in designing good games.

> So if you are going to make the weird crazy game that should not work, now is the time to do it. If you are going to make horrible massive interesting mistakes, now is the time to do it. […] You learn so much by making terrible, failed experiments.

Additionally, as teacher, she does not consider that she knows everything about the field and she has not had experience playing all existing games. However, she is the one that has being doing that the longest. Her main goal is to

> To get them (students) to be adaptable and to figure out what it is that they really want to do and to find a way to do that… and hopefully to find a way to find somebody to pay them to do that.

When Brandy is teaching seminars, she occasionally lectures; however, the core part of the courses is the discussions. For the practical courses, she creates the elements of the course, so it can happen; however, she does not teach it. She sees her main role as an executive producer. She provides a lot support and feedback making sure that by the end of the course each student or team succeedsin developing good quality games.

Brandy believes that video games are one of the most influential art forms of the first half of the new century. From an "expressive artistic" viewpoint, they provide opportunities that it is not possible to do with another kind of media. From an educational perspective, she agrees that it is possible to use the best parts of entertaining games for education.For teaching, she often uses them as part of her classroom. Because her students are in Game Design, she likes to encourage them to become familiar with, at least, the most influential games, such as World of Warcraft

About the Course Using World of Warcraft:Introduction to Massively-Multiplayer Online Games

Brandy taught this 11-week, optional course, during the summer 2010 session. It was the first time that the course was offered and there was only one section. Each session was taught once per week and it lasted about four hours. In addition, during the weekends, there were two-hour virtual meetings inside of the game.

About 20 students took this course; from these students, the gender distribution was even. Most of students were doing their master in the Arts and Technology program. However, there were a few from other schools such as the School of Business. There were also few doctoral students and few undergraduate students who were planning to pursue a master's degree. Most of the students were in their mid-20s; the youngest ones were in their early 20's and the oldest ones in their 30's.

Students took this course for various reasons. Some of them because they already knew Brandy, others because they wanted to take a course that was tied to their research. Other students were just curious about this type of games and the field of game studies.

And finally, others because there were not many summer course offerings related to game studies.

From Brandy's personal observations, discussions with students, and a survey that she conducted at the beginning of the course, she concluded that students' gaming habits are very diverse. Most students self-identified as gamers and fewdid not have that much experience playing video games. Other students had experience playing specific genres of games, but were not familiar with MMOs. Within World of Warcraft, a few students were advanced players and one of them was even a "guild leader." However, at the other end, there were students who knew that World of Warcraft was a game and that there were many people playing it, but they had never actually played it.

The main goal of this course was to explore psychology of player behaviour and motivation in massively multiplayer online games, with a special focus on World of Warcraft. It was expected that students would play the game, and, observe and analyze what other players do.

Brandy started the course introducing the history of MMOs and basic concepts such as gaming literacy and the language of World of Warcraft. Then, she moved to advanced topics such as ethics and justice, the changing game space, economics and politics, and effect on players. Brandy closed up the course introducing research biases in the field and discussed similar games such as "Eve Online" and "Lord of the Rings Online." During the last class, Brandy and her students wrapped-up the course all together.

As major assignments, students had to write two publishable papers. They could choose the subject as long as it was related to the content of the course. The main goal of

both papers was for students to be able to write a "graduate-level" quality papers and to learn how to write in the Game Studies field.Brandy also wanted them to understand how fast research in games studies moves.She explains that a book that was published in 1997 may not be accurate anymore. Students should be aware of that. For these papers, students could include World of Warcraft to the topic, but it was not a requirement. Nonetheless, most students made at minimum a reference to World of Warcraft within their paper.. For example, for one paper, a student researched about how Buddhists monks experience World of Warcraft. Additionally, Brandy also graded discussion and participation in the class and in the game.

Brandy used World of Warcraft through the whole course. The class met at the same time on Saturday or Sunday and had different on-line activities related to the lessons that they discussed during the week. For example, in one lesson they talked about role-playing; so the assignment was to have a role-playing experience. They followed up their experiences in class.

How Brandy Used Minecraft in the Course

Brandy chose World of Warcraft because, when she was teaching the course, it was a very dominant game. She explains that after its release, many games tried to imitate it; however, it has remained as one of the most popular MMOs for the last ten years. According to Brandy, World of Warcraft is a game that has been central in the field; all students should be, at least, familiar with it.

The idea of teaching this course started because, whenever a new MMO was out, Brandy and her colleagues were thinking how they could incorporate them as part of the class discussions. Then they thought that it could be a good idea to open a course

exclusively for analyzing this type of games. The first game that came to their mind was World of Warcraft and they saw it right away as a good fit. At the beginning, Brandy also thought about incorporating other games such as “Eve Online” or “Everquest.”She wanted to use a different game each month; however, she quickly realized that there was not enough time for that. Therefore, she decided to focus only in World of Warcraft and to analyze it in a deeper level of detail.

Brandy was also looking for a game that was easy to use. With World of Warcraft she expected that students will not have problems with the gameplay so they could focus on the goals of the course. She also expected that students who are familiar with the game would learn to look at it in a more critical way --especially for those who wanted to develop MMOs or work for MMOs developers. For the students who were not familiar with this type of game, she wanted to get them some exposure and to have them actively understand how they work. Brandy explains that:

> If you are talking about ethics and if you are talking about 'ninja looting', somebody who hasn't played the game will say ‘ohhh that’s not a big deal,’ but first time they get ninja looted, then it becomes a big deal, and then they get it.

The way that Brandy incorporated the theory and the game as part of the course was very intuitive and organic. From the start, she knew the list of topics that will be included in the class. She also knew that she wanted to incorporate as a main source T.L. Taylor's “Play between worlds.” Then, she structured the course around the topics that she wanted to discuss. For the discussion time, each student had to pick one or two topics and lead the discussion. She covered briefly all the topics that were left. She also knew the topics that were not possible to cover. For example, she left out “raids.” The main

reason was because, in order to experience that, students would have to reach a very high level in the game and there was not enough time for that.

In addition, on Sunday or Saturday evenings, she set a time in which everybody in the class will meet in World of Warcraft and play together from home. The main idea was that all students at the same time could experience the same things at the same level. Then, during class-time, students could share their experiences and discuss theory that would be demonstrated the next time they played the game. In addition, Brandy set a level requirement for each week. For example, for the first week, students had to reach level 10, for the second week, level 18. In order to experience advance features of the game, such as "PvP zones," all students had to reach the same advanced level. Brandy was expecting that by the end of the course students would reach level 60.

For each week, Brandy prepared a set of activities that students had to do during the gaming time. For example, in one week, the lesson was about "anonymity." Then, as a main activity, students had to get until level ten and talk to five strangers. Another time they discussed about communities, so students picked up a group and solved some collaborative quests.

In addition, students had to write two research papers related to the content of the course. Even though World of Warcraft was not required for these papers, most of students used it as a context for their research.

At the beginning of the course, students used some of the games' accounts from the university; they were not requiredto buy their own but eventually they opened and paid their own accounts. They preferred to do that, so they could use the game after the

course or as part of their personal research. Brandy was not aware if there were any type of limitations regarding the use of the game for educational purposes.

Brandy was also expecting that students will be, at least, interested in the topic and in the game. Therefore, she did not see as a problem that some students may not like the game. From the start of the course they were aware that they will be using it.

Reflecting on the Experience of Using the Game

Overall, the game worked very well to initiate very interesting discussions regarding MMOs and topics such as social dynamics and ethics and justice in this type of game. In addition, having a very large list of topics related to World of Warcraft motivated students to choose something of their interest and be more engaged in the class. By the end of the term, the papers had very good quality; some of them were even published in conferences. That was a good indicator of both the success of the course as well as of the success of using the game.

However, there were also some challenges. First, finding a secondary time to meet in- game was difficult. Students had things to do, so it was hard to coordinate. In addition, keeping the discussions going was challengingbecause the length of the class. Students were getting tired and often were talking about parts of the game that were off-topic. Finally, the time in the course was limited. It was not possible to cover all the topics that could be included in the course. Brandy did not have a solution for all these challenges; however, she tried to further focus the discussions and she reduced the levelrequirements of the game.

Overall, Brandy felt that students reached the objectives of the course and the objectives regarding the use of the game. She felt that students learned a lot, and that was

reflected in their papers. Because this was the first and only time that the course was taught, there was not a point of reference about the performance of the students comparing to previous versions of the course.

Students' reactions were also very positive. Through this course, students realized things about video games that they had never thought about before.They also researched topics that Brandy was not expecting. For example, she described:

> I had one student who was Buddhist. She found something at one point about Tibet monks that play World of Warcraft, for various reasons they got interested in that. Actually she wrote a very nice paper on religion and games. Not religion in games, you know, the relationship of a religion and the way that people play games such a WoW. And that's a topic that I did not consider at all at the beginning of the class. That was very interesting.

In addition, some students kept playing after the course was done. That was a very pleasant surprise for Brandy. At the end of the course, the class had "post-mortem" discussion of the course. Comments were very positive.

Brandy would like to use the game again next time that she teaches the course. However, she would like to change some things.First, she would split the students in groups; so different groups can reach different levels and have different experiences. In addition, she pointed out that the game is becoming outdated; that presents new limitations. It would be still interesting if students play it and study it as something influential, but keeping in mind that it is outdated. She was not sure if this game would be the core part of the course again, she was thinking about using other options such as "Start Trek Online" or "The Old Republic."

Additionally, she would like to find a better way to balance the use of the game and use of game-based discussion. She would also like to incorporate a peer-support system where two or three students are required to play together and help each other all the way along.

Brandy concludes:

> I haven't thought about this course in an in-depth way, really since I taught it. And again, it is more than three years. And over these past hours I'm really thinking that I'm going to teach it again. I forgot how much I enjoyed it. It was fantastic, we really had great papers came out it, we had people publish their papers out of this course. Yeah, I gotta teach this course again. It will be fun.

Brock: Introduction: video games as learning tools

> Many teachers believe that introducing a game, virtual world, or game development tool will make for effective instruction -- this is not true. These tools, worlds, and games are places where content and processes are stored. The teacher must have a good pedagogical reason for using a game, software, or world. Why? Because these tools have a learning curve. Students have to learn to use them. This means that they are learning about the tools, not the content. I don't suggest a game because I do not want to spend a lot of classroom time having them play through the games. I want them [students] to conduct analysis. Many of these games can take 40+ hours of playing time. This would account for 8 weeks of instructional time to just to play through. This is just not practical when you have academic requirements for content learning.

About Brock

Brock is a post-doctoral fellow in the department of Computer Science and Software Engineering at large, public, research-intensive university located in Eastern Canada. He usually teaches courses related to Cognitive Sciences and Psychology. Currently, he teaches a course in Human Computer Interfaces for Software and Game Design.

At a Higher Education level, Brock has taught at a college level for seven years and at university level for thirteen years. He has also taught in public schools for ten years. He has experience teaching in different fields such as Educational Technology, Humanities, Computer Science and Game Design courses at both, undergraduate and graduate level. Examples of courses that he has taught are Education Psychology and English Composition. Brock also has professional experience as a game designer and as principal learning architect for serious games. As part of this role, he used to, design, assess, manage, and evaluate the performance of various video games.

Brock has a Bachelor in English, a Master in Literacy Education and Educational Psychology, and a Doctorate in Curriculum Studies.As part of his research,Brock is developing psychological models for the design and assessment of video games and simulations.

Brock likes to use problems as a central element of his teaching. He pays extra attention to the way he designs them. From his perspective, it is very important for students to understand a problem and its goals. Then, working together as a group, communicate and create a solution. Communication and cooperation are essential for solving these problems. He considers extremely important to understand the processes

when solving a problem. In addition, Brock also encourages students to do peer-evaluations of each other.He illustrates his teaching style with an example:

> I used to teach Physics to college students. They were to learn physics, they were to learn technical reading and writing, they were to learn engineering and they were to learn how to use Autodesk and Venture, which is a cad tool. Rather than trying to teach them directly these concepts and these practices, I had them make styrofoam boats, and I had them race them. I would create different stations or levels where they can level up to the next process in the boat. The first one might be the use of an engineering notebook, how to sketch in isometric, what are the use of the correct terms that are required for this, how do you integrate those into the picture in the release for your boat design. So that used to be a number of categories that will count as a rubric for leveling up to each station, and then all of those different small levels would be later matched criteria-wise with the larger reasoning and decision making rubric.

Brock started to play games when he was a kid. The first games that he played were pong and other games for the *Atari* console. He also used to spend many hours playing computer-games such as Civilization. He liked the challenge of this game; often he was not playing this game for fun anymore, he wanted to compete and get better at it. Presently, he is still playing video games, especially with his children, but not as much as before. He enjoys playing games such as “Minecraft”, “Starwars Lego” and “Mario Galaxy” with his kids. At the beginning, Brock used to play video games just for fun. However, he started to take games more seriously during the late 90s, when *StarLogo,* a language in which students can create simulations, was trendy. He started using video

games as part of his courses because, he got influenced by James Gee's book "What Video Games Have to Teach Us About Learning and Literacy" (Gee, 2003). However, he did not necessarily agree with some of the main ideas of this book. Even though Brock sees video games as important learning tools, he finds that the content is often inadequate. For example, in Civilization or Assassins Creed, the content of the game does not reflect all the facts for historical events. He sees the potential of video games in the production of "the higher order processes that turn into larger patterns of memory and thought." As an example, Brock points out:

> I can present the same content in any form of media. But I can't implement the same form of process of experiences that is in content. So where we are getting at here is, How you learn is maybe more important than what you learn. […] If I want to teach somebody about literary elements, just as plot, what I may want to do is to show how the plot folds in a game. So what I'm getting at is, my content is not the explicit content that you will find at a surface level or the story level of a game or a book or, you know, a printout or a webpage. What I'm looking at are the higher order processes that turn into larger patterns of memory and thought. […] So when I'm talking about using games, I'm talking about teaching higher concepts that need grounding. Not just saying, 'ok, there is the Second World War modeled here with Call of Duty, or Castle of Wolfestein.

Brock considers games as potential learning tools in the following ways:

- To illustrate an idea. Brock usually asks to his students to talk about their experiences playing games.Students incorporate these experiences during the class discussions. For example, for a topic such as "Sensory Integration," one of his students talked

about the game "Warioware Snapped" and how the body plays an important role in the experience. Brock also uses games to illustrate topics that he is talking about. For example, he has used *SimCity* to illustrate some parts of a city planning seminar.

- As artifacts. In this case, students analyze a game and discuss its implications. For example, one group of Brock's students, all females, analyzed "Mortal Kombat" from a feminist perspective and discussed its implications.
- As a context of instruction. Students are encouraged to try specific games or virtual environments so they can experience what is using them. For example, Brock had asked to his students to use "The Virtual Forbidden City" in order to understand what a model is. His students also created, explored, and wrote about their experiences in virtual worlds such as second life.
- As simulations. Students can use some games to simulate some phenomena and to test hypothesis. For example, it is possible to use games to simulate the speed an acceleration of a car.
- To produce something. The creation of new media or different gaming experiences using video games. For example, Brock has usedSketchUp, PowerPoint, and later Scratch to teach games.
- As a metaphor for instructional design. Brock argues that they give regular feedback to the participants about their progress. He suggests using rubrics, "so teachers can keep track of students who attempted to level-up with their scores, the number of times they tried, and how they progressed. Students can record their comments and feedback in their sketchbook so they can rehearse their explanation – another artifact for assessment" (Dubbels, 2014).

In addition, Brock also emphasizes that one of the key features of using video games in these ways is that all of these situations are directed towards data collection and data analysis. Students collect data observing games, using games, creating games and they analyze it according to the goals of each case.

For his courses, Brock usually does not use specific or required games. Students bring them to talk in the class or they use them as part of their assignments. As long as they justify why they are using the game and link them with the theory, students are free to use whatever game they want in all possible ways.

About the Course Using World of Warcraft:Introduction: video games as learning tools

Brock taught this doctoral-level course from 2005 to 2012. It was optional and there was just one section; the one that Brockused to teach. Brock taught this course between 15 and 20 times during this period. Last time Brock taught this course, the course was limited to 20 students. Most of the students were in their doctoral programs and there were a few undergraduate students who registered in the course with a required permission. Students had an age distribution between 20 and 65 years old, they were predominantly female (60/40 females to males),and were from the education, computer science, and designprograms. They took this course because they were interested in the topic. Students' gaming experience was diverse, from extensive to novices; a few students were experienced players in World of Warcraft. Brock designed the structure of the course, developed the assignments, and created the evaluation schema.

The main goal of the course wasto provide a general introduction to video games as learning tools. Students explored the use of games as new media and how theycould be

used for developing specific competencies such as reading and composition.After completing the course, Brock expected that, among other objectives, students will be aware of popular games, become familiar with uses of games for "delivery of content, communication, production, and cultural artifacts", make connections "between research-based views of comprehension and new media literacy," and to develop a curriculum "based upon elements of game design and research-based assessment practice."

Brockstarted the course with an introduction to games and games for delivery content. Then, he moved to more complex topics such as “games, discourse, values, and culture,” and “new models of comprehension.” The final part of the course included advanced topics related to game studies and related to games and teaching. For this course, Brock encouraged discussions basedon guiding questions. Students were“encouraged to participate through sharing ideas, listening deeply, and building off of the contributions of others.”

In the course, there were three major assignments:

- Blog – Wiki Jigsaw. Students were grouped in fours.Three of the four students had to blog about the classes; the fourth member had to summarize and connect what the other students wrote on the wiki.
- Platform game analysis. Students had to analyze and present a game in groups.
- Class presentation of lesson plan or arranged assignment. Students had to design a lesson plan using what they learned through the course.

Brock incorporated World of Warcraft as an optional tool of a lesson in Massive Multiplayer Online Role Play Games.In this lesson, students had to analyze and experience these types of worlds and conduct research inside of them. The main goal of

the lesson was to experience what it is like to conduct research in a real-life setting versus in a virtual world, and to compare both experiences. Brock expected that students would understand the similarities and differences in both situations. Students also had to analyze the results within the framework of the cognitive and learning theories that students were reading.

How Brock Used World of Warcraft in the Course

For the specific lesson on Massive Multiplayer Online Games, Brock suggested to his students to play with this game or other ones such as "A Tale in Dessert", "Eve" and "Whyville" in order to experiment with these types of worlds and analyze them from an ethnographic perspective. He chose World of Warcraft as an optional game because it is the most popular of this type of game and because it fits within the context of the lesson. Brock was expecting that, with these games, students could explore and compare research in virtual worlds against research in real life:

> It is kind of like a field observation, based upon personal interpretation of cultural symbols and markers. So the students, the students' responsibilities in playing WoW or Eve or Room Quest was to begin to look at some of the culturally motivated activities from the game world and the relationships with the non-player characters and the player characters and the expectations that came about from constructing and using a character avatar. The idea was that they were to document in a field journal, prior to this. In WoW or any of these kinds of MMOs there was actually a curricular experience that started with play. What I asked to begin about were toys, what Vygostky calls them pivots.

Brock divided this activity in two parts. In the first part, Brock indicated to his students to go a park, ask permission to the parents, and observe how children play. They had to pay special attention to pivots such as concepts, tools, and toys in the game environment. They had to take notes following a template that Brock provided. Then, in the second part of the activity, students started to play World of Warcraft, or the virtual environment that they chose, at home. They had to conduct something similar than in the park. Students observed how players were interacting paying attention to the "pivots", such as the tools for creating armor in the game. During this activity, students had to keep a player log and write observations. Then, when students began to read their notes, they started to code them using the learning and cognitive theories that they were studying. Brock illustrates this with one example:

> So for example, as a new person, you go and chase this forest's pigs and you go through these little quests along the way. But if you find yourself having chosen a combat situation, somebody can immediately trick you and kill you or your character. So the idea was to begin looking at how communication, interaction and activity will structure this environment as compared as what they saw children's natural inclination to play in areas like playgrounds, etc. So that's one of the ways that WoW and other MMOs RPG where used.

Because most of the time the games are incorporated as part of the discussions, or as a video from YouTube, or at home, Brock did not have to worry about any copyright issues. Students who decided to use World of Warcraft could use the free version of the game. If they had a license they could use it. If they were not felt comfortable with this game, they could use other options.

Reflecting on the Experience of Using the Game

One of the main challenges about using of World of Warcraft was that there was not enough time to explore advancedthings such as "guilds." In order to reach this level, students should play the game for the whole term. It could be interesting to research advanced mechanics such as that. However, Brock did not find a value in using World of Warcraft in that way:

> I think that will be great if a course like World of Warcraft could go on for a semester and I can justify just having students playing World of Warcraft, but I just don't see the value of that, so I never did it. They were welcome to interview and learn from other people in guilds as well to read about it, but we just did not have the time to level up that far.

It is possible that Brock will use the game again in future courses, but that will also depend on the students. He may suggest it, but students may not bring it into the discussions or assignments.

Overall, Brock liked the way that he set up the course and how students used the games. In most of the cases, including World of Warcraft, students achieved what it was expected. From the evaluations and discussions, it seems that they enjoyed the course and using the games.

Renatta: Writing and Research

> The first time that I've actually used video games for teaching is using World of Warcraft. I had such a good experience using World of Warcraft when I was writing my dissertation… it got me thinking, could this be helpful for students and could playing the game be a part of writing invention for them? And

> then, also a form of research? So I thought, 'Oh, this is really cool' and I could actually have a really hard-hitting class where they're actually learning a lot about research and writing but they're also playing games, and that would be very fun.

About Renatta

Renatta is a professor in a private, medium, research-intensive university in the Western United States and an avid World of Warcraft player. She started playing since it came out, around the time that she was writing her doctoral dissertation. She teaches full-time in the Writing Program of her University. This program does not belong to a specific faculty, it reports to the Provost of Renatta's institution. She usually teaches writing-related courses such as rhetoric and writing, and research and writing. Renatta is in her mid-30s and has been teaching at a Higher Education level for twelve years at her present university for eight years. She also has professional experience as a researcher, as a writer, and as a writing consultant. She holds a bachelor in English, with a concentration in poetry, a master in Rhetoric and Composition and a doctorate in Rhetoric and Writing. Her research interests include the intersection between rhetoric, composition and new media.She is also very interested on the use of video games for teaching.

Renatta's teaching style relies a lot in discussions and in having students do class activities. For example, she likes to do small writing exercise and after, all together, talk about it. She also uses these types of exercises to build up toward larger projects. She tries to reduce lecturing as much as possible. Sometimes she gives mini-lectures of five minutes, but that is it. She strongly believes that students learn better when they are thinking for themselves and when they do hands-on activities.

Renatta has been playing video games since she was a kid. Before she used to play around 30 or 40 hours per week; however, now she just plays few hours per week. She also has a vast experience playing World of Warcraft. Her character already reached the maximum level in the game. Rennata also believes in the potential of video games as learning tools. She agrees with James Paul Gee's perspective and agrees that they help to develop critical thinking skills. She has previous experience teaching World of Warcraft for a Writing and Research course that she is still teaching at an undergraduate level for first year students.

About the Course Using World of Warcraft: Writing and Research

This 11-weeks course is taught twice per week, two hours per session. Even though the course is required, other sections do not require the use of World of Warcraft. There are six sections; four of them use World of Warcraft. Rennata teaches one, another teacher, also co-designer of this course, teaches the other three sections.

This course is required for first-year students of all undergraduate programs in the university.Last time that Renatta taught this course, 15 students registered in the course. Most of the students' age ranged between 18 and 19 years old. From these students between 2 and 4 were women; the rest were men. Based on personal observations and in-class discussions, Renatta noticed that approximately two thirds of the class were gamers. From this group, between a third and half of them have played World of Warcraft.

Renatta's department provided the content and description for this course. However, she had the freedom to adapt the content according to her teaching style and needs.Renatta co-designed the course with another teacher from another section who also uses World of Warcraft. However, she slightly adapted the syllabus for her section.

The main goal of the course is "introducing students to the basic research methods across the curriculum and then basic ways of writing across the curriculum." After completing the course, it is expected that students should become familiar with the most important research traditions and academic discourses. Students should also develop skills in finding, evaluating, synthesizing, and reporting the major findings in the literature.It also expected that students would manage their time and play the game wisely, so they can research and write.

During the first weeks, Renatta introduced the course and the basics of qualitative, quantitative research, and also humanities-based textual research methods. The rest of the course gravitated towards a research project that students had to develop through the entire course using World of Warcraft, which was used in-class and at home. At the same time, there were also discussions regarding the theory that could be used during the analysis of the game.

This research project was divided in three parts: research plan, rhetorical genre analysis, and publishing reflection. For the first part, students had to develop a research plan. Renatta helped the students to refine this plan and then she evaluated it. Once the plan was ready, students could continue with the following parts of the project. For the rhetorical genre analysis, students had to decide the kind of writing plan they would follow for the project. Finally, students had to write a reflection in which they discussed their experience and main results. This reflection had to be published in a World of Warcraft forum. Students had to do an audience analysis and post their work in the right place.

In addition, at the end of the course, students had to submit four pieces of writing to the University's portfolio system. This web-based application is a searchable database of electronic portfolios for the university's community.Two of the submissions had to be papers that were written in this course, another one, a paper from other courses, and the fourth one, an analysis of these papers. Finally, for extra credits, students were encouraged to go to meetings, presentations and discussions from other disciplines.

How Renatta Used Minecraft in the Course

At the beginning, Renatta was thinking about using EverQuest for analyzing some topics such as gender representations. However, it was hard to use, and with time, it became "wonky." WithWorld of Warcraft, she found it more versatile, easier to play and more fun. She did not hesitate about using it.

In addition, Renatta chose this game because of its social gaming characteristics and because it is a virtual environment ideal for conducting research:

> It's a very social space. It's online and it's really a very social game. You can chat with people and talk to people, and there's been such great ethnographic qualitative research on the game that other scholars have done. So when I was thinking, well this is a great way of introducing these research methods because first of all, it's so social and you can do so much with this type of research with the game. So, that's kind of what inspired me. I think that the game is well-designed in that it's pretty easy for new players to play.

In addition, she considers World of Warcraft as a very "rich" game. It is possible to do many things and to play in different ways. Students can bring many things to the

discussions and to their assignments using this game. Additionally, it is a very open environment. According to Renatta, it is possible to do many things in this game.

Renatta was expecting that World of Warcraft would provide a virtual environment in which students can conduct research.She was also expecting that her students would post part of their research on a gaming forum, so they can get feedback from actual players in the game.

The course was co-designed with another teacher of the same course. First they designed the first four weeks and then the rest of the course is studio time where students work on conducting and then writing about their research.Because the content is radically different to other courses, both teachers also researched about games, game culture and World of Warcraft.

At the beginning of the course, Renatta decided to introduce the fundamentals of the course. Then, each week, she introduced a different research tradition and then, how to write for each type of tradition. After few sessions, students started to play the game. Students had the freedom to choose their research questions for the assignments and to connect their level of expertise in the game with the project. For example, advanced students choose to do research related to ‘guilds.’

The game was used as part of the “studio days” and at home. Studio days were incorporated so students could work in class and to work on their projects. During these sessions, students were also getting feedback and support from the teacher and from their classmates.Because there was not enough time to completely finish all the projects in class, students had to continue working and playing at home. Fifty percent of the course was reserved for studio time and it was held in a computer laboratory.

Some students used the free version of the game; however, others, specially advanced players, had to buy the game and pay the subscription. Renatta has done research about restrictions when using this game for teaching,she concluded that there are not restrictions when using this game for teaching. She affirmed that Blizzard, the company that developed the game, is very flexible about the use of the game. However, students have to follow the protocol that the game requires; for example, good behaviour during gameplay.

Renatta also thought about students who do not like the game but did not see this concern as an obstacle. At the beginning of the course, she clearly stated the use of this game. If somebody did not want to use it, there were other sections for the same course that do not use the game.

Reflecting on the Experience of Using the Game

According to Renatta, the game was very effective on setting a research context for the students. They were able to conduct research and to write about it. In addition, the game provided a very rich social space. Students were able to chat with other people. That enhanced the experience. Additionally, students did not have problems playing the game; the learning curve was very smooth. Students could also do their projects according to their expertise. More advanced players were analyzing different type of questions. For example, some people studied "guilds", which requires an advanced level of the game knowledge.

Overall, students achieved successfully the objectives of the course. Compared to other sections, the majority of the class performed better. Discussions were very rich,

students were good at figuring things by their own, and they had more freedom than in a traditional class.

> I think they achieved the objectives of the course. Learning how to research with the different research traditions and write within them. I think they actually learn that really well. In fact, I think they probably learn it better for the most part than my regular classes because they're really engaged with the game. They're all developing their own research projects, which tend to be quite complicated, so they really have to learn the different research traditions more in depth, but then they're more engaged with it for their research projects.

However, a challenge was that few students were getting distracted with the fun part of the game and they were not actually working on their projects. In those cases, Renatta talked to them and pointed out the problem. In addition, Renatta had clear deadlines for their projects; she did not let them go at "their own pace." In previous versions of the course, she gave them absolute freedom, but students were procrastinating and leaving things until last minute. However, that was not a problem anymore.

> I basically said, 'I don't care what your project is, you need to meet these deadlines' so that it gives them enough time to do the research and they're taking it seriously; they know they have to meet the deadlines, and then they also have enough time to revise their writing so it's actually at the quality that I want it to be by the end of the course.

In general, students were engaged with the game and students' evaluations were high. Students loved the creativity of the class and playing the game as a form of research. They also appreciated the freedom for designing their own projects.

In the future, Renatta will definitely use the game for the course. She has had very good experience and she believes that this game is a good fit for the course. However, next time she will try to put more clear deadlines so students can distribute their time better. In addition, she would like to encourage the students to have more interaction with the game's community. This can even be used as part of a project: the students could do "forum analysis"specific World of Warcraft forum. Additionally, she would like to use videos as tutorials; they may be better than existing text-based tutorials.

Sam: Visual Literacy

> When I played a heck of World of Warcraft, I played for six years. I was in a raiding guild, where we raided every Saturday night for four to five hours, and during the week, I played an hour or two. I was gathering materials so I was ready to raid. I knew the game backwards and forwards. So just knowing how games work and enjoying them as a player, I think it is a key component to think. So teachers who want to start moving to that direction, the first thing to do is to find a good game and play it, play the heck about it. The key decisions I made, I think, once I started I stopped asking how do I teach, and I started asking, how do I get the most numbers of students to be desperate to learn this content.

About Sam

Sam is a full-time faculty member in the College of Education in a large, public, research-intensive universityin the Midwestern United States.Sam's subject area of teaching is technology for education and teachers' training. He has been teaching in Higher Education for two years; he has experience teaching at both, undergraduate and

postgraduate level. Currently, he is teaching courses related to Educational Technology and Multimedia.In the past, he has taught Game Design, and Visual Literacy courses.

Sam is also an experienced gamer. He started playing games since he was 10 years old, when "Pong" was out in the early 70's. He likes role-play and strategy games. Some of his favorite games are the Civilization series, Total War and World of Warcraft, which he has been playing for six years. As a side interest, he writes game reviews. He plays around 100 games per year. Presently, he plays between 10 and 15 hours per week.

Prior teaching at the university level, Sam was a middle school teacher for ten years and a high school principal for four years. In addition, he has also professional experience as a consultant for designing courses and workshops. Sam holds a bachelor in Education, Philosophy, and Political Science. He also has a master in Educational Leadership and a doctorate in Curriculum and Instruction. His research interests include learning and video games, curriculum design, and interactive media.

Sam calls himself a "structured constructivist."

> I try to find ways for students to do those things at whatever level of skill they have and then, over 10 and 12 weeks, we do an iterative design process where I respond to what they made, they revise it, and the learning happens through revision and response.

In his courses, during the first lesson, Sam builds a "sandbox" and introduces the main theoretical elements that will be used during a course. Then, students have to use them to build learning. For instance, in his Visual Literacy course, at the beginning, Sam introduced the eight different things that visual literacy can do to education. Then, students had to use these theoretical concepts to build something, such as a lesson

plan.Sam's courses are very practical and iterative. Students create something and he provides detailed feedback. Students revise their work and the cycle starts again.

> I think... this is why I'm saying 'structured constructivist', I like constructivist learning, but there has to be, you know, a treated number of planks around the sandbox. I have to
>
> tell all students, 'We are going to play in this sandbox this semester; this is what the sandbox is constrained by.

However, Sam lectures in exceptional situations, such as when students ask further details for specific topics. For example, in his Game Design course, many students really wanted to know more about the field. Then he gave a couple of traditional lectures and presented examples of gaming media for education. He showed prototypes and gave students some directions of what games to look at.

Sam perceives and has used games for teaching in three ways: as a media format, as a tool for building things, and as class design model.

As a media format, he accepts games as a representation of an idea, concept or contribution. Often he also sends his students to play games "just to be culturally literate."

> If you consider reading, writing, movies, radio, I will say, gaming media is a valid representation of an idea, and in that sense, as a teacher I accept video game play and reflection as valid contributions to my class. So if students want to show me that they know something or made an objective, I welcome machinima and game screenshots as demonstrations of what they know.

Sam also sees games as a way to collaborate and coordinate to build things. This includes using existing video games to produce something or using game development environments to design and develop new video games. Sam illustrates this with an example:

> Steam has the 'steam workshop' as the ability to build mods. Civilization has been great about this for years. I mean, go back to 'Civ III' and you can make mods for that game, which can effectively represent historical periods, geographical and sociological problems, political environments. So you can do a lot of work in games like that. Other games like World of Warcraft are a lot harder to mod, but you go with a game like that if you want people to interact online or you want to do something social or coordinate a project together. What a better place to meet them than a place where you can do something when you are bored. You can actually use 'MMO's' as environments in which classroom can do online interaction and conversation.

Finally, as a design model, Sam integrates gaming elements, such as goal, scores and quests, as part of his courses. For example, for his "Visual Literacy" course he incorporates the basic mechanics of World of Warcraft. He uses elements such as scores, player's levels, and quests.

About the Course Using World of Warcraft: Visual Literacy

This is an optional, online, 14-weeks course for graduate students from the departments of Education, Arts, and Communications. It is taught once per week and each session lasts four hours. There is just one available section and the course has been offered just once.

Thirty students registered to this course. From these students, approximately, 15 were men and 15 female.Students take this course mostly because they are interested in the topic. Sam was not aware of students' video games habits and preferences; however, based on his experience, he expected that most of his students, at least graduate students, like games in general – not necessarily video games. Sam explains:

> My experience is that it takes a pretty tough soul to not 'like games'. Lifetime learners, or at least my graduate students, need to step up in this case - not expect the course to change for them. The verbs that go with gaming (inquiry, collaboration, experimentation, leadership, problem solving, etc. etc.) are exactly what I want in my PhD students.

The main goal of this course is "to improve learner's visual skills." Visuals include elements such as typography, color, shape and design. The course focuses on the effective use of visual literacy skills for effective communication, organization, and teaching. Sam created the content and the syllabus from scratch. Sam used the syllabus as an initial document to guide the course; however, the content was constantly changing because the learning path that students decided to take. Some of the topics included as part of the content of the course are "presentation visuals," "posters and flyiers," "infographics," "videos," "web design," and "portfolio design."

By the end of the course, Sam expected that students would be able to enhance instruction using different types of visual mediums, demonstrate skills and abilities to understand and express themselves using images, build project-planning skills and get basic technical skills of image manipulation and design software.

Sam did not incorporate explicitly World of Warcraft as part of the course; he used the game as an instructional model for this course. He incorporated elements such as levels, quests, and objectives as the core part of the course.

How Sam Used World of Warcraft in the Course

Sam used to play World of Warcraft for six years. He used to be part of a "raiding guild" and he played with other players during the weekends for more than 5 hours. At the same time, repeatedly he was thinking about how to make his way of teaching more appealing to his students. Sam used to gather with a community of teachers that were also interested in video games. So all together they started to wonder about things that they recall when they were students. Often common experiences can be forgotten and exceptional experiences are more easily remembered. Commonly, they agreed that gaming experiences were often exceptional. So together they started to see video games as a possible instructional tool and considered how they could be integrated in the classroom. When Sam was teaching at a secondary level, he started integrating games such as Civilization in the classroom. At the beginning he had some flaws, but he was always improving his teaching style.Then he realized the motivational potential of the elements existing in video games. So he decided to start integrating elements of World of Warcraft in the classroom. He saw it was working, it was just the right fit for his teaching style. So after a while, he decided to use this game as a teaching model for his courses.

Through the use of this teaching model for the Visual Literacy course, Sam expected that students will be more motivated and passionate about the subject area. He expected that students will want to learn as much as they can.

Sam divided the course in two parts. First, there were three face-to-face sessions. Then students had to "play" in what Sam calls "a sandbox", which is Sam's teaching platform based on World of Warcraft. During the face-to-face sessions, Sam explained the course's syllabus, his teaching style and the basics of the course. He introduced the sandbox, its main elements, and how to play on it. He also assigned some readings, so students could become familiar with the context of the course, and then, the "game" started.

The main elements of the sandbox were:

- Google hangouts. Sam divided the class in groups of ten or less people; so it was easier to communicate. During these sessions, they talked about the students' progress, questions and comments. In addition, they used the share screen capability, so students could show their progress while Sam was providing feedback.
- Experience Points (XP) and Levels.When students solved quests or participated in different activities, students were awarded with certain number of points, which Sam calls "experience points".Projects, readings, class meetings and reviewing other students work were also worth a number experience points. These points were used to "level up" and solve assignments that were more complex. Each quest required a minimum level in order to be solved and students' grades depended on the experience points achieved by the end of the course. For example, a student needed 1000 experience points in order to reach "level 9." If this was the student level by the end of the course, it was equal to a B-.
- Quests. Are tasks connected with the content of the course that students have to complete in order to get through the course. At the beginning of the course, students

had three common and mandatory quests. In the first one, students had to create an instructional module. In the second one, students had to create a website for a topic of their choosing. In the third one, students had to submit an analysis of a set of visuals. The rest of the quests were directed to each of the students; gradually, they started to build their own learning paths. As a result, towards the end of the course, there were multiple quests trees.

Besides the quests proposed by Sam, students could also create their own quests. If that was the case, before the student started the quest, both, Sam and the student, had to analyze it together, so both of them could decide if the quest is worth it in time and value. As an example, as a quest, some students proposed to design and play-test a game that engages players with a park space. Sam agreed, discussed its learning value with the students, and then, students started the quest. All quests were open to everybody, so if other students wanted to, they could do quests directed to other students,as long as the quests were connected to the students learning path.

- Side Quests. These are optional quests that allow students to take up for further practice or to get extra points. For example, a side quest was to visit a bad-designed website and propose a new and improved version. In that way, students were able to transfer their skills to real world situations. Some of the challenges of this quest were to make a prettier logo and to sell the website.
- Challenges. They are a variation of side quests. However, they present an extra level of difficulty that motivates students to learn more rewarding them with extra experience points. For example, often students were challenged to complete a quest with a different tool, or with a unique twist.

- Easter Eggs. Eastern eggs are “surprises” that are incorporated as part of some quests as a way to reward behaviour. They also enhance students’ appreciation of the fact that the teacher has thought of and rewarded their learning style and expertise. For example, in a quest, after completing it, Sam posted message that said

  > Congratulations, I have been contacted by the local park service thanking me for your game! They did not have to do that, so they must be extremely happy with your public service to them! Nor do I have to give an additional 20XP for this, but I think I will.+20XP.- Great job, this is making a difference!

- Farming Opportunities. Extra work that students have to do repeatedly to complete different quests. For example, student had to read reviews, image editing, use graphic organizers, or written reports. Farming was worth a small number of experience points and it was a required part of the quests. For instance, students had to build a park game for every local park in a city.
- Raids. This refers to quests that require group-work. In these cases, part of the experience points of the course is related to the participation of each member of the team in the project. For example, a master colleague or mentor gets 100 points, a leader 75, a solid group member 50, a weak group member 25 or less. For example, in a quest, students had to make a game for a park, but teaming with a classmate and with media students that can make professional videos and audio captures.They had to build a plan together, work as a 'raid' team and build a game.
- Boss fights. Key stones in the course. These are a test about the principles of visual literature and the presentation of students' portfolio and projects.

- Tools and Games. List of editing tools and video games that students could use to solve the quests. Students could also propose to use other tools when appropriate. At the start of the course, Sam indicated that students should expect to spend $85 dollars for buying tools and games. However, that was their responsibility.
- Resources. List of videos, documents, workshops, and tutorials that students should use to become familiar with the tools.
- XP Rubric. Template that students had to follow in order to keep track of their progress. In this rubric, students have to write down their quests and other elements of the course and their experience points. It also had a conversion table between experience points, levels, and grades.

When designing the course, Sam thought about students that they may not like his teaching style. So from the beginning he was clear about it and presented his expectations. If students did not agree, they had the option to drop out the course and take something else. However, if they decided to stay, they were accepting to "play the game."

Reflecting on the Experience of Using the Game

Students had the freedom to choose their projects and to use the tools that they wanted, as long as their ideas were related to the course. Then they had the opportunity to try and share different strategies for approaching learning. According to Sam, that was the most effective of the course. In addition, Sam appreciated the engagement and motivation that the students had in his class. According to students' comments, reactions, and evaluations, they really enjoyed the course. A student even wrote an unsolicited letter expressing his satisfaction with the course.

However, Sam also faced some challenges, especially with students that are not familiar with video games or any types of game. He explained that some students were not aware that learning by playing implies “experimentation, exploration, and trial and error.” Some students got frustrated and overwhelmed. Even though from the start of course Sam tries to be very explicit about his teaching style and the main mechanics of the class, this challenge still presents itself sometimes.

Overall Sam found that students reached the objectives of the course. They managed to understand how to incorporate visual literacy for learning and teaching. He would not do radical changes to the course. However, there is always room for improvement. If it applies and if it is the best method, he may come back to traditional tools such as lecturing in some parts of the course. In addition, he would like to be clearer when setting up what he is expecting from the class. He would also like to create more handouts or manuals about what is the appropriate use of specific games or tools. Finally, he would like to spend more time giving individualized feedback.

William: Art and Virtual Environments

> I'm not much of a gamer; however, I'm very interested the community around gamers and gaming as an actual medium in society, which is why I actually spend a lot more time doing research and study about games, gaming communities, going to conferences, being involved with other artists that are doing this kind of work. So that's really where my interest comes from, this is much more than an actual "I like playing games, therefore I'm going to learn about games. My interest in games actually is more from a broader sense of gaming, like board games, hard games, those kind of games. There is nothing

unique about videogames to me that drives me in, in fact most video games I find a bit boring and not worth to try and pay what they charge. So I am more interested in the theory behind game games that I'm interested in the actual games themselves.

About William

William is a full-time faculty member in the Department of Digital Arts in a medium sized, public teaching universityin the Midwestern United States. He is in his mid-30s and teaches courses related to Digital Arts such as a graduate seminar in New Media. William has been teaching at a university level for two years; however, he has experience teaching art-related courses at a college level and in high school. Additionally, he also has professional experience as a flash animation developer.

Regarding his academic background, William has a bachelor in Psychology, a bachelor in Visual Arts, and a master in Digital Arts. His research always involves art creation; for example, he often makes project artworks. William does not conduct research in a traditional way as in other fields such as social sciences or engineering.

William does not consider himself as a gamer; but he is very interested in the gaming community. In the past, he has played few games such as SimCity and Dragon Age; he also likes to play board games. In the past and presently, he use to play about four hours per week; but it varies depending on his workload and the games that he is playing. He has experience playing World of Warcraft; however, he likes to play it in order to appreciate its artistic value.He is very familiar with the game and he has even played advanced quests that involve collaboration with other players.

Regarding his teaching style, William likes to start discussions using videos or presentations made in “Prezi” and using readings. He likes to encourage discussion, participation and collaboration.However, he also does some lecturing, especially at the start of his courses in order to introduce the syllabus and the basics of the course. In addition, he is always updating and improving his way of teaching. He likes to research about other professors in his field to see what they are doing. William likes to collaborate and, if possible, co-author courses with other faculty members across other universities. Additionally, he likes to incorporate highly interactive technologies such as virtual and video games as part of his courses. William likes to use video games for teaching because that is something that his students are already using and because it is possible to create art using video games.

> That's (games) something my students are already using, I, as an artist, I'm very interested in utilizing pre-existing platforms, objects that generate arts, it goes all the way, and that behaviour and practice goes back a long way in back to, for example, ‘dadaism.’ I find that most of my students in this contemporary age group are very interested in video games; they play a lot of them. But most of them are simply sitting around and don't realize the potentials that these games actually have. So artists from some time now have been using pre-existing found footage or other existing objects to create interesting discussions about cultural problems. I found video games could be a great platform to do a similar kind of thing with my students.

In the past, William has used Second Life, which he considers very close to video games, for his course in New Media. In the previous and present version of his Art and

Virtual Environments course he uses Planet Side 1 and 2, and Second Life. He also uses World of Warcraft as a context form some of the core lessons of this course.

About the Course Using World of Warcraft: Art and Virtual Environments

This 14-weeks course is taught at an undergraduate level two times per week, two hours per session. The course is optional and there is just one section. During the last time that the course was taught, spring 2013, fifteen students registered to the class. This is the first time that William was teaching this course and he created the content and the syllabus from the ground.

Most of the students were from the Digital Art program. From these students, most of them were between 19 and 22 years old and, approximately, fifty-percent were female and fifty-percent were male. Most of students took this course because they are interested in 3D animation, digital imaging, web development and virtual environments. From a survey that William conducted at the beginning of his course, at least sixty-percent of his students use to play between ten and fifteen hours per week. The other forty-percent, less than that. There were no students that did not play video games at all. In addition, twenty-seven percent of the students had a World of Warcraft account; however, they did not use it. Thirteen percent of the students use to play this game quite a bit.

The main goal of this course is to explore virtual platforms and video games as a method and medium for art. After completing the course, it was expected that students should learn the basics of contemporary game practice, virtual worlds, performative art and storytelling. They also should become familiar with artists, works and genre of new media. During this course, William covered a wide variety of topics related to arts and

virtual words such as“performance art in virtual environment”, “social analysis of MMOs”, “Machinima”, and “virtual sculpture and installation.”

In this course there were four major projects:

- Machinima. Students had to make a three-minutes film using video taken from video games. They could choose World of Warcraft as part of this assignment.
- Second Life. Students had to create a sculptural piece that expresses some of their earliest childhood memories.
- MMO installation and performance. Students selected a MMO of their choice, such as World of Warcraft, and created an interactive public work inside of the selected MMO.
- Narrative. Students had to create a complex plot structure to play through a 30 scene progression using the "Sleep is Death" game.

In addition, students were assigned a set of readings for each lesson. They had to write a small essay describing the core parts of the readings and any other type of insights that students may have. They also had to review the film “Star Wars Episode II: Attack of the Clones” and write a description of good film narratives. Finally, from a list of topics, students had to do a presentation.

William incorporated the game at the beginning of the course during one month and a half. The main goal was to use it as a platform for discussing the topics related to “social implications of virtual environments,” MMOs in particular. The main goal of this part was to play and understand social gaming and to learn how to produce narrative, such as "machinima", using video games.

How William Used World of Warcraft in the Course

William chose World of Warcraft because, based on his experience, he found it as an adequate platform for the discussion of social implications of MMOs. He considered important that this game has a very active dominant online presence and that it is possible to always find people playing it. In addition, he chose this game because it changed the way that games were traditionally perceived. Additionally, he likes this game as a medium for creating art. Many of William's friends use it in this way. That always intrigued him, so he also saw the game as a good context for creating art.

William also considered other games such as Mass Effect or Minecraft as possible alternatives. However, he found that Mass Effect is more linear, there is not that much "emergence." Minecraft could have been also a good option, but for other types of lessons; for analyzing MMO's World of Warcraft was the best fit. He also taught about using Second Life for more parts in the course; however, he felt that his students are more interested in video games rather than educational virtual environments.

William was expecting that his students will have a better understanding about how they can interact with video games but view them from another perspective. He wanted them to be aware about the difference between the content and the actual medium. He was expecting that students will understand what the medium does to them. William illustrated this with an example of his personal life:

> A bit like, what I really want for my own children is I really want to be able to look at an advertisement and know what that advertisement is trying to do to them, as well as understanding the content.

During the first three weeks, William discussed the basics of the course and the basics of the game. He introduced concepts such as arts, poetry and hyperrealism as a

cultural experience, virtual environments, and the differences between “cinema” and “machinima.” Students also started playing the game in-class and at home. During these weeks, in class time, students started with the basics of World of Warcraft. Altogether, they met at a specific location at the same server and they moved to the “Goldshire” area. There, students with a higher level of expertise took other students through different parts of the world. In class and in the game, they talked about the basics of the game, for example, how to attack and to group to solve some quests.

Then, students branched-out and started interacting and talking to other players in the game. They asked them basic questions such as why they are playing the game, and what is their experience using it. The main goal of this activity was to introduce the students to the basic social aspects of the game. They also discussed the social implications of the game. By the fourth week, students should have reached level 20 in the game. Students kept playing the game for two more weeks, so they could experiment all social aspects and implications of the game. Then William moved on to other lessons, such as “performative arts” that do not require necessarily the use of World of Warcraft.

During the second week, William assigned the first project, in which students have to generate narrative-based Machinima videos. Most of the students used World of Warcraft because it is easy to get many actors together and because it is easy to control the camera. Other students used other games such as “The Sims” as an alternative. A couple of weeks after finishing the lessons that use World of Warcraft, William assigned the second project. Inside of a virtual world, students had to do a performance that has certain interaction with other players. Half of the students used World of Warcraft. Others used Minecraft for this project

In addition, William was aware of the licensing and agreements of use for World of Warcraft and the other games that he used in this course. Students used the free version of the game, so it was not a problem. However, he believes that students are probably unaware of some copyright issues. For example, they do not know if they are allowed to share their projects and the rights when using "creative commons."

Because of the scope of the course, William was not concerned by students not liking the game. World of Warcraft is a virtual world, so becoming familiar with it and with similar types of Worlds was one of the objectives of the course.

Reflecting on the Experience of Using the Game

William found that the most effective part of using World of Warcraft for teaching is that it more "restricted" than other platforms such as Minecraft or Second Life. In Minecraft, for example, players can create and code objects; World of Warcraft does not allow that. However, that's acceptable. William explains:

> World of Warcraft is a fascinating platform because there is very little you can actually do inside the platform. Unlike Minecraft where you can create, generate, save, download, share, invite people, actually even create generic pseudo-code objects, World of Warcraft is an extremely closed down environment. Part of that is interesting because it is close down, because it makes you really have to think about what you can do inside that environment. That breaks it… that subverts the point of what that a MMO is.

In addition, William found that through the assignments and the use of different tools, students developed technical skills that can be used in other courses and contexts. For example, they could use World of Warcraft in another course to create more

sophisticated types of art. In addition, creating art using World of Warcraft also opened up interesting discussions about creative commons and fair use of video games regarding user-generated content. Additionally, it was very effective to have all students in the same virtual environment and do activities together.

However, there were also some challenges. Students found boring the process of leveling up until level 20. Once they started to play as group, the experience was more engaging. Playing in-group in the same room was more engaging and facilitated more communication between students.

In addition, the social aspects of the game should have been more important than the game mechanics. William wanted to have most of discussions to evolve towards the interactions that students were having as a team and outside of the classroom. Because students were more interested in the game than in the parts related to the course, most of the time the discussions evolved towards the game mechanics. In addition, most of students found that they were just not able to have positive enriching experiences outside of the classroom.

Additionally, when playing outside of the classroom, students found difficulties interacting with people that they did not know in real life. Moreover, often other players were not responding to students' interaction. Other players where bothered because students were playing the game in a different way. Students were asking questions and proposing new activities inside the game; that is not part of the game.

Finally, every 14 days there is a new patch. The technological office had some restrictive policies; it was hard to update the game all the time in the computer lab. William decided not to update the game all the time.

William pointed out that students definitely managed to use the game as a tool to create art. However, students did not reach all the expectations regarding the use of the game. Students did not manage to make a distinction between the content and the game. Students had fun and worked hard, but not all them got the serious part of the experience. William explained that it might have been because the nature video games, they are immersive:

> Videogames themselves are very seductive in the virtual rendering of the world that.. When you are in that world is very hard to separate out what the world is doing to you in real life apart from what the virtual environment is. I tried to do it by lecture, through helping them to break that cycle, to separate out what is what they are doing virtually from what is what they are doing in real life, but the connection is really strong for most of my students, and I don't know if they are actually aware yet of the difference there.

Compared to related courses, William noticed that in this course students were more "conceptually aware of contemporary issues." The course helped them help them to build social constructs and to apply that back to their real life.However, William was not sure if it was thanks to World of Warcraft.

As a teacher William does not feel that World of Warcraft helped him to improve his teaching. World of Warcraft was a good fit for the type of experiences that he wanted to create in the course. However, this game did not fulfill all his expectations. He is still looking for a game that requires more "cooperative-based learning." For example, William believes that Minecraft has a lot of potential, he is looking forward until it becomes more like a MMO.

Even though William will use World of Warcraft again in his course, he hopes that at some point another game will be more dominant. He feels that this game is not servicing contemporary players' needs anymore:

> Perhaps when environments like 'Unity' gets more pervasive, then we'll see a shift in MMO's being more web-based and there will be more interesting things happening. But right now as WoW is really the monolith out there and is strangely not that interesting anymore. So I'd like to do more of Minecraft, it just means that I have to restructure the course being less in the social aspect and more about construction and more about less social art making and that does not interest me as much as social art making does.

Findings

This section presents the analysis across the five participants showing the themes that emerged from the analysis of the interviews, syllabi, course schedules, and description of the assignments. As part of the open coding, the strengths of the emergent patterns were classified in four categories: 1) dominant patterns occur in all participants, 2) strong patterns occur in four of the five participants, 3) weak patterns involve three of the participants, 4) interesting patterns are noteworthy issues that arise in two participants.

This section is divided in to four parts: about the participants, about the courses, how participants used World of Warcraft in the courses, and reflecting on the experience of using the game. The first part, about the participants, includes general information related to the demographics of the participants and their teaching, professional and gaming experience, the profiles of the teachers from a teaching perspective, and explores

why they use games for teaching. The second part, about the courses, introduces the courses and their design. The third section, how participants used World of Warcraft in courses, details how the teachers used the game. The last section, reflecting on the experience of using the game, explores the main opportunities and challenges when using World of Warcraft for teaching. It also discusses how the course and the use of the game could be improved.

About the participants

In this case, distribution of the participant regarding their gender was even. Three were male (Seann, William and Brock), and two female (Brandy and Renatta). In such, there was not a strong pattern indicating a dominant gender. Regarding their age, a dominant pattern emerged indicating that they were in their 30s.

Another strong pattern also indicated that participants had a doctoral degree, did not have experience teaching at other educational levels, and their institutions were located in the United States. In addition, as a dominant pattern, participants were teaching full-time and had no more than ten years of teaching experience in Higher Education. Three of the participants, Brandy, Renatta and Sam, were full-time faculty members; Brock was a full-time postdoctoral fellow, and William a full-time lecturer. Only two participants, Brock and Sam (interesting pattern) had experience teaching at other educational levels.

Participants were teaching in different departments and in different areas; no strong patterns were identified. Brandy and William were teaching in departments related to arts and technology, Brock in Computer Science, Renatta in English Writing, and Sean in Education. A dominant pattern indicated video games were a major part of their

research interests and a strong pattern pointed out that they were interested in the use of video games as an instructional technology.

Regarding their professional experience, a dominant pattern indicated that participants had out-of-school professional experience related to their field. Three participants had experience in education-related positions such as instructional consultants (weak pattern) and two had experience developing video games (interesting pattern). Regarding their gaming experience, all participants with the exception of William had long-time experience playing video games resulting in a dominant pattern. Four of them, Brandy, Brock, Renatta and Sam considered themselves as advanced gamers thus forming a strong pattern. Three of them had advanced experience playing World of Warcraft consisting a weak pattern.

As a dominant pattern, all participants mentioned teaching practices that relate to a student-oriented teaching style. In this style, students take the main responsibility of their learning (Fries, 2012; McCarthy & Anderson, 2000; Svinicki & McKeachie, 2011). For example, as a strong pattern, Brandy, Brock, Renatta and Sam prefer to reduce lecturing time and focus more on the course activities and discussions; Brandy, Renatta, Sam, and William, prefer to focus in the practical components of the course. Along the same lines, in all cases, participants tend to act as facilitators; they consider fundamental teacher-students interactions, guide students, and encourage cooperation and independent learning (Grasha & Yangarber-Hicks, 2000). For instance, in all cases, the participants design activities that require collaboration, discussion, and independent learning. In two cases, as an interesting pattern, Renatta and Sam, also incorporate elements of a delegator teaching style. Delegators encourage students' autonomy and provide assistance when

students request it (Grasha & Yangarber-Hicks, 2000). In both cases, they let students propose their own projects or activities; if students needed any help, the participants provided support.

The reasons why participants started to play the game were diverse. As a weak pattern, one reason was for entertainment purposes. Other reasons were popularity, creativity, and social capabilities (interesting patterns). Regarding the participants' experience using video games as part of the courses, all of them mentioned that they had previous experience using video games, thus forming a dominant pattern. For instance, Renatta, Sam and William have previous experience using World of Warcraft (weak pattern); and Brandy and Brock using a wide diversity of video games. Regarding the reasons why participants use video games as part of their courses, all participants but William, admitted that it was because of their learning value (strong pattern). Brandy, Renatta and William, agreed they use them because they are an influential type of media (weak pattern); Brock, Renatta and Sam also accepted that the main reason is because they are useful for illustrating ideas (weak pattern); and finally, Brock, Sam and William indicated that they used video games because they can be used as production tools.

When asking participants where the idea came from and why they chose World of Warcraft, Brandy, Renatta, Sam and William indicated that it was because of their experience playing the game and because of its popularity. This was a strong pattern. Brandy, William and Renatta also mentioned that they found that the game fits with the content of the course and because of its social features (weak pattern). Brock's reasons were different. He knew that World of Warcraft, as well as other virtual environments, were a good fit for the activities that he was thinking of doing for his course. Students

had the option to use World of Warcraft, but it was their decision whether they used it or not.

As a summary of this part, a profile describing the typical teacher that uses World of Warcraft can be synthesized. Participants tended to be in their 30's and were not predominantly female or male. They have long-time gaming experience; however, they are not necessarily advanced World of Warcraft players. They have a doctorate, they are full-time faculty members, have more than 10 years of teaching experience in Higher Education, and they teach in public universities in the United States. Video games in general and using video games as instructional tools are part of their major interests. They also have previous experience incorporating video games as part of their courses but not necessarily World of Warcraft.

Additionally, the average participant tends to follow a student-oriented teaching approach and tends to act as a facilitator. They encourage collaboration, try to reduce lecturing time and encourage practice and hands-on experience. They use video games because of their learning value, because it is an influential type of media, because they are useful for illustrating ideas, and because it is possible to produce new media by using them. Reasons for which participants chose World of Warcraft include its popularity, the social features of the game, and that it is an adequate platform for conducting research in a virtual setting. Table 8 summarizes the results found in this section.

Table 8

About the Participants (World of Warcraft)

Category	Patterns
Demographics	
Age	30s (dominant)

Gender	Male (weak), female (interesting)
Expertise	New Media and digital arts (interesting), video games related (interesting)
Faculty	Humanities (interesting), fine arts (interesting)
Degree	PhD (strong)
Type	Full-time (dominant)
Research interests	Games in general (dominant), games as new media (weak), games and learning (strong)
Type of courses	New media (interesting), games-related (interesting)
University's size	Large (weak),medium (interesting)
University's type	Public (strong), Research intensive (weak), teaching intensive (interesting)
Experience	
Professional	Education and digital media (weak), game design (interesting)
Teaching	One to ten years (dominant)
Have taught using video games	General (dominant), using WoW (weak)
Playing games	Intermediate to advanced (dominant)
Playing WoW	Intermediate to advanced (strong)
Teaching Style	
Teaching approach	Student centered (dominant)
Type	Facilitator (dominant), delegator (interesting)
Beliefs	Students responsible for learning (weak), collaboration (strong), encourage practice and hands-on experience (strong)
Practices	Short lectures (strong) Collaborative activities (strong), students choose topic of assignments (dominant), discussions (weak), research about teaching (weak)
Beliefs about video games	
Why video games?	Interest (dominant), experience (weak), learning value (weak), importance as new type of media (weak), To illustrate an idea (weak), As media for production (weak)
Reasons because they started playing WoW	Recommendations and popularity (weak), engaging (weak)
Why World of Warcraft?	Popularity (weak), research capabilities (weak), social features (weak)

About the courses

Four of the courses were taught face to face (strong pattern). Sam's course, Visual Literacy, also had an online component. Classes were small, between 7 and 30 students, and optional. Renatta's course, Writing and Research, was the only one that was required. Despite this, there were other sections of the same course that did not use World of Warcraft.

Regarding the content of the course, all participants created the content and the syllabus (dominant pattern). Only one participant, Peter, proposed the course to his department; in all the other cases, the departments provided a description of the course to the participants. Regarding the goals of the courses, it was possible to classify them in four categories:

- Understand (strong pattern). Goals relate to comprehending and interpreting theory. For example, in Williams' course, students had to "learn the basics of contemporary game practice, virtual worlds, performative art and storytelling."
- Familiarize (weak pattern). Become aware of the fundamentals of the course and with related software applications. For example, in William's course, students had to become familiar with artists in the digital arts field and with popular games that are used to build art.
- Analyze (interesting pattern). Examine in detail specific types of technologies or media. In this category, courses' expectations go further than just to become familiar with a tool. Students actually have to gain an in-depth understanding. For example, in Brandy's course, students had to do a deep analysis of the social mechanics of World of Warcraft.

- Development of higher order skills (interesting pattern). This category refers to the ability to judge material for a given purpose. For example, in Renatta's course, one of the main goals was "to develop skills in finding, evaluating, synthesizing, and reporting the major findings in the literature."

Three of the participants (weak pattern), Renatta, Sam and William had previous experience using World of Warcraft as part of their courses. For Brandy and Brock, it was the first time that they used it. Brandy, Renatta, and Sam (weak pattern) decided to use the game the entire course. Brock and William used it for a lesson; in the case of William, this lesson lasted three sessions. Brandy and Renatta used it as a context for activities that were related to the content of the course and Sam as a model for teaching. In Brock's course, students had to choose a massive multiplayer online game and to observe other players. They could use World of Warcraft; however, it was optional. William used World of Warcraft at the beginning of the course as a platform for discussing social implications of virtual environments. The goals of the lesson were to play and understand social gaming and to use the game as a tool to produce a short film.

Concerning the students, Brock, Rennata and Sam's courses were mainly oriented to undergraduate students. Brandy and William's were for graduate students. So, as a dominant pattern, the students were between 18 and 24 years old. In regards to the students' field of study, as a weak pattern, they were enrolled in degrees related to arts and new media. An interesting pattern also pointed to the fact that students also came from Computer Science and Software Engineering fields.

There were a number of reasons why students took the courses. As a weak pattern showed, students were interested in the topic of the course. Other reasons were because

the course was required, because of the reputation of the participant and because the course was the only available option. These reasons did not represent any type of patterns. Regarding their gaming habits, as a strong pattern, students were advanced players. Also, a strong pattern indicated that students had at least basic experience with playing the game.

From this section, a profile emerged indicating that the content of the typical course that uses World of Warcraft is developed by the participants, but that the department provides an initial description of it. In addition, courses tend to be taught face-to-face and the class size is small, no more than 30 students. The typical student is an undergraduate, between 18 and 24 years of age, and has advanced experience with playing video games but not necessarily in playing World of Warcraft. Finally, the typical student of this course was from arts or information technology departments. Table 9 shows a summary of this section.

Table 9

About the courses (World of Warcraft)

Category	Pattern
About the course	
Type	Face to face (strong), optional (strong)
Times per week	One (strong), twice (interesting)
Length	One two three hours (dominant)
Class' size	Small (strong)
Sections	Required course (interesting), optional course (weak), other alternatives not using games (dominant)
Design of the course	
Experience	No previous experience using World of Warcraft in the course (strong)
Syllabus	Teachers created syllabus (dominant), departments provided a small description (strong).

Course goals	Familiarize (weak), understand (weak), analyze (interesting), higher order thinking (interesting)
Integration in course	Game used entire course (weak), game used for specific lessons (interesting)
Goals lesson	Understand content of the course (strong), conduct research (strong)
Students	
Level	Undergraduate (strong)
Age	Undergraduate: 18-24 (dominant), 25+ (interesting)
Program	Arts related (weak), IT related (interesting)
Reasons took the courses	Interest in the topic (strong)
Experience playing video games	Advance and intermediate using games general (dominant), casual or limited using WoW (strong)

How Participants Integrated World of Warcraft in the Courses

World of Warcraft was not the only option that participants considered for teaching. A strong pattern (Brandy, Brock, Renatta and William) indicated that participants considered using such games as Eve Online, EverQuest, or Mass Effect. They decided to use World of Warcraft because of a number of reasons. Brandy found that there was no time to incorporate other massive multiplayer online games; Renatta pointed out that other games (such as EverQuest) were out-dated and complex. William indicated that other games such as Mass Effect or Minecraft are too open. He explains:

> I wanted to start with software like World of Warcraft. It feels emergent and its nature that has an openness to it, but it is actually very close down compared to other games such as Mass Effect with this specific timeline for objects and quests, but because there is all this human interaction response, it feels very responsive to you.

A common instance between Brandy, Renatta, Sam and William was that they were aware that some students are not interested in video games. Then a strong pattern emerged. Despite this, Brandy, Renatta and William decided to continue because they strongly believed that the game fits with the scope of the course (weak pattern) and Sam and Renatta, because its potential as a learning tool (interesting pattern).As a weak pattern, Renatta, Sam and William indicated that to leverage this issue, they explicitly mentioned the use of the game from the start of the course. Then, students could drop-out of the course if they wanted.

A strong pattern indicated that Brandy, Brock, Renatta and William expected to use the game as a context in which students could experience specific parts of the game relating to the content of the course. Brandy gives an example that relates to “ninja looting”, obtaining items from another player, especially when her character is dead:

> An example is, if you are talking about ethics and if you are talking about 'ninja looting', somebody who hasn't played the game will say "ohhh that’s not a big deal." But the first time they get ninja looted, then it becomes a big deal, and then they get it.

Concerning the use of the game, two patterns emerged: all participants used it as a context for class-related activities (dominant) and, Brandy, Brock, Sam and William as a different type of media (strong). As a context for class-related activities, participants created a set of activities that supported the content of the course while students were experiencing the game. For example, in Brock’s course, students had to choose a massive multiplayer game in order to observe the behaviour of other players. The main goal of the

activity was to experience research in virtual worlds. Students could choose any multiplayer game; World of Warcraft was an option. Brock explains:

> What I asked them to do was to think about this from what was called an adult ethnographic perspective. […] The students' responsibilities in playing World or Warcraft, Eve, or Room Quest was to begin to look at some of the culturally motivated activities from the game world and the relationships with the non-player characters and the player characters and the expectations that came about from constructing and using an avatar. The idea was that they were to document in a field journal.

As a different type of media, World of Warcraft was used in a similar way than other types of media such as a movie or a book. However, in contrast to these, students had to play and experiment with the game, they had to analyze it in detail, and report or discuss their experiences. For example, in Brandy's course, students had to experience and analyze social and multi-player aspects of the game. Their major reports were based on their experiences and the connection of the game to the theory of the course.

Activities inside of the game were diverse. As a weak pattern, Brandy, Brock, and Renatta used the game as a virtual environment for conducting research. Inside of the game, students were doing a set of activities such as observing and analyzing interactions among different players. In Williams' course students had to do an artistic performance inside of the game. In Brandy's course, students had to finish a collaborative quest in order to experience the social aspects of the game.

On how the game was actually incorporated in the course, a weak pattern, Brandy, Renatta and William indicated that, firstly, they introduced the theory in-class.

Then, the students had to play in-class or at home, and finally, there were discussions. Discussions also happened during gameplay.

In addition, three participants (weak pattern), Brandy, Renatta and William, used "technical benchmarks." At specific parts of the course, they indicated the progress expected in the game. For example, Brandy expected that by the end of the first week, students will create a character and reach level 10 in the game. Using this strategy, participants expected that students would experience specific parts of the game at the same time and that they will be in the same level.

Regarding how students learned to use the game, as a strong pattern, all participants but Sam indicated that it was the students' responsibility to learn the basic of the game. They did not provide a tutorial of the game or explicit instructions related to the use of the game. However, a weak pattern indicated that Brandy, Renatta and William, besides leading in-game activities, were also assisting students.

Concerning the assignments, in all courses but Brandy's, students used the game either as an optional tool or as a requirement as part of their major projects or research papers. This was a strong pattern. For example, in William's course, students could use the game to produce a short film.

Regarding the licensing and fair use of the game, Brock, Renatta, Sam and William indicated that it was the responsibility of the student to get the license; this was a strong pattern. They also indicated that students could use the free version of the game if it applied to the projects. In addition, as a strong pattern participants were not aware of the limitations of use of the game in class. The only exception was William, he was aware that there may have been restrictions regarding new content generated by the users.

However, seeing that in this case it was created for educational purposes, he was not too concerned about it.

From this section it is possible to conclude that the participants using World of Warcraft came up with the idea of using the game for teaching through their experience playing it and because its popularity. They are aware that some students may not like video games and in such explicitly mentioned the use of the game during the first class. In addition, participants tended to use the game as a context in which students could do activities that relate to the content of the course. They also used the game in a similar way to other type of media as to illustrate, experiment and analyze something specific.

In-game activities are diverse; no patterns were identified; however, before gameplay sessions, participants usually introduced the theoretical part of the lesson. In addition, students had to learn to play the game by themselves; participants provided support when required. In regards to assignments, students could use the game as to complete them, sometimes as an optional tool, other times as a requirement.

Finally, participants were not aware about any type of limitations when using the game for instructional purposes; they thought it was the responsibility of the students to open an account and to pay for it if necessary Table 10 shows a summary of this section.

Table 10

How Participants Integrated World of Warcraft in the Courses

Description	Pattern
General	
Thought alternatives	Other MMOs (strong)
Aware of non-gamers in the class	Aware (strong)
Continued because…	Fits with the content of the course (weak), potential of game for

	learning (interesting)
Solutions for students no interested in games	Explicitly mentioned the game at the beginning of the course (strong)
Expectations	Good context for activities of the course (strong)
Practices	
Uses	Context for in-class activities (dominant), similar to other types of media (strong)
Activities	In-game research (weak), collaborative activities (interesting)
In-class practices	First short-lecture, then practice, game and discussions (weak), technical benchmarks (weak)
Support	Students learned how to use the game (strong), teachers assisted students (weak)
Optional tool	Strong
Licensing and copyright	Students have to get the license (strong), unaware of limitations (weak)

Reflecting on the Experience of Using the Game

Even though a deep analysis of the effectiveness of using commercial games in the classroom is out of the scope for this study, as suggested in chapter 2, in order to understand teachers' approaches of teaching, it is nonetheless necessary to analyze teachers' outcomes of teaching. This was done from the perspective of the participants. For that, they self-reflected regarding their experience using Word of Warcraft for teaching, related practices and outcomes.

Regarding the opportunities presented by using World of Warcraft, no dominant or strong patterns emerged from the data. However, a weak pattern emerged as Brandy, Renatta and Sam concurred that the game gave the students the opportunity to have more freedom regarding the learning paths that they were taking. Students could choose between different quests that were shaping the course of their learning. In addition, four interesting patterns emerged indicating that the game succeeded as a platform to engage

students in discussions, that it was easy to use, that it provided a good context for conducting activities that supported the content, and that it was successful in engaging collaboration.

About the challenges that participants faced when using World of Warcraft, there were not any recurrent instances forming a dominant or a strong pattern. Despite that, three participants indicated that the game was too distracting for some students; this was a weak pattern. Some participants, such as Renatta, had to talk individually to students that got carried away be playing the game and were not performing well in the class activities. Additionally, two participants (interesting pattern) indicated that time was an issue. It takes a long time to reach the advanced features of the game, so students could not experience them.

As a strong pattern, four participants agreed that they reached most of their expectations regarding the use of the game. As discussed in the previous section, it was identified as a strong pattern that participants expected that World of Warcraft could be a good tool for putting in context the activities of the course. All participants agreed that this expectation was achieved. This was a dominant pattern.

As another dominant pattern, participants felt that students liked using the game as part of the course; they were satisfied with the results. Three of the participants agreed that they definitely would use the game again. This was a weak pattern.

Brock did not know if students will use the game again in his course; each course is different. Also, he does not suggest specific games; students have the option to choose them. William expressed that he would not use the game again, mostly because it is out-dated, he would like to try new alternatives.

When asking participants about how they would improve the course and the use of the game, as a strong pattern, they felt that students needed more guidance. They planned to write more explicit instructions for the activities and provide more resources and information to the students.

Overall, evidence suggests that the use of the game was successful. In Brandy's and William's courses, part of the topics involved the use and analysis of Massively Multiplayer Online games. It is possible that other games could be a better fit for this type of courses; however, popularity, simplicity and students' familiarity with the game makes World of Warcraft a good fit.

Part of Renatta's and Brock's goals were to use the game as a context to conduct research in a virtual environment. In this case, evidence suggests that World of Warcraft was a good option. It has enough elements and human-interaction to develop skills that could be transferred to the real world. Other multiplayer games could be good options, but the number of players, quests, openness and social interactions make this game a good fit for the courses.

In Sam's course, the model of the game matched with his teaching style that; in such, it was easy for him to use it as a model for teaching. Everything points to the fact that the experience was successful; however, even though he mentioned that students liked his teaching model, I did not have access to students' or other types of evaluation to strengthen this argument.

Evidence indicated that World of Warcraft is a good game for experiencing a Massively Multiplayer Online Game. Its popularity, number of users, social elements, and easy learning curve makes it a strong option compared to other games. Overall,

participants achieved their expectations and, according to the participants, students liked using the game. However, it is important to provide more guidance to the students when using the game, provide enough resources, and to keep in mind that the game may be out-dated. Table 11 shows a summary of the findings from this section.

Table 11

Reflecting on the Experience of Using World of Warcraft

Description	Pattern
Opportunities	
Good game to experience a MMO	strong
Good game to illustrate a MMO	weak
Variety of quests that gives freedom to choose topic or project	weak
Good platform to engage discussions	interesting
Smooth learning curve	interesting
Strong social and multiplayers features	interesting
Engaging context for in-class activities	interesting
Challenges	
Game features can be distracting	weak
It takes long time to experience most important features	interesting
Expectations	
Overall were achieved	strong
Context for activities	Weak (achieved)
Freedom to choose activities	Weak (achieved)
Experimentation	Interesting (achieved)
Context for research	Interesting (achieved)
Incorporate in assignments	Interesting (achieved)
Improvement	
More support to use the game and guidance for in-class activities.	strong
Improvement of in-class activities	interesting
Use of other alternatives	interesting

CHAPTER 6: SIMCITY

This chapter describes in detail the third case, SimCity, and the four participants who used this game as part of their courses. So that readers have an understanding of the goal of the game and how people play it, the chapter starts by describing SimCity. Next, it describes how four teachers in Higher Education use the game in their courses. The chapter closes with an analysis, showing the characteristics of using SimCity that are similar across the different participants.

About SimCity

SimCity, which is an abbreviation of "Simulated City," is a computer and consoles game series originally developed by Maxis, which now is a division of Electronic Arts. It is city building simulation in which the player has to develop a city, making sure that the citizens, or "Sims," are happy, and that the city has a stable economy. The first installment of SimCity was released in 1989, the most recent one, SimCity V, in March 2013. SimCity is also available for mobile devices such as tablets and portable consoles. All the versions share the core mechanics from the first version; however, they have improved in graphics, complexity and in some of the main mechanics.

The main goal of the game is to build and simulate a city. In this game, there is no a linear game play or a narrative. The game gives objectives that relate to the simulated city. Players have the freedom to choose how to approach them. The player has to define the limits and areas of the cities, incorporate elements such as power supply and transport links, and build residential, commercial, and industrial zones. In addition, the game constitutes a set of variables, such as traffic, population, projections and economic

growth, that are interconnected with the different elements of the city, such as land use, water, power systems, and fire safety (Gaber, 2007). The value of a variable, can affect other ones. For example, increasing the density in an industrial area can affect an increase in the traffic, and then, in pollution (Gaber, 2007).

Additionally, everything in SimCity costs money. All upgrades to the city affect the budget of the city; so the players have to be careful about how to spend it. This budget can be increased through taxes or improving the city so it attracts new residents, which will also increase the city's tax base (Gaber, 2007).

The latest versions of SimCity have three game modes:

- *God mode*. Players have to design the land in which the city is going to be build. In addition, they can enable an option that allows triggering and controlling natural disasters such as tornados and earthquakes. That adds challenge to the game.
- Mayor mode. In this mode, players have to focus only on building and simulating the city. Several advisors suggest tips to the players about how to build the city and how to incorporate and control the different elements and variables of the simulation.
- MySim mode. Players create characters that are the inhabitants of the city. The different events that occur in the city can affect the lives of these characters.
- Multiplayer mode (SimCity 5). In this mode, players can collaborate or compete with friends and interact with other cities. For example, a player can send fire and police resources to other cities in need ("SimCity - Multiplayer," 2013).

Form a financial point of view, SimCity has been very successful. By the fourth quarter of 2013, the latest version of SimCity has surpassed $1 billion in revenue and has sold two million units (Makuch, 2013). In addition, critics have been favorable. In

Metacritic.com, the last three versions of SimCity, SimCity 3000, SimCity 4, and SimCity 5, got a score of 77, 84 and 64 out of 100. The score in the last version was not as favorable as in the previous ones because of technical issues when connecting to the main server, which was required in order to play the game. In addition, several games in the series have won different awards. For example, SimCity 4 chosen by IGN, one of the most know video games website, "Editors' Choice" games for January 2003(Butts, 2003).

SimCity is a game that teachers in Higher Education and scholars started to consider as an instructional tool since the first version was out in 1990. For instance, when discussing how computer could support learning in Geography, Unwin(1991) points out that SimCity is “an obvious pointer for further developments” in the field of computer assisted learning in Geography (Unwin, 1991). Similarly, Pahl(1991) discusses the potential of the game for teaching City Government testing the game with high school students; he concludes that SimCity was a helpful tool to model a city and to discuss how best to use a critical area of city property. However, most of this initial reports where merely descriptive and experiential.

During the following years, scholars started to introduce the game in the classroom and to report the results based on empirical evidence. For example, Adams (1998) reported how SimCity 2000 can be used as a tool for teaching urban geography concepts. He introduced SimCity as a tool that students had to use for a project in an Urban Geography undergraduate class. As part of the assignment, students had to return a questionnaire reflecting their experience using the game. He concludes that the game helped students to build “computer literacy, knowledge of geographical phenomena and processes; and ability to critique from a geographical perspective the social, political,

philosophical, scientific, and economic implications of an urban computer simulation" (P. C. Adams, 1998, p. 54).

More recently, Gaber(2007) used SimCity as a pedagogical tool for simulating theory in an Urban Planning class. Twenty students registered to this class. From these students, 60% were undergraduate students and 55% were graduate students. Some but not all of the students were from planning programs.Students had to work on two simulations for three hours each;then, they had to write a paper analyzing their work and their simulated planning experiences. The teacher also evaluated the quality of the cities. The author concluded that SimCity was successful to teach some of the concepts in planning. However, it had some limitations. It does not reflect always reflect reality and requires a considerable amount of work to integrate it in the curriculum and to match it with the learning objectives (Gaber, 2007).

However, even though literature about the use of SimCity as an educational tool is frequent; most of the time, it focuses in Geography and Urban Planning courses at a Higher Education. Literature regarding its use at other educational levels or for other topics was rather limited.

SimCity as an instructional technology also has its own wiki, google group and a modded educational version, SimCityEdu: Pollution Challenge. In this version, "students play the role of mayor, doing the challenging work of addressing environmental impact while balancing the employment needs and the happiness of the city's citizens" (GlassLab). This version is oriented to school educators and it is equipped with lesson plans, tutorial videos and cheat sheets. Additionally, teachers can keep track of students' progress.

How Participants Integrated SimCity

The goal of this section is to provide a detailed description of each participant, Chad, Dennis, Donovan and Jane, and the way they used SimCity for teaching Land Use and Transportation, Planning in the Gaming World, Introduction to Game Design, and Theory of Urban Planning respectively. Each description starts introducing the participant and the course that they taught using the game. Then, it details how participants used the game. After, it describes the main opportunities, limitations, and ways that the course and the use of the game could be improved.

Chad: Land Use and Transportation

> I started playing SimCity when the first version came out. It would been the early 90's, merely because my sons were playing it. I was playing it too, and I just I thought 'I can use this for teaching.

About Chad

Chad is a 58-years old, full time assistant professor in the School of Architecture and in a medium (5000-20,000 students) research-intensive university located in the eastern United States. He is in his 50s and teaches courses related to land use planning, environmental planning, and transportation planning.

Chad has 16 years of experience teaching at a Higher Education level and has professional experience as a consulting planning contractor. He has a bachelor degree in Geography and a master and a doctoral degree in in Planning; he is specialized in Environmental Planning. In addition, he has a post-doctorate in transportation planning. His main research interests are sustainable urban planning in the global south,

environmental impact assessment in the global south, transit oriented development, transportation demands management, obesity in urban sprawls, and greenway planning.

Chad started playing videogames in the 1970's; he used to play Pong in arcade machines. After that, he used to play with his friends on the Atari System. However, at that point, he did not used to play that much. He started to play video games more whith his children. He has a wide variety of gaming consoles; however, he prefers to play PC-Games. His favorite games are the ones developed by “LucasArts”, specially the Starwars games. Around 10 years ago, he used to play, one or two hours every day. He does not play that much anymore, unless he finds an interesting game for the PC. He started playing SimCity when the first version came out early 90’s. Since then, he saw its potential for teaching.

When teaching, Chad likes to engage students and get them involved with planning. He tries to take students to field trips and doing things that actively involve them in planning projects. He prefers to reduce lecturing time to get students in small groups for problemsolving activities. When he lectures, he likes to use online videos and discuss them. However, often he has to adapt his teaching style to the size of the class. When he is teaching large classes of more than 60 students, he lectures.

Chad has been using SimCity for teaching since 1996; however, he has no experience using other video games for teaching. In such, his perceptions about the use of video games for teaching are solely based on his experience using SimCity. Chad considers SimCity as a good tool to teach the basics of planning. He also believes that this game helps engage them intellectually in the field and develop critical thinking. He

has incorporated this game in planning courses such as “Land Use and Transportation” at a post-graduate level and at an undergraduate level.

About the Course Using SimCity: Land Use and Transportation

Chad had been teaching this course many times in different institutions at both, undergraduate and graduate level. Last time that Chad taught this course was in Fall 2012 at a master level. This course was taught once per week for three hours and it lasted 14 weeks. This was a required course and there was only one section. Six graduate students from the master of Urban Planning degreeregistered on it. From these students, four were females and two males. Students’ age ranged from early 20s to early 30s.

Most of the students took this course because it is required as part of their program. However, in previous years, when this course was optional, students were taking it because they liked Chad’s teaching style. Chad has gotten positive results in students’ evaluations and students frequently check his rating in websites such as www.ratemyprofessors.com, in which he has gotten good reviews.

At the start of his courses, Chad always does a straw poll to see how many people have experience playing video games and SimCity. He had noticed that usually 90% and more of the students have experience playing video games. However, occasionally he gets, usually mature students, who do not. In previous years, especially when Chad started teaching this course, a number of students had previous experience playing SimCity; however, it has declined. Presently, typically just few students have played it. The main reason, Chad explains, is because the game is fairly old. Even the newest version, SimCity 5, was released this year, SimCity 4 was released in 2003.

Chad created the syllabus of the course from scratch. He has been teaching this course for a long time, so he is very familiar with the content. He had a "freehand" to design the course and to teach in the way that he wanted.

The main objective of this course is to help students understand the main issues related to transportation and land use within the context of sustainability. Students should also become familiar with the basic principles of transportation modeling and sustainable planning paradigms. In addition, they have to understand the different priorities in the developing world.

After completing the course, Chad expected that students would be familiar with the basic of transportation planning and with the nexus of land use and transportation planning. Students should be able to clearly see that there is a relationship between environmental problems and transportation planning.

During the first weeks of the course, Chad introduced a historical geography of transportation and the basics of transportation planning. Then he introduced urban sprawls and the transportation nexus. He expanded these topics during the following weeks. Then he moved to more advanced topics such as Transportation Demand Management and Smart Growth.

In this course, there were three major assignments. In the first one, students had to do a "travel audit". During two weeks, students had to record what mode of transportation they use, calculate their carbon footprint, and propose how they could reduce it. For the second assignment, students had to build their own city and transportation system using Simcity. Then, they had to write a reflection paper. Finally, for the third assignment, students had to do a major paper. They had to choose a topic,

write a proposal and then write an essay. The research paper was broken into three parts. In the first part, they had to do a comparative analysis of North America and a Developing Nation transportation plans. Then, they did an annotated bibliography about their essay proposal. After, they had to write the paper. In addition, Chad also graded students' participation in class. There were no quizzes, midterm or final exams.

Chad incorporated SimCity in the course mostly as an assignment. He also referred to the game in his lecturing material. This assignment related to the material of the first two months of the course, which covered the basics of transportation planning.

How Chad Used SimCity in the Course

When SimCity came out in 1996, Chad's sons bought it. He started to play it with them. Since then, he viewed it as more than a video game: he saw it as a good tool for teaching Urban Geography, Urban Planning, and for developing critical thinking.

> I think that SimCity is an excellent tool for teaching students the basic mechanics of planning. There are a number of assumptions into the program and there are a number of limitations. But over time, because people like yourself have been studying the use of SimCity, we have a small body literature, which I sent you, a couple of papers. What I've been able to do overtime is integrate the refereed literature, from the planning literature, to get the students to recognize that although it is a good introductory tool in terms of modeling the basic of urban and regional planning, that there are in fact some limitations. Then, having them cross referencing referred literature that has come out recently, they've been able to adapt some use of... a critical thinking tool. So it is more than a video game. It

helps them in terms of using the refereed literature and developing critical thinking skills. So that's sort of the value added.

Since the first time that Chad taught this course, he did not consider other alternatives. SimCity was just the right fit. However, he lets the students choose whichever version. They can use earlier or the newest PC versions, the mobile-based versions, or in previous years, the ones available for consoles.

Through the use of SimCity, Chad expected that students would develop a "holistic" understanding of how and why urban transportation and environmental quality are critical to the success of well-planned cites. He also expected that students could examine how transportation affects land use development patterns, develop technical and problem-solving skills, and understand what the profession of Urban and Transportation Planning is.

Chad designed the original version of this assignment in 1996, when he used it for the first time as part of his courses. At that point, there was not social media, so it was not easy to communicate with other professors. In such, the assignment came up entirely from Chad's ideas. First, based on his experience in the field and playing the game, he brainstormed his own ideas. He created a first draft of the assignment, and asked his sons, who were experts in SimCity, for more ideas.

Overtime, he continued using the assignment, but he was improving it. Chad started to have discussions with his colleagues and to attend conferences, in which some researchers were presenting their results about their use of SimCity for teaching similar courses. Chad also attended some workshops, joined "list servers", and started to read more about using SimCity for teaching. In the list servers, occasionally, other professors

were discussing their own assignments and sharing related information. Chad also started to integrate parts of the textbook with the assignment. Chad wanted to push students to read the textbook and to show that there was a purpose to buying the textbook.

For the last version of this assignment, which was used during the fall 2012 session, first, students had to read some articles related to the use of SimCity for planning. They had to get a background about why they were using a video game. Then they had to build their city. For that, they had two options, one was to build the city "on the fly" or the second one, to use one of the simulations proposed in the readings for the assignments. Optionally, for an extra credit, they could build two cities and compare their outcomes.

Chad expected that students would start playing the game from the start of the course and spend an hour a day for the first week to become familiar with game. If they were choosing the simulation model, it was expected that they would spend at least 10 hours per week playing it. Students had to save their cities in a file, and send it to Chad.

As part of the assignment, students also had to write a one-page assignment describing what their city looked like and how well it functioned. They also had to write three-pages of analysis. For this analysis, Chad provided a set of questions to the students. For example, he asked them to comment on a critique from the textbook and to relate it to their cities.

In addition, Chad asked students to turn off "disasters", because it was unrelated to the course, and to start in a "greenfield" site. Students were not allowed to download existing cities from the internet. He also asked them to take a screenshot of their cities and to incorporate them as part of their papers.

When Chad started teaching the course in 1996, he asked students to buy their own copy of the game. Because it was not possible to request it in the university's book store, they had to acquire it in video games retail stores. However, that has changed through time. Now they can download it from sites such as Steam.com. He is aware that some students may just copy and "crack" the game; he believes that buying an original copy of the game is the responsibility of the students. Chadis not aware if there are any type of limitations regarding the use of the game for educational purposes. However, he knows that Maxis, the publisher of the game, supports the use of the game for educational purposes.

From the first time Chad used the game for his courses, he thought about students who do not like video games. However, he was not too concerned about it. He assumed that they would not have many problems playing the game. When he was teaching the course at an undergraduate level, he did not have problems. However, when he taught it at a graduate level, mature students did not feel comfortable using the game. Then he gave them an "opt-out option", so they could do a paper instead.

> I started something new. I'm giving them, because I'm dealing now with graduate students, and some of them are older, I'm giving them an opt-out option. So they can opt-out of the SimCity assignment and do a paper. I didn't give them the opt-out at the University of Toronto, because they were undergraduates, and I did not have any trouble or any complaints from any of the students about the assignment. But since when I started at Catholic, some of the Master students are older, and some of them were struggling with it. So I decided to give them the opt-out option.

Reflecting on the Experience of Using the Game

From Chad's perspective, SimCity was very effective at teaching the basic tools of planning and at showing the nexus between land-use planning, transportation, and environmental degradation. The game was also very effective at showing students the relationship of various pieces of infrastructure that are important in terms of land use planning.

However, the main weakness that Chad found in the game is that it is very difficult to get the game to mix land uses. A possible solution to this is to make students aware of the limitations in the game. The readings included in the assignment discuss this, so students have to read and reflect on their experience using the game.

Overall, Chad felt that most of the students reached the objectives of the assignment in which SimCity was used. Especially for undergraduate students, he noticed that students understood better the urban planning profession. Chad explains:

> One of the problems about our professions of being planners is that, I like to see it as a "hidden profession", it is not well known. We are very low key. So high school students, there is not secret about that, know very little about urban planning, or transportation planning, or environmental planning... planning in general. They know very little about it. The guidance counselors don't really cover it in schools, they are more familiar with engineering, what is needed to be a doctor or a lawyer, or physiotherapist. They know much more about them than planning. Generally, they don't even know that it is a professional career equivalent to being a professional engineer. So I find that with undergraduates, SimCity really open their eyes to the career of planning, and what's involved.

> Specially the interplay with politics, as well. You know, with the mayor or council."

However, at a graduate level, Chad noticed that the benefits are not that many. Students are already familiar with the basics of the course and the profession:

> Graduate students know what planning is, so they are not learning anything new. So is definitely more effective as a teaching tool at an undergraduate level than at a graduate level. Maybe at a graduate level is not all that productive, so, and maybe I should really re-think if I should give this to graduate students or not. I think that I can make an argument that it is redundant at a graduate level.

Because Chad has not taught this course without using SimCity, he was not sure if there was a change in the performance of the students when using it. However, he noticed changes through the evolution of the course and the game. Each version of the game has new elements, things that it was not possible to model before, now it is. For example, in SimCity IV, there was a better transportation modeling. However, these changes often affect the performance of the students in a negative way. Now the game is becoming too complex. The learning curve is increasing significantly. That is also, why he decided to allow the students to drop out the assignment and write a paper.

In general, students enjoyed both, the assignment and the game. First, they got very surprised that they can play a video game and get credit for it. From an anecdotally viewpoint, Chad have had always gotten positive feedback from students when he talks about the assignments with them. In course evaluations, he never has had a negative complain about the use of SimCity.

Chad definitely will use SimCity for the next time that he teaches this or similar courses. However, before he wants to check out SimCity V as to see what are the new capabilities of the game. He thinks it may be a good idea to limit the game up to SimCity IV. He is still debating how beneficial the game is for graduate students.

Dennis: Planning in the Gaming World

> "From the very beginning, I was like 'Hey Dennis, teach this urban planning class using games.' They wanted… there was 'Mary Poppins'. They (directives of the program) wanted to trick people into listening to a semester of basic planning stuff because games were involved, and it was a part of the project. I just started realizing that SimCity is not, there is not enough in SimCity to spend the semester on it. I really like SimCity, I talked a bit about it, I talked to other people… and it is a fun game, it is just a terrible planning tool. So I had to be very critical of the literature about how great SimCity was as a teaching tool."

About Dennis

Dennis is a part-time Higher Education teacher in a private, medium research-intensive university in the interior west of the United States. He teaches courses related games, media and learning in the Arts and Media College. As a full time position, in the same educational institution, Dennis is the director of the Department of Academic Technology and Media Support. He coordinates the Learning Managing Systems and provides support for the incorporation of different technologies in the classroom. He has earned a bachelor in Philosophy, a Master in Speech Community and a PhD. in Architecture. Dennis is in his late 40s having more than ten years teaching courses in Architecture. He also has professional experience in the corporate training field. His

research interests are related to games, teaching and learning, and critical studies in video games.

When he was younger, Dennis used to be an avid gamer. He started to play video games such as pong since he was a kid. He also used to be for more than 20 years a game journalist; so he is familiar with a wide diversity of video games. However, presently he does not play that much anymore; he just spends one or two hours per week playing video games.

Currently, Dennis is teaching a course in Critical Games Theory; he has taught this course many times in the past. In addition, he has taught different courses in Architecture and a course in Virtual Worlds.

Dennis does not like lecturing too much; he prefers to ask meaningful questions to his students and to have discussions. Using his own words, his teaching style is heavily influenced from "critical inquiry" and the "Socratic dialog" teaching methods. He also likes to have very dynamic lectures and keep their students engaged in play-alike activities. He likes to have"fun lectures." He illustrates this with one example from his Planning in the Gaming World course.

> I had a lecture in history, I will show them pictures of buildings and I will ask them'keep it or tear it down.' And they will say, that's horrible, tear it down. And then I will tell them what the building was, and what actually happened. You know, one of the buildings that I showed them and they said 'tear it down', I ask them 'you know what this building is?' and I said 'That is Elvis Prestley home, you can't of tear it down.' I think that the idea of play was really alive in that class. Even when it wasn't necessarily playing video games."

Dennis has a wide experience using both, video games and board games for teaching. The first course in which he started incorporating games was the "Planning in the Gaming World" at an undergraduate level. He started teaching this course almost ten years ago; from the start, he incorporated SimCity as part of this course. At that point SimCity was a popular game and it was trendy for teaching urban planning courses, then he thought it was a good idea to use it for teaching in related courses. After that course, he started incorporating other games in the same and in other courses.

Dennis perceives video games as effective instructional tools for difficult contexts. He also agrees that video games can be good for some concepts, but not for all. He finds video games especially useful for teaching introductory topics.

About the Course Using SimCity: Planning in the Gaming World

This course lasted for 15 weeks, it was taught once per week and three hours per session. It was not a required course, students were able to register to it as an elective course. This was the only section available; however, students have as an alternative other elective courses. Dennis taught this course five times during a period of two years and a half. He is not teaching this course anymore.

Last time that Dennis taught this course, an average of 20 students registered to it. From these students, two thirds were male and one third female. Most of the students were from the Environmental Design undergraduate program. Most of students had on mind to continue in a master program after finishing the degree; just few of them were oriented towards the workplace. The average age of the students was between 18 and 21 years old; most of them were junior or senior students.

Most of the students registered to this course because they were interested in the topic. However, few of them registered to it because it was at a convenient time or because it was a good course to take at the end of the week. Based on Dennis' observations and experience, one third of the class was made up by avid gamers; one third was made up by casual games, and one third did not play video games at all. Some of the students were simply familiar with SimCity, but most of them used to play it when they were younger.

The main goals of this course were to help students understand key concepts in planning, identify the opportunities and limitations of digital media in the planning and design process, and to generate ideas about how planning should occur in both, virtual worlds and the real world. Dennis was expecting that students will understand the basics of planning, the commonalities between architecture and urban planning, and to give the students some of the tools to better understand urban planning.

In the course, there are two major assignments:

- Second life project. Students had to build collaboratively various things such as a place to play or a place to shop using Second Life. Students had to negotiate in order to build stuff.
- SimCity project. Students had to write a paper-review of SimCity and to present an urban-planning concept using the game. For example, a student created a sophisticated modeling of a city as an intervention in an urban landscape.

In addition, he also evaluated presentations and participation. There were no other forms of assessment such as exams or quizzes.

The first time that Dennis taught the game, his department asked him to create a new course in which he had to use video games. Then, he created the content and its syllabus based on popular video games and board games that were related to planning. Through the years, he has been updating the syllabus. For example, he has realized that because of internal policies in the university, installing a game in a computer lab is not always easy. So he has moved more towards using more board games and other types of activities. For instance, now students have to modify "Pit", a stock market game.

SimCity was introduced during the second week of the course. In the first week, Dennis introduced the fundamentals of Planning; then, in the second week he introduced planning and systems and explained how SimCity can be used to simulate a city. The main goal of this lesson was for the students to understand the basics of planning and systems and be able to put theory in practice using SimCity. During the third week, Dennis discussed how a digital medium can act as a rhetorical environment. In this lesson, it was expected that students will understand the limitations of SimCity as a simulation tool. For the rest of the course, Dennis covered topics that are more advanced, for these topics Dennis does not use SimCity.

How Dennis Used SimCity in the Course

Dennis started to use SimCity because, at the time that he was required to teach the course, SimCity was at its peak of popularity for entertainment and instruction. Dennis knew that SimCity is well known for teaching Urban Planning; so he felt that it should be a mandatory game if he wanted to teach this course using video games. He did not think about other alternatives to simulate a city in a digital way.

The first time he taught this course, he wanted to use it as a main "pillar" of the course. He thought that it will be a great tool for learning and that it will encourage discussions. He was thinking about creating, as the literature suggested, weekly assignments that had to use the game. However, after realizing the limitations of the game, he changed the way he used the game. The last time he taught the course, he was expecting that it will help illustrate basic concepts of the course, open up discussion, and allow to introduce more advance topics and other games.

The course was project-based, which, according to Dennis, is the nature of courses related to Architecture and Urban Planning. The first time he taught the course, he created an outline of the content of the course. Besides considering SimCity, he also wanted to include other games. He went to a games store to look for games for each part of the content of the course.

Then, he decided how to use each game for each part of the content. He decided to use SimCity for lessons such as Planning as a System.Students had to explore what happens if they raise taxes or if they do not build roads. Dennis' main goal was to make the students think about how a city can be looked at as a series of variables and how these variables interact.

During the second week of the course, Dennis asked the students to complete the tutorial and start building the first city. They did that at home. Then, for the third week, students had to do two readings about how SimCity influences planning culture and write a report about how they built their city and why. Based on their experiences, they had in-class discussions.

The first few years that Dennis taught this course, each computer in the lab had installed a copy of SimCity. It became problematic because a "key disk" was required in order to run the game. Then, Dennis just told the students to buy their own copies. At that time, there were old versions of SimCity, so they could find something for $20. Because the course did not require any type of textbook, that requirement was reasonable. It was the responsibility of the students to buy the game.

Dennis also thought about students who may not like to play video games. However, because the focus of the course involved video games, he was expecting that students would enjoy playing them. In the title and in the syllabus of the course it was explicitly indicated that they would use SimCity as part of the course. If students did not like that, they could choose another course.

Reflecting on the Experience of Using the Game

Based on his experience using SimCity for teaching, Dennis concluded that it is good for introducing the basics of a course, such as basic planning theory, and as a way to introduce students to other games, such as Flux and Carcassonne, that are also used as part of the course. The main limitation is that, from a teaching perspective, SimCity is very inaccurate. For example, a car looks almost the same size than a building. Nonetheless, this limitation helped to see the game from a critical perspective and start a discussion.

> I remember, Will Wright used Jay Forrester's book as the basis of SimCity. So there is in place a kind of basic planning theory. So it was good. It looks at budgets, issues like traffic and how it affects the variables in the game. But once you got through that, there was not really a lot left in SimCity. In fact,

> SimCity has these horrible things wrong from the point of view of teaching planning. So as a result, I have them playing SimCity and in one of the first activities after they play SimCity for a while is, I will say "so, class... what's not real about SimCity" and they will be like "what do you mean? What is not real about it?" Finally some students will be like "well, time goes by much faster than in real life." I will be "yeah, for sure... that's one.." And then, we'll start dissecting the game.

From Dennis viewpoint, SimCity is a toy. It represents just a simplified version of a city. He refers to it as an "architect's dream of how a city works." As a player, it is possible to control everything, but cities are not like that. Despite this, Dennis found that this game work as a way to lead students into advanced topics such as Marxist Theory, Critical Media Studies and Game Theory.

In addition, the game helped students to think about cities in terms of systems. Students could play with some variables and see how they affected others. SimCity also helped students to develop critical thinking when using media, such as videogames, in order to really understand what is not evident.Dennis illustrates this with an anecdote:

> I brought this one class down to a city one day. I had a former city counselor person who was sitting on the border of this redevelopment district. Inside this city, there is this gigantic project that is still going to create a transit center kind of in the middle of the city, around the old train station. So they can tear things off, build stuff, this is a giant project. So she took us to a tour of the project and kind of where buildings are going to go, what was getting turn down, what was getting kept. You know, the fight between the developers and the

> neighborhood. The developers wanted bigger buildings, the neighborhood smaller. You know, between the federal government, the state government; the financiers, the landlords. She described all this. The students were very interested. Actually, they got to see a real city-scale kind of urban planning event. After she left, I looked at the class and I said, 'So, what do you think? Is real world urban planning more SimCity or more Flux?' and the students they were more like 'This is way more Flux.' They saw, when they finally, right in front of them, they got that. SimCity is not about cities, it is no more about cities than 'Call of Duty' is about war.

Dennis found that the main challenge was, and not just for SimCity, also for other games, that "games are great at teaching something, but games are not great at teaching everything." For instance, for teaching Planning History, a core part of urban planning, Dennis could not find any game that could be a good fit. He gave some readings to the students, but ideally, he would have preferred to use games.

In addition, Dennis noticed that when using a game in a computer laboratory, students tend to juststare at the screen. It is hard to encourage them to discuss, collaborate and participate. That is why Dennis decided to stop using SimCity in-class and to ask students to play it at home. He found that a better alternative was to use board games in class.

The first time that Dennis taught this course, he did not feel that he achieved all the objectives of the course. One of his student's commented: "I know we are learning something, but I'm not sure what it is."

The course got better through time,last time that Dennis taught the course in 2008, he felt that he "had a good handle on what I was doing, what I wanted to achieve, how to achieve it. I will say that the success bar went up over time." So the objectives of the course were achieved. Dennis believes that the performance of the students is always related to the performance of the teacher. So through time the performance of his students also got better.

The first time that Dennis was teaching the course was more challenging. Back then, there were not many people using video games for teaching. He felt isolated. He feels that now there is much more research and that teaching with games has improved.

From students' evaluations, students liked the "playful" approach of the course. They were engaged with the content and enjoyed not being in a drill and practice class. They liked the dialog, the engagement, and the critical pieces of it. In addition, they also liked the use of games, including SimCity.

Dennis will definitely use SimCity again. Even though now there are other alternatives that are quite good, such as CityLife, SimCity is still popular and it is a must when using games for urban planning.

> Probably I will use SimCity, because, you know, it is SimCity. You know, if you are going to teach a class with MMOs, you have at least to talk about World of Warcraft. I like SimCity, it is a fun game, I'm still enjoying it.

Overall, he liked how the course was taught last time and students' reactions. If he was teaching this course again, probably he will teach it in the same way. However, he would like to incorporate new games such as Minecraft. He sees a lot of potential on it. Dennis is not sure how he could use it, but he is confident that there is a way:

I would use Minecraft today if I was teaching this class. There is a lot of that I like about Minecraft. I don't know how I will use it, but I'm pretty sure that I will use it. Probably because it is a spatial interesting game. You know, it is a game about the American West, whether people realize it or not.

Donovan: Introduction to Game Design

I use video games because most of my courses are linked directly to video games; they are my primary example, and also they are part of, big part of my culture. Even for non or at least non-specifically game related courses, I'm looking for examples or things to refer to that, and also being able to refer to, game examples come also to my mind, to get straight the point.

About Donovan

Donovan is a 33 years old, full-time faculty member Large, public second-tier research university in Eastern Canada. He is a professor in the department of Media and Design, which belongs to the faculty of Fine Arts.

At a Higher Education level, Donovan has been teaching for more than seven years. He usually teaches courses related to Game Design, Game Studies, and Media Arts. In his present institution, he has been teaching for one year. During the last academic year, Donovan taught courses such as Game Design and Introduction to Media Arts. In the past, he has taught courses such as Game Prototyping and Introduction to Aesthetics and Design. In addition, Donovan also has professional experience as a game designer. He worked in the gaming industry for one year, and he has been working as an "indie" game designer seven years. Donovan has a doctorate in Cinema Studies, a Master

in History and a Bachelor in Humanities. His main research interest is the history of video games.

Donovan's preferred teaching method is lecturing. He also likes to ask questions to his students, encourage them to participate in the class and to present their ideas, and to engage them in discussions. He also tries to incorporate a big practical component to his courses. He constantly shows YouTube videos and plays video games in the classroom in order to illustrate the theoretical components of the course. Students analyze these games and discuss them all together. He also encourages students to bring their own repertoire of games into the discussions.

Donovan started playing computer-based video games when he was a kid. Since then, he has been playing video games many hours every week. Presently, Donovan plays five hours per week, but when he plays a new game, he could spend more than twenty hours per week. From a time-investment perspective, Donovan does not consider himself as a 'hard-core' player. However, he considers himself a 'hard-core' player in passion. Donovan is mostly a 'PC-Gamer', he does not have that much experience playing console games. He is a big fan of role-play, simulation, strategy and adventure games. Among others, his favorite games are the *Quest of Glory* series, the *Civilization* series and the *SimCity*series. He started playing SimCity since its first release in 1989. He has played most of the versions of this game, including the latest version, SimCity 5.

Donovan has used video games in most of his teaching experience. However, he does not use them thoroughly during his courses. He uses them as "side notes" in order to illustrate specific parts of the content of the courses. SimCity is a game that Donovan uses commonly as part of his courses. In courses such as Introduction to Game Design, a

course for last-year undergraduate students, he considers that SimCity is a game that must definitely be discussed.

About the Course Using SimCity: Introduction to Game Design

This 14-weeks course is usually taught during the fall session. It is offered once per week and each class lasts around three hours. It is an optional course and there is just one section.

Last time Donovan taught this course, 22 students registered on it. From these students, roughly, half were male and half were female. Most of them were from the undergraduate program in Media and Design, but there were few students from other faculties. Most of the students were in their last year. Students took this course because it is part of their program, some students were aiming to become professional designers, and some were just interested in the topic. For this course, it was expected that the students had experience playing video games. From Donovan observations and discussion with students, most of the students at some point in their lifes, have spent a considerable amount of time playing video games. Not all the students had played SimCity, but all of them have heard about it.

Donovan created all the content and the syllabus of the course. His department just gave him a small description of the course. The main objective of the course was

> For the students, to get an understanding, a deeper understanding of the game design foundations and the vocabulary and the concepts related to game design when we speak about game design theory and also to themselves found their skills and become better game designers. To keep and increase their awareness of game design theory, but also to engage them in practice so they can

build knowledge. And to, in a general way, establish their sensitivity to the relationship between design and experience.

After completing the course, it was expected that students would be able to integrate the basics of game design as part of their games. When designing games, students should design a set of rules and objects; but they also have to understand that gameplay comes through "the circuit of experience with users." Students also have to understand how game design actually influences the game experience and gameplay.

Donovan started the course introducing basic concepts of the theory of videogames such as game autoethnography, ontology of games, game as system and procedural rhetoric. Then, he covered specific concepts of game design. These include fun, game mechanics, challenges, interfaces and usability. Finally, he introduced advance topics such as level design and game balance.

As part of the major assignments, students had to develop two prototypes of games, one for each half of the semester. For each game, he assessed the whole design process, including pre-design, development and testing. He also evaluated how "fun" and "effective" the games were. Students also had to write a small report regarding their experiences designing and developing these games. In addition, students had to do weekly readings and play some suggested games. Donovan used these reports and the discussions in class to assess informally the progress of the students.

Donovan lectures most of the time; however, he also incorporated presentations created in PowerPoint. He also used "Moodle" to make resources available to his students. He posted articles, links to other types of references, and the assignments. He also incorporated video games as part of his teaching showing online videos, screenshots

or playing the game in-class. SimCity is a game that he used recurrently to illustrate various concepts of game design. As part of the first lesson “introduction and gamer autoethnography”, he used it to illustrate “game versus toys.” In addition, he used it for two more lessons “Game as (open) Systems” and “Procedural Rethorics”

In the “introduction and gamer autoethnography” lesson, students had to learn the basics topics of game design. As part of them, they had to understand the difference between games and toys. It was expected that students would understand that not all games have goals, some are more like ‘artifacts’ or ‘toys’ that are used to play and create experiences that are not necessarily games. In the second lesson, “Game as (open) systems”, students had to learn how all the components of a game interrelate creating and experience. It was expected that students would understand that even games, such as Pac-Man, that are not that complex, also represent a system. Finally, in “Procedural Rhetoric”, students had to learn how games can be designed to express something. It was expected that students would understand how video games couldbe analyzed as expressive objects through their systems instead of their narrative.

How Donovan Used SimCity in the Course

Donovan always chooses games for his courses based on the games that he finds interesting. Because he is the one who designed this course, the content and material were very influenced by his domain of expertise and his own game culture, in which SimCity has been very important. When he was designing the course, SimCity was always at the back of his mind. For him, it was very easy to think about this game as a good fit to illustrate basic concepts of this course. He considers SimCity as a very creative tool and as a “very systemic and emerging game.” Donovan explains:

> SimCity is systemic and emerging because it is not scripted. There are no critical tasks that you have to go through the story and scripted events. It's a game that has functioning parts and then you do whatever you want with them. As the designer Will Wright said, ‘it is also an example of a game that is more like a toy than a game.’ There are no objectives or ‘victory’ conditions to it. You just fool around with it, you propose yourself your aims and directions, and then you succeed or not.It is also a very creative tool because you can design very much the way you want.

When Donovan designed the course, he assessed the objectives of the class, the context, the students, and expected competencies. Based on that, he designed the content, the assignments, and decided the tools and games to be used. After designing the content, from his own repertoire of games, he decided which ones could illustrate better the different topics of the course. He explains that this was not an easy process.

> It is actually a very long process to find game examples; there are many difficulties when teaching games with game material. Even as a lecturer if you want to get to a certain point in a game to show something that happened or that will happen or specific behaviour, you need to go yourself until that happens, make sure you have the saved game right before and then you can show it live.

Donovan illustrated topics using games in two ways, showing the game, or parts of the game, in class and using screenshots. The first one, as he explained, was the most challenging one. He had to find the specific moments in a game that best supported his explanations. Sometimes he just showedYouTube videos. Sometimes he actually had to play the game in class. He explains that for some concepts it is necessary to show the

game "in action." So he has to play the game himself, save the game right before, and then show it live. In addition, the main reason the class does not altogether play the game is because there are not necessarily the facilities for doing so. It is challenging to use the game in the computer laboratory, it is hard to convince the administration to buy licenses, it may be expensive, and it is not a game that students will use more than a couple of hours per term.

Using screenshots was the easiest way; however, it was still challenging to find the best screenshots that exemplifies what he wanted to show to his students. He sees showing the game in the class as the ideal way to illustrate what he is explaining.

Donovan always prepares all the class material, including the games, in advance. The main reason is because

> It is really hard to be spontaneous about this, because the difficulties I just mentioned. if I'm teaching and I just say, 'oh it's like in this game', and then I have to find it on my computer, try to see where I can find the examples, so usually I prepare in advance. I have the examples, even if they are screenshots, videos, and when I really want to make a strong point, I make sure to have the game installed with the a saved point in good places, and then I go there.

When designing the introductory lessons about the differences between toys and games, Donovan thought about using other alternatives instead of SimCity. He illustrated this point with an analogy: “A ball is not a game, but you can play with it, then you make tennis, and then it becomes a game, but with the same artefact.” SimCity was still a better reference than just using the “ball” or similar examples. Students were familiar with the game and it represented what a toy is in a very clear way. For the other topics in which

SimCity was used, “games as systems” and “procedural rhetoric,” Donovan did not think about other alternatives; SimCity was just the right fit.

When Donovan showed the game in class, he brought his computer and played some parts for his students. He expected that his students would understand the basic differences between toys and games, and challenge them about how to turn toys into games. He also expected that students would be sensitive to the fact that simulations "are not transparent". Donovan explains that “whenever someone makes a simulation, although he may think that he is reproducing accurately the model he is trying to do, there is always bias because the simplification.” Additionally, he expected that through SimCity students would understand what a complex system is.

In addition, as a personal aim, Donovan expected that his students, especially those who are not familiar with SimCity, would build some “game literacy”. He explains that not all students have the same references; by showing SimCity, he wanted to make sure that all of them would know how the game looks like. With this game, he wanted to also to attract the attention of the students and show how complex the system is. He explains:

> Every game, especially once you are familiar with, you see it as something normal. But I want to attract their attention to show them how complex it is, to attract their attention the level of detail and complexity that goes behind and make conclusions to the design work in games. So it is not only a rare story and then the game is made. They also need to think about such a thing, if I model a city, so how is waste management modeled. So the houses create waste, so they are trucks around that gather it where do they go. Someone has to detail all these procedures.

Every single procedure, every little object in SimCity is the object of the designer. So it is kind of overwhelming.

Even though Donovan thought about students who have not played the game, he was not too concerned about it.He sees this game as something very relevant to the course. He explains that there are many games that asplayers, he and his students do not like, however there is too much that can be learned from them. He just expected that his students will pay attention and think about of the game; not to play it for a significant amount of time.

Donovan has an official copy of SimCity installed on his personal computer and that's the one that he showed in class. He is not aware if there were any type of restrictions regarding the fair use of the game; he was not too concerned about that. He always uses legal copies of his games and, if his students buy games, he believes that it is their responsibility to buy a legal copy of the game.

Reflecting on the Experience of Using the Game

Donovan found that using SimCity to illustrate games as toys worked perfectly. He felt it was a good fit to illustrate this topic. When using it in "Game as a system", SimCity worked to show the complexity of a system design as a part of game design. It helped to show the levels of detail and procedures in a game. In procedural rhetoric, it worked because it is an obvious example for this topic. Once it is mentioned, it kind of makes evident the main concepts of the topic.

Donovan hesitated about the total success when using SimCity for explaining "Games as Systems." He felt that it may "push the perceptions of that these high level games only are systems." Other games, such as Pac-Man can also represent a system. In

addition, for "procedural rhetoric" he was concerned that SimCity gives the cue that only games about real life issues can deliver a procedural rhetoric, when it is not necessarily the case.When he was explaining these topics, it seems that everything was clear; but after few weeks, he noticed that it was not the case. Then he had to clarify some concepts, change the examples, or the explanation around the game.

Donovan felt that the objectives of the course and the ones for the specific lessons in which SimCity was used were achieved.

> Examples are always useful ways to remember and thinking aids for certain content. I think it remains with students as a way to explain or think about something like ‘procedural rhetoric.’ Yes, I have the feeling that the specific use of SimCity kind of worked.

Students reactions about the course and from the selection of games, including SimCity, for the course was positive. However, he was concerned that sometimes students did not understand what Game Design is. Despite that, many students created games successfully and tried to play different games in a very critical way.

Because Donovan always uses SimCity for teaching these specific topics, he does not have a point of reference if there could be a change of the performance of the students if these topics were taught in another way. SimCity has been always his first choice. He definitely will use this game again next time that he teaches this course.

He may do some improvements to the way that he uses SimCity.He may change it for another game when discussing “game as systems.” He was still questioning about this.

Jane: Theory of City and Regional Planning

SimCity first came out when I was a freshman in college and I enjoyed playing it for recreation. Then, when I became a professor, I've been teaching planning theory. I was looking for creative ways that I'll be able to make theory more engaging to students. And so, I thought “well, SimCity will be a nice game that students will enjoy and it will be a way for them to physically build cities,” and they could build based on that theoretical context.

About Jane

Jane is a 38 years old full-time faculty member in the School of Architecture in a large public, research-intensive university in the Midwestern United States. Jane has more than 10 years of experience teaching at a Higher Education level. Her subject area of teaching is city planning. Last academic year, she taught an upper undergraduate and graduate course called "Technology in the City", which was a massive open online course with 20,000 students in it. She also taught an undergraduate studio class. In the past, she has taught courses such “Planning theory”, and “Studio I.”

Jane has a bachelor of science in Political Sciences, a master of Public Administration, a master in Urban Planning, and a doctorate in Urban and Regional Science. Her main research interests are using gaming as part of activities in the classroom, participation in planning, and processes and technology. In addition, she has experience working as a professional planner.

Jane has been playing video games since she was in second grade. At that point, she used to play “Atari 2600” games such as Frogger and Pac-Man. Since then, she has been playing in a recurrent matter. She started playing SimCity when it first came out in

1998; she was in her first year in college. Since then, she has been a big fan of this game. When she was a college student, Jane used to play around 50 hours per week during summer time. However, she does not play that much anymore. Presently she plays one or two hours every week, and besides SimCity, she plays more 'casual games' such as Bejeweled.

Regarding her teaching style, Jane likes to use "'experiential learning." She likes for the students to "go out and experience different aspects of planning and then bring it back into the classroom." In addition, in her classes she lectures in, approximately, twenty minutes blocks. Then she encourages discussion and incorporates some kind of activities that students will engage with during the breaks between the lectures.

Jane has used SimCity as part of her teaching from 2003 through 2007 for the course "Regional Planning" that she teaches at a graduate level. Besides using SimCity, Jane does not have previous experience using other video games for teaching. However, in general, Jane views video games as a very valuable tool because "students can be more focused and spend more time really thinking about small details." She explains that video games can help put theory into practice. She illustrates this point with Simcity,

> It's one thing in a theory class to talk about theory in the big sense, and the other thing to dissect the city in very explicit detail and try to build a city. So it was just an effective tool to help with that.

About the Course Using SimCity: Theory of City and Regional Planning

This is a required graduate course that lasted 11-week during the spring quarter in 2007. It was taught once per week and each session lasted three hours. There is just one

section in which Jane was the teacher from 2003 to 2012. She used SimCity from the start up to 2007.

Thirty-five students registered in this course; all of them from the master's program in City Planning. From these students, approximately fifty percent were female and fifty percent male. Most of them were in their mid-20s; however their age ranged from 21 to 50 or plus years old. Students took this course mostly because it is a requirement of their program. Jane does not know information about the gaming habits of her students and about their experience using SimCity.

Jane created the content and the syllabus of the course from scratch. Her department just gave her a two-line description for the course, the same one that is included in the courses' catalog. The main goals of the course were to understand the basics concepts and major theoretical concepts for city and regional planning, to understand the utopian concepts of city form, to understand the ethical context of working in planning, and to develop critical thinking about urban problems. After completing the course, Jane expected that her students would have foundational knowledge of different planning theories and be apple to apply that in a physical context. In addition, she expected that her students would improve their research, writing, and oral communications skills.

Jane started the course introducing the basic of the course and "utopian cities" during the first weeks of the course. Then, she moved to ethics and the public interest in planning. After, she introduced the "Rational Model" and theory about social and political planning. Then she moved to advanced topics such as diversity in planning and communicative planning. She concluded the course with a review.

There were two major assignments in the course, SimCity Utopia project and the analysis of a comprehensive plan. In the first project, SimCity Utopia, students had to plan and develop a city using SimCity. For the analysis of a comprehensive plan, students had to prepare an analysis based on an actual plan. Plans were obtained from the university's library or from internet. Additionally there was a final exam. Jane also graded participation, discussions, and the use of the forums in WEBCT, a system for eLearning. Jane also used WEBCT to post the assignments, information about the course, and notes from the classes.

Jane incorporated SimCity as part of this course in two ways, as a major assignment and as a laboratory session. The first assignment, the SimCity Utopia project, was assigned the second week of the course and due for the fourth week. The main goal of this assignment was for the students to review the utopian planning theories and incorporate them in a city created using this game. She expected that students will select one and that they will analyze it in detail. Then, they should go through the process of studying the selected theory in depth and then use SimCity to actually build their project. The main goal of the laboratory session was to familiarize the students with the game connecting it with the main concepts of "Urban Utopias." After this session, Jane expected that students would understand the basics of the game, so they could do the assignment and understand why they are using SimCity for this specific topic.

How Jane Used SimCity in the Course

When teaching, Jane likes to encourage students to put theory into practice; she believes that students should experience in a practical way different aspects of planning. From her own personal experience, she found SimCity as a good way to see how a city

actually works. She perceives SimCity as more than a game, she considers it as a simulation that actually allows "more than just design a city." Jane explains that through this game, it is possible to see how a city actually works. It allows seeing the main issues of a city such as trying to provide city services and control the budget:

> By creating a city students will learn how infrastructure systems are built, their interdependencies and the importance of combining infrastructure and city services with good land use planning.

From her experience teaching the course, Jane noticed that students often have difficulties visualizing Utopian Cities drawn by planners. She felt that there was the need of creating an assignment that could help students to visualize this type of city. Based on her experience playing SimCity, she thought it could be a good tool for learning. Jane also thought about "Civilization" as an alternative. However, she found that this game is not detailed in the same way that SimCity is. She just felt that Civilization was not the right fit for what she was expecting: a tool that can help students to create a city so they can gain a deeper understanding of utopian cities while having fun.

Jane visualized the assignment as a research project. Then, she took a variety of historical utopian theories, urban development and modern utopias that could be modeled using SimCity. Students had to choose one, find out more about it, propose ideas of how the city will be, and then build the city.

For the first part of the assignment, in which students had to do research about a specific theory, she provided a set of questions that could guide the students to get all the information that they needed. Examples of these questions are: Where is the city located

in terms of topography? What amenities does the theorized city include? Would you want to live in a residential zone downwind of a large industrial complex?

Then, she indicated specific instructions about how students should create the city and to relate to the theory. For example,

> Students have to make decisions about zoning land for residential, commercial, or industrial uses and by supplying infrastructure such as roads or rail systems, electricity, police and fire protection.

Jane also indicated the main elements of the game that students should use. For example, she emphasized that students should pay extra attention to "analytical maps." These maps provide the necessary information to make good decisions. She also indicated which elements of the game, such as natural disaster, should not be used. Disasters such as tornados or alien invasions have nothing to do with the topic and it can be distracting for the students.

After students understood the conceptions of their theoretical cities, they could begin building them using SimCity. She also reminded them that regardless how well they replicated their city, it may fail. So they had to build the city slowly so they could make sure that they do not run out of money. They had to build different cities before reaching the final one; that was part of the learning experience. Once the students finished their city, they had to write up their experience reflecting on what worked, what were the main challenges, and what were the limitations of SimCity as a tool for planning a city.

Jane also conducted a session about utopian cities and SimCity, so students could learn the basics of the game and feel more comfortable doing the assignment. This

session was divided in two parts, lecture and laboratory. During the first part, Jane introduced theory related to Urban Utopias and the basic concepts of Urban Form. She also introduced the basics of SimCity. This lecture and the related activities lasted half of the session. Then, the laboratory started. While students were using the game, she was walking around helping them as needed. After this session, Jane expected that students would have a theoretical basis of the Urban Theories and that they will know the basics of the game, so they could start workingon their assignments.

Jane provided cd's with the games to be used, so students could use it either on their home computer or on the computers in the computer lab. They were responsible for carrying it around and for returning it by the end of the course. Jane did not have issues using the game in this way because it was "simply used for teaching purposes."

Jane also thought about students who may not like using the game. However, she expected that most of them would enjoy it. She found that SimCity really had the potential for the assignment, so, even students who do not enjoy video games, would benefit from the assignment.

Reflecting on the Experience of Using the Game

Jane found that some of the utopian cities were very detailed. Students had lots of material to draw from. These cities could be easily replicated. However, it became more challenging for some of the other theories because they were less fully developed. It became difficult for the students to choose how they will develop their city model. After students finished the project, the class all together had a discussion about which projects were the most successful and why.

A big challenge was learning how to use the game. It took the students a couple of tries before they could really build the city that they were planning. That led to many frustrating situations. So Jane decided to provide more detailed instructions that supported the assignment.

Overall, Jane found that the game was moderately successful in terms of achieving what she hoped. The main reason is because SimCity is based on the assumptions of the designers, who do not have necessarily a full understanding of planning:

> One of the issues is that SimCity does not fully tell the assumptions that are behind it. There are certain things that drive the success of the city. So, not fully understanding what the programmers of SimCity have built in their assumptions and what is in the model.

Compared to versions of the course in which Jane did not use SimCity, she noticed that the midterm exams were better, in terms of being able to talk about utopian communities when students used SimCity. She explains that the main reason is because students spent more time focusing on this topic. But definitely, she feels that there was a change in the performance of the students when they were using SimCity.

Students' perceptions about the use of the game were divided. Jane noticed that some students loved it, but some of them hated it. She explains, "the ones that loved it, tended to be gamers themselves and have some experience on gaming. The ones that hated it tended to be older students who were less computer savvy". Even though she developed more detailed instructions and tried to simplify the assignments, that was an issue. In addition, with the newest versions of SimCity, students were not able to easily

find their saved games and send them to her. Jane resorted to stop using the game after 2007.

She is not teaching this course anymore, so she has not thought about how it could be improved. If she teaches this course again, she is still wondering if she will use SimCity as part of it. However, she is still interested in the game:

> I'm not currently teaching a course that SimCity could work particularly. I would say it has continued my interest in game, particularly it relates to engagement of the community in entitling processes. I remember cities that use kind of gaming tools, so I have talked about those in my other classes, although we have not specifically used gaming in an assignment.

Jane still has a positive perception of using video games for learning; but she hopes that, at least for urban planning, in the future there will be games specifically built for city planning developed by planners:

> Games are a fun way to get students engaged with the subject and, you know, I would love to see games that are specifically developed for city planning. SimCity was not developed by planners, but I would love to see a game that is developed by planners that would have better documentation of the assumption, scenarios and things like that. You see a lot of discussion around scenario planning, but I think I'd love to see other tools that are developed that allow students to engage.

Findings

This section presents the analysis across the four participants presenting the themes that emerged from the consideration of the interviews, syllabi, course schedules,

and description of the assignments. As part of the open coding, the strength of the patterns were categorised in four ways. Dominant patterns occur in all participants. Strong patterns occur in three of the four participants. Weak patterns involve two of the participants. Interesting patterns are noteworthy issues that arise from one participant.

This section is divided in five parts: about the participants, about the courses, teaching style and SimCity, how participants used SimCity in the courses, and reflecting on the experience of using the game. The first part, about the participants, includes general information related to the demographics of the participants and their teaching, professional and gaming experience. The second part, about the courses, introduces the courses and their design. The third part, teaching style and SimCity, explore the profiles of the participants from a teaching perspective and explores why they use games for teaching. The fourth section, how participants used SimCity in courses, details how the participants incorporated the game. The last section, reflecting on the experience of using the game, explores the main opportunities and challenges when using SimCity for teaching. It also discusses how the course and the use of the game could be improved from the perspective of the participant.

About the Participants

Participants that used SimCity for teaching were between 30 and 50 years old, had a doctoral degree, were full-time faculty members, and did not have teaching experience outside of Higher Education. Two participants, Jane and Donovan, were in their 30s (weak pattern) and two, Chad and Dennis, were older than 40 (weak pattern). As a strong pattern, participants had more than 10 years of experience teaching in Higher Education. The exception was Donovan, who had seven years of experience teaching at this level. As

a dominant pattern, participants were teaching in research-oriented universities and had professional experience outside of an academic context. Donovan and Jane were teaching in large and public universities (weak pattern), and Chad and Dennis in medium-size, private, universities (weak pattern). Three participants, Chad, Dennis and Jane, were teaching in institutions located in the United States (strong pattern) and one, Donovan, in Canada.

Three participants were teaching courses related to Geography and Urban Planning, which was also part of their expertise, research interests, and professional experience. This was a strong pattern. The exception was Donovan, who at the time of the interview was teaching a course related to Game Design. His expertise and professional experience was also related to this field. Dennis was the only participant who was had video games and learning as part of his research interests.

A strong pattern also indicated that participants were long-time players. They started playing video games when they were kids; in the past they used to spend between 10 to 20 or more hours per week playing. Even though presently they do not play as much as before, they still consider gaming as one of their major interests. Dennis was the only participant who was not that interested in video games. His experience playing video games was rather limited and even though he is curious about video games, they are not part of his major research or personal interests. With respect to the participants' experience using SimCity, two participants, Jane and Donovan had advanced experience playing it. Dennis' and Chad's experience was rather limited. Both patterns were identified as weak.

As a dominant pattern, all participants' teaching approaches were geared towards a teacher-centered teaching style acting predominantly as a formal authority. In a teacher-centered teaching style, teachers prefer to lecture while encouraging students' participation and discussion; that was the case in all participants. As formal authority, they feel responsible of the content and how students receive it (Grasha & Yangarber-Hicks, 2000). However, in all cases, participants tried to encourage students to put theory in practice through a number of activities and, in some situations, they also incorporated student-centered practices (strong pattern). If that's the case, they tried to reduce lecturing and acted as facilitators putting more emphasis in discussions, sharing personal insights, and using real-world examples. For example, in Planning in the Virtual World, Dennis starts lecturing introductory theory to urban planning, and then students had to do an assignment using SimCity. After the students submit the assignment, they all together discussed the opportunities and limitations of the game.

Regarding their perceptions and use of video games for teaching, a dominant pattern indicated that participant started playing the game because of its popularity and, as a strong pattern, because of its engagement. No dominant or strong patterns emerged explaining why participants used video games in their teaching. However, Chad and Dennis mentioned that because of their learning value (weak pattern), and Chad and Donovan expressed because they fit with the content of the course (weak pattern).

When asking participants where the idea of using SimCity in their courses came from, Chad, Dennis and Donovan coincided that they got the idea from their own experience with using the game. While playing it, they realized that it fit with the content of the course. This was a strong pattern. In addition, they mentioned that SimCity has

been used for many years in Urban Planning and related courses. Its educational use has been reported in journals and conferences. Being part of this field, Chad, Dennis and Jane knew about its potential as an educational tool; that motivated them to use it as part of their courses. This was also a strong pattern.

From this section, it was possible to identify a profile of the participants who used SimCity for teaching. Participants are not necessarily young or new faculty members; age ranged between 30 and 50 years old. They are predominantly male, and they are long time gamers having advance experience playing SimCity. They started to play the game because they found it engaging. They are full-time faculty members, they have a doctoral degree, and they have more than 10 years of experience teaching in Higher Education. They have used SimCity for teaching in previous courses; however, they do not have previous experience using other games. They have professional experience in the Urban Planning and Architectures field, which is also part of their major research interests and expertise. Donovan was the only participant that was partially an outlier of this profile; his field of expertise was in game design. Their teaching style gears towards using student-centered approaches; however, they tend to adapt to the type of course and topic. Table 12 summarizes the results found in this section.

Table 12

About the Participants (SimCity)

Category	Patterns
Demographics	
Age	30s (weak), 40+ (weak)
Gender	Male (strong), Female (interesting)
Expertise	Urban planning (strong), game design (interesting)
Faculty	Architecture and related (strong), humanities (interesting)

Degree	PhD (dominant)
Type	Full-time (dominant)
Research interests	Games in general (strong), games and learning (strong), Urban-planning related (strong)
Type of courses	New media (weak), games-related (weak), urban planning (strong)
University's size	Medium (weak), large (weak)
University's type	Public (weak), private (weak), research intensive (dominant)
Location	United states (strong), Canada (interesting)
Experience	
Professional	Urban planning-related (strong), Game designer (interesting)
Teaching	10 to 20 years (strong)
Have taught using video games	General (dominant), SimCity (dominant)
Playing games	Intermediate and advanced (strong)
Playing SimCity	Intermediate and advanced (strong)
Teaching style	
Approach	Student centered (strong)
Type	Formal authority (dominant)
Practices	Encourages discussion (dominant), encourages practice and hands-on experiences (dominant), use of innovative technologies (strong), short-lectures (weak), traditional lectures (weak)
Beliefs about video games	
Why video games?	Learning value (weak), fits with the course (weak), good case studies (interesting), good for illustrating ideas (interesting)
Reasons because they started playing SimCity	Recommendations (dominant), engaging (strong)
Why SimCity?	Fits with the course (weak), good learning tool (weak), good case study (weak), popularity (weak)

About the Courses

A dominant pattern indicated that the courses were taught face-to-face, once per week, and the sessions lasted three or more hours. In all cases, participants had previous experience using SimCity as part of the courses, and the course and the syllabus were

created from the ground up: the departments only provided a small description of the course. This was also a dominant pattern.

A strong pattern showed that classes were relatively small having between 6 and 20 students. Jane's course was the exception, she had approximately 30 students. Two courses, the ones from Chad and Jane, were required. Dennis and Donovan taught optional courses. Both situations indicated a weak pattern.

About the courses' goals, it was possible to classify them in three categories:

- Understand (dominant pattern). They relate to comprehending and interpreting theory. Then students can apply the theory, solve problems and reach related goals of the course. For example, in Jane's course, students had to understand the fundaments of different planning theories.
- Familiarize. As a strong pattern, one of the main goals of the courses was for the students to become aware with the fundamentals of the course and with different related tools. For example, in Chad's course, students had to "be familiar with the basic of transportation planning and with the nexus of land use and transportation planning."
- Analyze. As a weak pattern, another recurrent objective across the courses was to examine in detail specific types of technologies or media. In this category students actually have to gain an in-depth understand related technologies. For example, in Donovan's course, students had to analyze different games identifying and studying the design of their main components.

A dominant pattern emerged indicated that the game was used for specific lessons. In all urban planning related courses, the goal of the lesson was to understand

and put in practice the basic fundamentals of urban planning and city building. In Dennis and Donovan courses, the main goals of the lessons were to see games in a different way, not just as an object for entertainment. This was a weak pattern.

About the students, Dennis and Donovan had students from undergraduate programs; Jane and Chad from graduate programs. Thus, two weak patterns emerged. As a dominant pattern, the students' age ranged between 18 and 24 years old. However, in the graduate courses, there were also students of 25 years old and plus. This was a weak pattern. In addition, as a strong pattern, students were from architecture and urban planning programs. In Donovan's course, they were from Computing Arts (interesting pattern).

As a strong pattern showed, one of the main reasons the students took the courses was because they were required as part of their program. There were also other reasons such as interest in the topic (weak pattern), schedule of course (interesting pattern) and reputation of the participant (interesting pattern).

Regarding the students' gaming habits, as a dominant pattern, at least 60% percent of the students had experience playing video games. Their experience ranged from casual to advance. However, as a strong pattern, their experience playing SimCity was rather limited. As a strong pattern, participants knew this information because their personal observations and discussions with the students.

From this section, it is possible to conclude that the average course that uses SimCity is related to the fields of Urban Planning and Geography. They tend to be more theoretical, they are taught face-to-face, classes are small, and the sessions last three or more hours. In addition, the course and the syllabus were designed by the participants.

The most recurrent goals of these courses are to understand and become familiar with specific concepts and theory related to the urban-planning field. In addition, the game was not used during the entire course, only for introductory lessons.

Students were from urban planning and game design programs. They tended to be from 18 to 24 years old and took the courses because they were required. In addition, students had experience gaming; however, not all of them were advanced players. Their experience playing SimCity was rather limited; however, they knew of it. Table 13 summarizes the results from this section.

Table 13

About the courses

Category	Pattern
About the course	
Type	Face to face (dominant), required (weak), optional (weak)
Times per week	Once (dominant)
Length	Three or more hours (dominant)
Class' size	Small (strong)
Sections	Required course (interesting), optional course (weak), other alternatives not using games (weak)
Design of the course	
Experience	Previous experience using SimCity in the course (dominant)
Syllabus	Teachers created syllabus (dominant), departments provided a small description (dominant).
Course goals:	Understand (dominant), familiarize (strong), analyze (weak).
Integration in course	Game used for specific lessons (dominant)
Goals lesson:	Understand theory (strong), put in practice theory (strong), see games in a different way (weak)
Students	
Level	Undergraduate (weak), graduate (weak)
Age	Undergraduate: 18-24 (dominant), 25+ (weak)
Program	Architecture and urban-planning (strong), computer arts (interesting)

Reasons took the courses	Required part of their program (strong), interest in the topic (weak), schedule (interesting), teacher's reputation (interesting).
Experience playing video games	60% have experience, from casual to advanced; experience using SimCity is limited

How Participants Integrated SimCity in the Courses

When choosing SimCity, Dennis, Chad, and Donovan did not think about other alternatives (strong pattern); SimCity was the right fit for their expectations. Dennis explains that when thinking about using games in Urban Planning related courses, SimCity is always a first option: "I think, most of that was pretty organic, I think it was not super-intentional. You know, if you are teaching an urban planning class, using games, you are going to teach using SimCity." Along the same lines, when teaching games as systems, Donovan names SimCity as an "obvious system," then, it was a straight forward option for this topic.

> Jane thought about using Civilization; however, she found that SimCity was more related to the content of her course. She explains "Civilization was not as detailed in the same way that SimCity is. For the kind of assignment that I was looking at I just thought it [SimCity] will be like a better fit."

A potential problem when using SimCity and other video games in the classroom is that students may not be motivated to use video games for learning purposes or there may be just an initial enthusiasm (Barab et al., 2009; L. Chen & Liu, 2009; Dipietro et al., 2007; Hamalainen, 2008). Therefor, for the purposes of this study, it was also worth discussing why if teachers were aware of this, they decided to continue with their plans. As a dominant pattern, participants were aware that some students may not be interested in video games; and that it could be an issue. Regardless, Dennis and Donovan (weak

pattern) indicated that they decided to continue because it fits with the scope of the course and they believed that it could be beneficial to the students. Similarly, Chad and Jane (weak pattern) decided to continue because they believed in its potential as a learning tool. In order to leverage this issue, participants thought about possible solutions. Chad suggested the use game as part of an optional assignment; Dennis mentioned the use the game from the start of the course, so students could register to another course if they preferred, and Jane provided detailed instructions about the use of the game. Because Donovan's course was related to video games design, he was not too concerned about this issue.

The teachers also had expectations regarding the use of SimCity as part of their courses. A dominant pattern indicated that participants expected to use this game as a way to help students to contextualize and understand the theory of the course. For example, Chad, Dennis, and Jane used the game as a simulation of a city in which students could model the theory of the course. Donovan used it to illustrate fundamentals concepts in game design. In addition, as a weak pattern, two participants, Dennis and Donovan, expected that the game would help students to develop critical thinking about the limitations of the game as a simulation tool. Dennis explains:

> We spent all this time talking about "wow... see how SimCity gets in your head, and makes you think about cities as toys, isn't wild, man?" and then, you know, you pop up Google earth and it says "hey, look, this a real science tool, but, hey, see how the same thing happens?" How that image of the city presented by the tool gets in your head and makes you think about the world in certain way? And I think that was a pretty powerful experience. Specially, for all these students

> that grew up on all these stuff, they are not super critical about that. They kind of think "I know real from fake, therefore, I am effective." SimCity was a great way to say "Woo..it's not that easy."

About the use of the game, as a strong pattern, Chad, Dennis, and Jane coincided that they use SimCity in a similar way than they would use another type of media such as a movie or a book. However, in contrast to other types of media, students had to play the game, analyze it in detail and report or discuss their experiences. All participants used it as an example to illustrate theory of the course. For instance, Donovan played it in class to explain the difference between a toy and a game:

> Games vs toys, that's one distinction that I like to make with SimCity. SimCity is particularly famous for making that distinction. There is a very well known quote that says "SimCity is a toy" and the last one is also for "Procedural Rethorics", following Ian Bogost in persuasive games. Not only that, also Gonzalo Frasca on simulation vs narrative, or something like that. And because they take SimCity as an example themselves, one of them at least, there is, when you make a simulation, as SimCity, you try to make a transparent simulation of city building. But since it is a model that you can always interpret it as ideological biases, or at least, expressive biases. The designers are making a statement of city building, but embedding certain rules and not other rules.

Dennis and Jane also used the game as object of study (weak pattern). In these cases, students had to play the game and analyze different aspects that related to the theory of the course. This was followed by discussions and written reports. In both cases,

students also had to build a city and analyze the opportunities and limitations of SimCity as a city-simulator.

Additionally, Chad, Dennis and Jane (strong pattern) used the game as a tool to build and simulate a city. Students had to build a city, incorporate the theoretical concepts of the course, try different scenarios, and analyze the outcomes.

Regarding the support of the game, a dominant pattern indicated that participants introduced the basic of the game to the students. In addition, three participants, Chad, Dennis and Jane, provided explicit instructions regarding the use of the basic functionalities and asked the students as a requirement to complete the tutorial. In addition, a strong pattern indicated that participants expected that students will be responsible of learning how to play the game; so they did not plan to provide extensive direct support to the students.

As a common practice, which emerged as a dominant pattern, participants introduced the theory before gameplay, and then students or the participant played the game. After, they altogether discussed the experience. A dominant pattern showed that discussion was one of the most important activities during the learning experience using the game. In Chad, Dennis and Jane, in which the game was used with more intensity, a common practice to control the progress of the experience was the use of "technical benchmarks" (strong pattern). At specific parts of the course, they indicated the progress expected in the game. For example, they expected that all students would finish the tutorial for a specific week.

About the assignments, in Chad, Jane and Dennis courses', students had to use SimCity for a major project, the simulation of a city. This indicated a strong pattern. In

addition, as a weak pattern, in Chad and Jane courses, students had to write a paper describing their experience and conclusions about using SimCity as a simulation tool.

Regarding the licensing and fair use of the game, as a weak pattern, in Chad and Dennis courses students got the license. In Jane's course, the institution provided it, and in Donovan's course, he got the licence, he was the only one using the game. As a strong pattern, Dennis, Donovan and Jane were not aware about possible limitations when using the game in class.

From this section, it is possible to conclude that the average participant got the idea about the use of the game from their experience playing it, its educational value and because it fits with the content of the course. They did not think about other alternatives, SimCity was just a good fit.

In addition, participants were aware of students that do not like games; however, because of the relevance of the game to the content of the course they decided to continue. With the use of the game, participants mostly expected that the game will help students to contextualize theory.

SimCity was used as an example to illustrate theory of the course as an object of study. First, participants introduced the theory of the lesson, and then they introduced very briefly the basics of the game. After, students had to play the game, and as part of an assignment, simulate a city, and analyze different aspects of the game that related to the theory of the course. This was followed by discussions. Students had to reach a "technical benchmark" at specific times of their game play. For example, after one week, it was expected that they would have a simple city already built. In addition, participants were

not aware about possible copyright limitations when using the game in class. Table 14 shows a summary of this section.

Table 14

How Participants Integrated SimCity in the Classroom

Categories	Patterns
General	
Where did the idea come from?	Experience using the game (strong), fits with content of the course (strong), educational value (strong), popularity and suggestions by other people (interesting)
Alternatives	Civilization (interesting), board games (interesting)
Aware of non-gamers in the class	Aware (dominant)
Continued because…	Fits with the content of the course (weak), they believe on it as learning tool (weak)
Solutions for students no interested in games	Optional assignment (interesting), mentioned the use of the game from the start (interesting), detailed instructions (interesting)
Expectations	Understand theory (dominant),, develop higher order skills (weak), motivation (interesting), encourage discussion (interesting), increase gaming literacy (interesting)
Practices	
Uses	Similar to other types of media (strong), , put theory in practice (strong), as an object of study (weak), to illustrate something (weak)
Activities	SimCity as major project (strong), write a paper (strong)
In-class practices	Discussions (dominant), first lecturing then play (dominant), use of technical benchmarks (strong)
Support	Introduce basics of the game to students (dominant), explicit instructions (strong), complete tutorial (strong), students had to learn it by themselves (strong)
Licensing and copyright	Teachers were aware of possible limitations (strong), students got the license (weak)

Reflecting on the Experience of Using the Game

As mentioned in the previous sections, courses that used this game can be classified in Urban-Planning related courses, and Game Design courses. In the Urban-

Planning literature, SimCity is frequently praised as a game that can be used as instructional tool for this field. Because of this reason, and its popularity, instructors in this field decided to use the game. In Game Studies, it is also often used because of its popularity. However, as will be discussed in the rest of the section, popularity is not always a good indicator of the effectiveness use of a game.

Even though Chad, Dennis and Donovan (strong pattern) agreed that SimCity was helpful to illustrate theory and to put it in practice and Chad and Dennis, indicated that SimCity was a good platform to engage discussions (weak pattern); a dominant pattern indicated that one of its main flaws is its inaccuracy as a tool for modeling cities. This game has the perspective of a game designer, not the one of professional planner. Jane explains:

> I will say it [SimCity] was moderately successful in terms of achieving to what we hoped. One of the issues is that SimCity does not fully tell the assumptions that are behind it. There are certain things that drive the success of the city. So, not fully understanding what the programmers of SimCity have built in is their assumptions and what is in the model.

Then, participants opted to discuss with the students the limitations and assumptions of the game. In addition, two participants, Chad and Jane (weak pattern), indicated that the difficulty of the game presented a challenge to the students, especially to those who do not have experience playing video games. Additionally, Jane found that because some versions of the games are relatively old, there were too many technical issues. Finally, Dennis also pointed out that the gaming elements of the game were too

distracting for some students, they kept staring at the screen, not paying attention to the class:

> You are in a lab, and everybody is sitting there staring at the screen. You are trying in the class to engage students with each other; SimCity is not very good in that. Let's face it. Video games are really awesome for playing by yourself.

As a dominant pattern, participants disagreed that they achieved what was expected with the incorporation of the game. It had limitations as a way to help students to contextualize and understand the theory of the course. Despite this, a strong pattern indicated that SimCity succeeded for introducing basic concepts in Urban Planning; however, it was not the best fit for all the content.

Regardless the game's flaws, as a strong pattern, participants felt that students liked using the game as part of the course; they were satisfied with the results. However, there was not access to students' evaluations or other type of sources validating this information. Jane was the only one feeling that students did not enjoy the experience. She felt that for students who have advance gaming skills, the experience was quite enjoyable. However, for non-gamers it was very frustrating:

> Some of them loved it and some of them hated it. So the ones that loved it, tended to be gamers themselves and have some experience on gaming. The ones that hated it tended to be older students who were at best computer savvy.

Chad and Donovan agreed that they would use the game again (weak pattern); however, Dennis was hesitating if he will use the game again. Jane will not use it again. Both of them were not particularly impressed with the results achieved the last time they

thought the course. The main reason is because SimCity has been updated, and they feel the newer versions are not adequate for teaching anymore. Along the same lines, when asking participants about how they would improve the course and the use of the game, as a strong pattern, three participants Dennis, Donovan, and Jane agreed that they would like to use other alternatives. Dennis would use board games, Donovan other games that also represents systems, and Jane, other educational technologies or teaching methodologies.

As a conclusion of this part, even though participants were partially satisfied with the use of the game, SimCity was not very useful for teaching Urban-Planning courses. For Game Design, it was moderately successful. Across the courses, the game was effective to illustrate introductory theory and to put it in practice. However, the main issue is that it is an over-simplification of a city-simulator. Because of this, participants did not reach their expectations. Most participants were not sure if they would use the game again. They were thinking about using other alternatives. Results found in this section are summarized in Table 15.

Table 15

Reflecting on the Experience of Using SimCity

Description	Pattern
Opportunities	
To illustrate theory	dominant
Illustrate theory	strong
Good platform to engage discussions.	weak
Building and city-simulation capabilities	interesting
Critical thinking	interesting
Challenges	
Limited for content	dominant
Difficult to use	weak
Technical issues	interesting

Distracting	interesting
Expectations	Pattern
Reached overall expectations	Dominant
Understand theory	Dominant (achieved)
Higher order skills	Weak (achieved)
Experimentation	Interesting (not achieved)
Motivation	Interesting (achieved)
Discussions	Interesting (achieved)
Gaming literacy	Interesting (achieved)
Improvement	
Try other alternatives	Strong
More support	interesting
Fix technical issues	interesting

CHAPTER 7: CROSS-CASE ANALYSIS AND DISCUSSION

The main goal of this chapter is to analyze the data across the three games. In the first part of the chapter, I elaborate on the Presage-Process-Product (3P) model (Trigwell & Prosser, 2006; 2004; 1999) that will be used to analyze the results of this study from the emic (participants') perspective. Because the components of the 3P model correspond to the first five research questions of this study, conducting an analysis using that model also answers those questions. The last section of this chapter takes the etic (or outsider's) perspective, and answers the sixth research question.

About the Presage-Process-Product (3P) Model

In this section, I elaborate on the P3 model that will be used to analyze the data across the cases. To do so, I elaborate on the five characteristics of this model and frame them within the context of this study. These factors characteristics of the teacher and the institution, the learning context, teachers' approaches to teaching, and outcomes of Teaching. I describe them in the following sub-sections.

Characteristics of the Teacher and the Institution

This category includes all the individual characteristics of the teachers, their knowledge and their experience. Teacher's personal characteristics, refers to the individual traits and attitudes such as personality, character, attitudes towards students and leadership (Bolyard & Moyer-Packenham, 2008; House, 2006; Martinazzi & Samples, 2000; Maslow & Zimmerman, 1956) and interests outside education (Dikkers, 2012). Different studies argue that effective teaching also depends on personality factors that students perceive to be relevant in a learning environment. For instance, in a quantitative study, it was shown that the improvement of teaching effectiveness may

depend more on changes related to personality than those related to their teaching and classroom procedures (Sherman & Blackburn, 1975). Along the same lines, based on different characteristics associated with research creativity and research effectiveness, from another quantitative study, Rushton et al (1983) describes the effective teacher as liberal, sociable, showing leadership, non-authoritarian, non-defensive, intelligent and aesthetically sensitive.

Knowledge and experience, refers to the ways that individual skills are used in teaching. It includes both, pedagogical experience, which refers to the educational preparation of the teacher (Bolyard & Moyer-Packenham, 2008; Martinazzi & Samples, 2000); and subject matter experience, which is the teacher's knowledge and practice in the field (Kennedy, 2007).

Teaching style, refers to "the distinct qualities displayed by a teacher that are persistent from situation to situation regardless of the content" (Conti, 2004, pp. 76-77 as cited in Conti, 2007). Teaching style is comprehensive and it is directly related to the teacher's teaching philosophy, which refers to the "comprehensive and consistent set of beliefs about the teaching-learning transaction" (Conti, 2007, p. 20). Teaching style varies depending on the course or specific topics; however, it is always influenced by the teacher's philosophy (Conti, 2007; Kauchak & D., 2008). According to Grasha and Yangarber-Hicks (2000) there are five types of teaching styles: expert—teachers who have all the knowledge that students need and are mostly concerned about transmitting information; formal authority—teachers who provide the structure of the course, expectations, rules, and provide feedback; personal model—teachers who consider themselves as an example to follow for the students showing them how they do things

and encouraging students to imitate their approaches; facilitator—teachers put more responsibility on the students about their learning, provide information when required, encourage cooperation and hands-on experience; delegator—they encourage students' autonomy and provide assistance when students request it.

The Learning Context

This category refers to the specific characteristics of the course including the students, formulation of instructional objectives, the sequence of learning, the instructional format and course assessment (Davis, 2009; Laurillard, 2002; Terlouw, 1997).

Entry Characteristics of the Students and the Course

Terlouw (1997) identifies two kinds of entry characteristics in a student: (a) cognitive characteristics, which involve capacities, learning styles, and available knowledge and skills, and (b) affective characteristics, such as student motivation. Regarding cognitive characteristics, teachers have to recognize students' ability to think, their possession of knowledge pre-requisites and their learning styles. According to Tubić and Hamiloğlu (2008), students differ from each other according to their own learning styles; it is then necessary to use different teaching methods that connect to the different type of learners so that students may be successful.

Regarding the affective characteristics, a central element that encourages students to study and to reach a goal is motivation (Terlouw, 1997). One of the principles of andragogy, a learning theory that was discussed previously, is motivation. This principle assumes that "while adults are responsive to some external motivators (better jobs, promotions, higher salaries, and the like) the most potent motivators are internal

pressures (the desire for increased job satisfaction, self-esteem, quality of life, and the like).” (Knowles, Holton, & Swanson, 1998, p. 68).

Formulation of Instructional Objectives

Instructional objectives are “descriptions of learning results to be acquired: knowledge, skills, and attitudes” (Terlouw, 1997, p. 357). Biggs (2003) suggest that, first, it is necessary to set the objectives, what students have to do, and then, decide how to get them to do it. Objectives should be stated in terms that require students to perform their understanding. It is then important to detail the levels of understanding required, and what performance or understanding will lead to that knowledge (Biggs, 2003). A tool that is frequently use to define and measure students’ learning outcomes is Bloom’s taxonomy (Biggs, 2003; Chan, Tsui, Chan, & Hong, 2002; Crowe, Dirks, & Wenderoth, 2008).

Benjamin Bloom was interested in shifting the instructional emphasis from teaching facts to teaching students how to use the knowledge they had learned. The foundation was that not all learning goals entail the same cognitive complexity and that educators should encourage more complex reasoning and problem solving. The taxonomy was therefore developed as a tool to help instructors categorize goals to ensure they are achieving higher-level thinking among students. It consists of six major categories in the cognitive domain: knowledge, comprehension, application, analysis, synthesis, and evaluation. They are ordered from simple to complex and from concrete to abstract. As such, they are arranged in a cumulative hierarchical framework.

Bloom's taxonomy is a very important basis for test design and curriculum development. However, due to the evolution of the educational field, this taxonomy has been out-dated and sometimes considered because of historical value. In order to update

and improve it, Anderson and Krathwohl gathered theorists from various areas to modernize the taxonomy. It was published in 2001 and is most referred to as the revised taxonomy.

In the new taxonomy, categories were changed from verbs to nouns. "Knowledge" was renamed "remembering; "comprehension" and "synthesis" were respectively retitled to "understanding" and "creating". In addition, in the revised taxonomy, the noun and the verb form separate dimensions: the knowledge dimension (noun) and the cognitive process dimension (verb). The two dimensions from the taxonomy table. The knowledge dimension forms the vertical axis and the cognitive process dimension forms the horizontal axis. Every objective can be classified in one or more cells of the taxonomy table; the columns are appropriate for categorizing the verbs and the rows for the nouns.

The Sequence of Learning in a Course

This refers the logical arrangement of the content and related material in a course (Davis, 2009; Laurillard, 2002). This is determined based on the teachers' own vision of learning, teaching philosophy, the kind of learning that is expected and the results intended from evaluating students (Terlouw, 1997).

A theory that helps teachers to select and organize content in a way that the learning goals are achieved is *elaboration theory* (Reigeluth, Merrill, Wilson, & Spiller, 1980). This theory is composed of the following basic strategies: organizing structure, simple-to-complex sequence, within-lesson sequencing, summarizers, synthesizers, analogies, cognitive strategy activators, and learner control (Wilson & Cole, 1992).

The Instructional Format

Instructional format refers to the way that learning is stimulated in students (Terlouw, 1997). It includes the combination of different teaching methods, such as lecturing or case-based learning; grouping, such as self-study, solo-work, group work and laboratories; media, such as books, computers and mobile devices; and the connection of these elements with the content and organization of the course (Laurillard, 2002; Terlouw, 1997). One of the main challenges of the design of the instructional format is the selection of the adequate elements that will make for an effective learning experience. Additional challenges are the constraints that can affect the course such as the entry level of the students, the sequence of learning, curriculum constraints and administrative constraints (Terlouw, 1997).

Two models that suggest explicit guidance in how to design the right instructional format are:

- Gagné's nine events of instruction. Gagné (1985) proposes nine instructional events that should satisfy or provide the necessary conditions for learning and serve as the basis for designing instruction and selecting appropriate media: 1) Gaining attention; 2) Informing learners of the objective; 3) Stimulating recall of prior learning; 4) Presenting the stimulus; 5) Providing learning guidance; 6) Eliciting performance; 7) Providing feedback; 8) Assessing performance; and 9) Enhancing retention and transfer (Gagné, 2005).
- Merril's principles of instruction. Merril (2002) proposes a prescriptive set of design principles which are common in various models. The five first principles of instructions are: 1) Learning is promoted when learners are engaged in solving real-

world problem; 2) learning is promoted when existing knowledge is activated as foundation for new knowledge; 3) learning is promoted when new knowledge is demonstrated to the learner; 4) learning is promoted when new knowledge is applied by the learner; and 5) learning is promoted when new knowledge is integrated into the learner's world.

Course Assessment

Finally, the last perspective that must be studied relates to how students are assessed and how the course is evaluated. Student's assessment refers to the design of course examinations that reflects students learning and effective teaching (Ali, 2005; Carbone, Mannila, & Fitzgerald, 2007; Ditcher, 2001). Students' learning is generally measured assessing students through the evaluation of projects, documentation, and final papers or exams (Petkovic, Thompson, & Todtenhoefer, 2006).

The evaluation of effective teaching varies according to the way that evaluation is conducted, the objectives of the evaluation, and the instruments that are used (Colby, Bradshaw, & Joyner, 2002). Examples of common evaluation instruments are students' ratings and questionnaires, paper-and pencil or online instruments where students evaluate teaching and/or a course (d'Apollonia & Abrami, 1997; Lavy & Shriki, 2008; Leung & Kember, 2005); discussion-based evaluations, this type of evaluation helps to understand students' perceptions, gather formal and informal feedback, and combine it to the perspectives of faculty, researchers, and practitioners (Connor, Buchan, & Petrova, 2009).

Teachers' Approaches to Teaching

This category includes teaching methods, media, tactics and technology that is chosen to stimulate students' learning (Terlouw, 1997). Teaching practices can be divided in to categories: teaching methods, which refers to the specific techniques that teachers use as part of their instructions, and use of educational technology, which includes the different ways that incorporate different types of instructional technology as part of their courses.

General Approaches to Teaching

In a broader sense, authors such as Mascolo (2009) classify teaching in two main categories:

- Teacher-centered instruction. In this type of teaching, the teacher is viewed as the main authority and determines the content and organization of the course. In this style, it is assumed that the body of knowledge is independent of the student; the teacher is viewed as the primary source of knowledge and as an expert. The main function of the teachers is to move a body of knowledge from their minds to the minds of the students (Mascolo, 2009). In this teaching style, the teacher primarly lectures, distributes assignments, tests and grades (Meyers & Jones, 1993). This teaching style encompasses practices from teachers as experts and formal authorities.
- Learner-centered instruction. In this type of teaching, the teacher is viewed as a "facilitator" who supports students who are responsible of their own learning (Mascolo, 2009). This teaching style encompasses characteristics from teachers as facilitators and delegators emphasizing a variety of different types of methods in which students are encouraged to participate actively in the class, solve problems,

answer questions and work in teams (Blumberg, 2009). Different studies have showed the effectiveness of learner-centered instruction over teacher-centered instruction. For example, after introducing a training program for faculty members of an university in North America, results from a survey indicated that the students' perception of the quality of the teaching at the university increased significantly (Kember, 2009). In addition, in a qualitative study about teaching practices in computer science programs in higher-education, Garcia-Martinez and van-Thiel (2010a) showed that learner-centered methods support a better way of teaching in the field.

Teaching Methods

Teaching methods refer to the specific "instructional techniques or behaviour" that teachers use when teaching (Tubić & Hamiloğlu, 2008, p. 139). Common teaching methods in Higher Education include direct instruction, active learning, collaborative learning, cooperative learning, and problem-based learning.

In the first teaching method, direct instruction or lecturing, the teacher stands up in front of the class and explains the topics using the blackboard or slides (Garcia-Martinez & van Thiel, 2010b).

A second approach, active learning, is defined as "instructional activities involving students in doing things and thinking about what they are doing" (Bonwell & Eison, 1991). Active learning is often contrasted to traditional lecturing where students receive information in a passive form (Prince, 2004). According to Prince (2004), there are two main elements of active learning: introducing activities into the traditional lecture and promoting student engagement.

The third approach, collaborative learning emphasizes collaboration instead of individual work and analysis; it focuses on how collaboration influences learning outcomes (Prince, 2004; Svinicki & McKeachie, 2011). Cooperative learning, the fourth teaching method, is based on the use of small class groups or teams where peer-interaction plays the main role in learning (K. Smith, Johnson, & Johnson, 1991). In cooperative learning, students are typically placed in small team, they collaborate in structured activities trying to maximize each other's learning (Koppenhaver & Shrader, 2003).

Finally, problem-based learning, is defined as "an educational format in which learning takes place in a small, self-directed group and in which actual problems and experiences form the beginning of the session" (Smits et al., 2003, pp. 280-281). In problem based learning, the problem guides the student learning. In this approach, the goal is not to solve a problem, but rather to help students identify their learning needs, understand the problem, and to collaboratively apply what is learned to the problem (Walsh, 2005).

Use of Educational Technology

Another teaching practice that is important to analyze is teachers' use of educational technology as part of their courses. Depending on factors such as the needs and characteristics of the adopter, attributes of the innovation, financial and technical incentives, affective factors (Mrabet, 2009),and, age and professional development (Palmore, 2011), teachers adopt various types of educational technologies. Common technologies used in the classroom at the Higher Education level are:

- Merging and using the best of traditional and online classrooms to offer unique learning experiences (blended classroom) (Marsh, 2003). For instance, it is possible to use technology to provide lectures outside of the classroom and reinforce the taught concepts through assignments and different learning activities inside the classroom (Clark, 2013).
- Incorporating web 2.0 tools such as blogs and wikis in order to encourage students to think and write in more depth than traditional formal essays (Warlick, 2006).
- Incorporating video podcasts as part of the lecture and asking students to create 'video mashups', which allow students to recombine and mix video-content content for themselves and to share with others (Bowness, 2008).
- Using virtual worlds. Evidence shows that virtual worlds are engaging and provide a good environment to experiment with real-life issues (Ertzberger, 2008; Kramer & Adviser-Bassett, 2010). They can also be used as a good social tool; but, the specific outcomes may vary according to the different methodologies used in the activities (Jennings, 2010).
- Using instructional video games. Video games are used for educational purposes in two ways: introduction of games developed from scratch (instructional games) and introducing games for entertainment (Van Eck, 2006 as cited in Tuzun, 2007).The first approach refers to the introduction of customized games, these games fit with the content and the context of the course; the second approach, the type of games of interest in this study, refers to introducing commercial-off-the-shelf games, games that are distributed primarily for entertainment (Becker, 2010).

Outcomes of Teaching

The last elements that compose this theoretical framework refer to the results of the course and self-reflection of the experience. For this, self and critical reflection is one of the best ways to receive feedback, to evaluate effective teaching and to improve the way of teaching (Wood & Harding, 2007). However, critical reflection requires skills that are developed with experience and maturity in the field (Walkington, Christensen, & Kock, 2001; Wood & Harding, 2007).

From the literature, cues that can provide guidance to collect and analyze data were also identified.

Figure 1 summarizes the proposed framework and some of the identified cues.

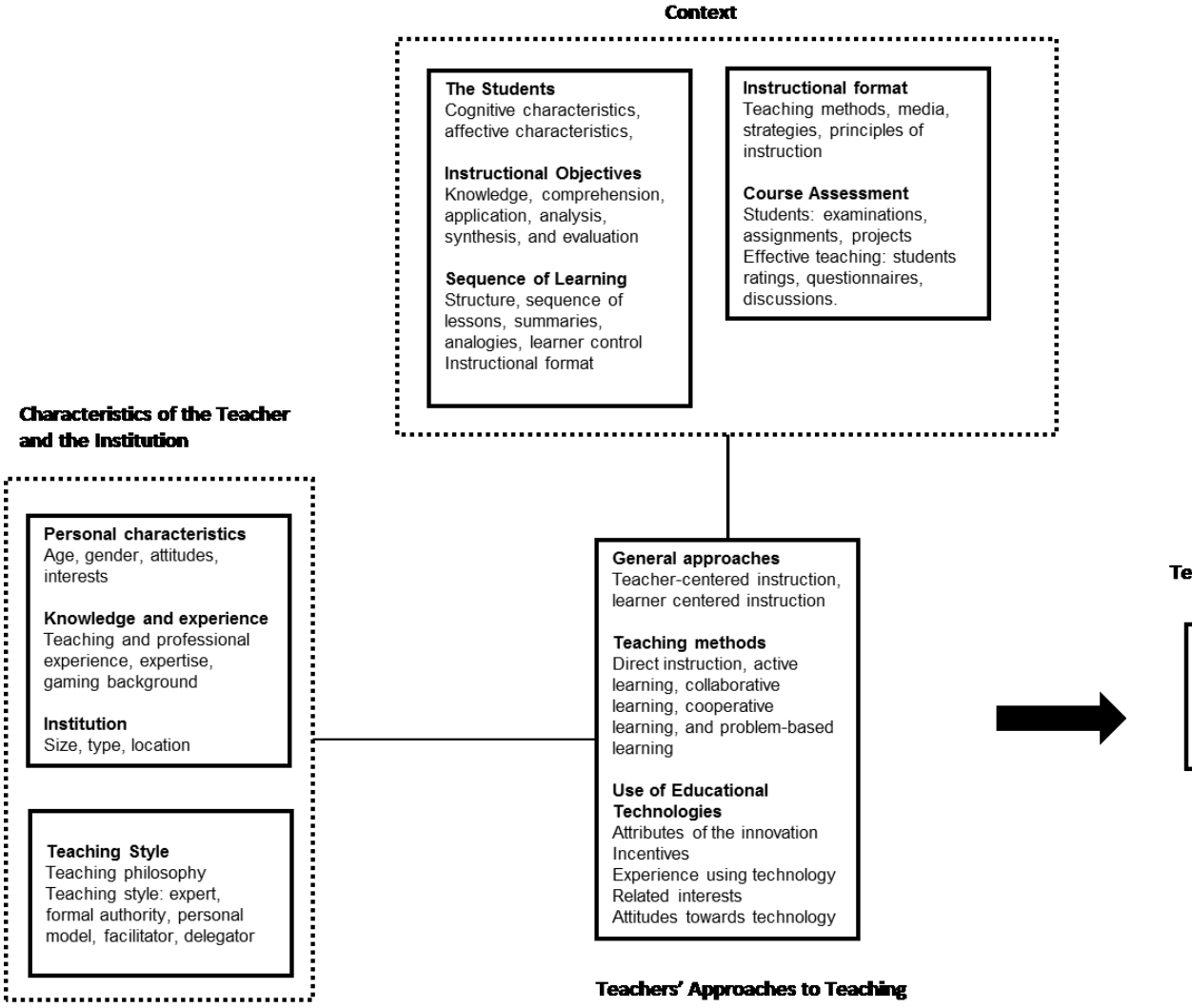

Figure 1. Framework use to Collect and Analyze Data

Analysis

This section provides the analysis of the data across cases using the 3P model. The components of the 3P model also correspond to the research questions of the study, so by analyzing the data, I also answer the research questions. This analysis addressesthe personal characteristics of teachers who incorporate video games into their courses, the

characteristics of the courses in which teachers used the games, why participants used commercial games, how they used them, and the experience of using the games.

Research Question 1: Who Uses Commercial Video Games for Teaching? (3P Characteristic 1: The Teacher and the Institution)

The first research question and component of the 3P model considers characteristics of the teacher who integrates commercial video games into courses as well as the institution in which the teacher works. This includes personal characteristics such as age, gender, teaching background and professional experience, teaching style and teaching practices (Martinazzi & Samples, 2000). This question seeks to understand the common characteristics of the Higher Education teachers who incorporated the commercial video games selected by this study as part of their courses.

As noted earlier, the following profiles were identified for the individual games:

- Minecraft. Participants are predominantly male, in their 30's or 40's and have less than 10 years of experience teaching in Higher Education. They are at least intermediate level gamers, but their experience playing Minecraft is rather limited. They have experience using other video games in their courses, but not necessarily Minecraft. They are located in the United States and their research interests relate to new media and digital arts. Their teaching style is predominantly student- centered. They believe that students are responsible for their own learning, they encourage discussions, prefer to reduce lecturing time, they incorporate other types of technologies such as social media, and encourage practice and hands-on experience. They started playing the game because of its popularity, creative capabilities, and its entertainment value.

- World of Warcraft. Participants have less than 10 years of teaching experience in Higher Education, they are at least intermediate gamers generally also play World of Warcraft. They started playing the game because of its popularity and its entertainment value. They are predominantly full-time faculty and have a doctoral degree; they also have professional experience outside of academia. They teach in public universities located in the United States. Games as educational tools are part of their research interests. Their teaching style is also predominantly student-centered. They try to reduce lecturing time, encourage practice and hands-on experience. They have previous experience with using different video games as part of their courses, but not necessarily World of Warcraft.
- SimCity. Participants are predominantly male, in their 30s or 40s and have more than 10 years' of experience teaching in Higher Education. They teach in urban planning or related programs in research universities located in the United States. Urban-planning and related areas are also part of their research interests. In general, they are at least intermediate gamers and play SimCity. They started playing SimCity because of its popularity, its entertainment value, and because they found the specific characteristics of the game interesting, such as its city-building capabilities. They are predominantly full-time faculty and have a doctoral degree, they have professional experience outside of the academia, and have previous experience using SimCity as part of their courses. Regarding their teaching practices, they encourage discussions and hands-on experiences.

From the cross-case analysis, the following characterestics of participants can be conluded. Participants have from intermediate to advanced experience playing video

games. This was a dominant pattern. A strong pattern indicated that participants started using the specific games for this study because of their popularity and their entertainment value.

Regarding general demographics, strong patterns emerged indicating that participants are predominately male and they are in their 30s; they have professional experience outside of the academia, they teach in medium or large research-oriented universities located in the United States. In addition, a dominant pattern emerged indicating that participants have previous experience with using various video games as part of their courses, but not necessarily with the individual games.

In addition, strong patterns also indicated that participants are likely to be new full-time faculty members having less than 10 years of teaching experience at a Higher Education level. Video games are also part of their research interests, but focusing specifically to their areas of expertise such as video games as new digital media or video games and learning.

In regards to their teaching style, participants self-reported their teaching style as learner-centered instruction, a strong pattern. According to Mascolo (2009), in this style of teaching, teachers believe that students are responsible of their own learning. This was confirmed based on their common teaching practices: participants try to minimize lectures, encourage discussions and collaboration, emphasize practice and hands-on experience, and prefer that students choose their own topics for the assignments.

Table 16 summarizes the results of the question, Who uses commercial video games for teaching?

Table 16

Who uses commercial video games for teaching?

Description	#Participants	Pattern
Male	10	Strong
30s	10	Strong
Less than 10 years of teaching experience	10	Strong
Full-time	11	Strong
Teach in medium or large universities	13	Dominant
Research universities	10	Strong
United States	13	Dominant
Previous experience using games [general] in their courses	13	Dominant
Previous experience using games [individual] in their courses	9	Weak
Professional experience outside of the academia	12	Strong
Play [game] because its popularity	10	Dominant
Play [game] because its entertainment value	8	Weak
Intermediate to advance experience playing video games	12	Strong
Intermediate to advance experience playing [game]	8	Weak
Casual or no experience playing [game]	6	Interesting
Video games are also part of their research interests	11	Strong
Learner-centered instruction.	11	Strong
Minimize lecture	10	Strong
Encourage discussions	11	Strong
Collaboration	10	Strong
Practice and hands-on experience	12	Strong

Research Question 2: For What Types of Courses, Objectives, and Students Do Teachers in Higher Education Integrate Commercial Games? (3P Characteristic 2—The Learning Context)

This second research question and component of the 3P model seeks to identify the characteristics of the courses in which participants used games, including their goals, content, and the field of application, to elucidate what is expected to be achieved by the use of video games.

As concluded earlier, the characteristics of the courses in which participants used the individual games games were as follows:

- Minecraft. Participants taught the courses at least once though not necessarily by using Minecraft as part of the course. The typical course is taught face-to-face, and the class is small (no more than 30 students). Additionally, the content and the syllabus are created by the participants; participants' departments provided them with a brief description of the course.
- World of Warcraft. The content of the typical course that uses this game is developed by the participants; but the department provided an initial description of the course. In addition, courses tend to be taught face-to-face to small classes (no more than 30 students). The typical student is an undergraduate, between 18 and 24 years old, and has advanced experience playing video games though not necessarily playing World of Warcraft. Finally, the typical student is from art or information technology departments.
- SimCity. The typical course that uses this game is related to the fields of Urban Planning and Geography. These courses tend to focus on theory and are taught face-to-face. The classes are small, no more than 30 students, and class sessions last three or more hours. In addition, the course and the syllabus are designed by the participants. Most of these courses have goals to understand and become familiar

with specific concepts and theory related to urban planning. In these courses, instructors use the game for the introductory lessons rather than the entire course. Students were undergraduates from urban planning and related programs. Their age ranged from 18 to 24 years old and took the courses because they were required. In addition, students had gaming experience but not all were advanced players. Their experience playing SimCity was limited but most students were familiar with it before starting the course.

Two dominant patterns emerged when analyzing the data across games. The first one is that courses were taught face-to-face and were small, up to 30 students. The second dominant pattern was that the syllabus and course content were created by the participants from a course description provided by their respective departments.

A strong pattern indicated that classes in which the games were used were not the only option available to students. Many of the courses in which the games were used were multi-section courses where students had the option of choosing a different section. In other cases, students could choose between the course in question or an alternative, or, the course was an elective. Only a few courses covered by this study were required and the only option available to students.

A strong pattern emerged indicating that the games tend to be used in one lesson or just in a part of the courses. For example, Minerva used Minecraft for one lesson of her course on Creating Content and Intellectual Property. This lesson lasted two sessions, the first one was a lecture about the topic and the second one was a lab in which students used Minecraft.

There were no patterns about the departments or programs in which the courses were thought. Although SimCity seems to be primarily used in one type of course: courses related to urban planning (a strong pattern). A weak pattern emerged that other courses in which participants used games involved the study of new media, including digital media, virtual environments, or video games. This was a strong pattern in Minecraft, and a weak pattern in World of Warcraft and SimCity.

Concerning course goals, the updated version of Bloom's taxonomy (2001) was used to classify them. Bloom's taxonomy (1956b) is frequently cited as a tool for classifying course objectives. It was originally proposed by Benjamin Bloom (1956b) and later updated by Anderson, Krathwohl and Bloom (2001). From a cognitive perspective, which refers to the development of intellectual skills, Bloom's taxonomy is classified in six categories that range from lower order to higher order thinking skills. Lower order thinking refers to the learning of facts and concepts such as for instance the recall and application of multiplication tables. It includes four levels: remembering—the ability to recall previous information; understanding—the ability to construct information and concepts; applying—the ability to use new information in a given situation; and analyz ing—the ability to distinguish and relate different parts of a problem. Higher order thinking involves the development of more sophisticated skills such as integrating information into systems, problem-solving and critical thinking. Higher order thinking includes two levels: evaluating—the ability to make judgments based on the material learned; and creating—the ability to adapt material into a new, coherent whole.

In terms of the courses studied, the games were primarily used to support lower-order thinking skills. One strong pattern in the data suggests that several courses were

used for objectives related to remembering, in which students had to become aware or recall different types of technologies and digital media, including games. Participants expected that after trying different tools, students could expand their technological knowledge and improve their technical skills and professional practices. For example, in James' course, students had to experiment with a wide list of technologies that could be used for educational purposes. The other strong pattern in terms of the course objectives observed is that participants used commercial video games to support objectives related to understanding. In these courses, participants expected their students to comprehend the fundamentals of the courses. This type of objective was specially observed in theory courses. For example, in Chad's, Dennis' and Jane's courses, students had to understand the basics of urban planning.

The next strongest pattern observed in course objectives was a weak one, and addressed another lower-order thinking skill: analyzing. In courses with goals related to analysis, participants expected students to examine in detail specific types of technologies or media. In this category, courses' expectations go further than just becoming familiar with a tool, students have to gain an in-depth understand of it. For example, in Brandy's, William's and Minerva's courses, students had to study in detail different virtual environments and video games.

Only a few participants used the commercial video games to support higher order thinking skills. Only three of the courses involved objectives related to applying. For example, Jane's course, students had to apply the basic theory of Utopian Cities through the simulation of a city built in SimCity. Similarly, four of the courses involved objectives related to evaluating and creating. For example, in Dennis's and Jane's

courses, students had to reflect on the limitations of SimCity as a tool for simulating a city.

Although many advocates of games suggest that promote the development of higher order thinking skills (Rice, 2007), the primary use by participants in this class was in support of lower-order thinking skills. .

In terms of the students with whom participants used commercial video games, I analyzed the basic demographics of the students, their experience playing video games, and the reasons that influenced their decision to take the courses.

One dominant and three strong patterns emerged. Participants incorporated the games in courses intended for students, ages 18 to 24, whom the participants felt would have limited experience playing the individual games used in class. This was a dominant pattern.

Although most were undergraduate students (strong pattern) some were in community colleges and enrolled in diploma (Canada) or associate's degree (US) programs. Furthermore, although participants did not expect that their students would have much experience with the commercial video game used in class, the participants reported that their students had intermediate or advanced experience playing video games.

In terms of gender, most of the classes (strong pattern) were predominantly male and the next largest number of classes had student bodies evently distributed between males and females. None of the classes was predominantly female.

A weak pattern worth mentioning indicated that one of the main reasons students took the courses was their interest in the topic of the course. Other reasons that emerged

as interesting patterns were that the course fit with their schedule or that the course was required. No patterns emerged regarding the students' majors. Students came from different programs with the exception of courses using SimCity. In this case, a strong pattern indicated that students came from urban planning and related programs.

From this part, it is possible to conclude that courses are taught predominantly face to face and classes are small. Participants have the freedom to design the course according to their style and interests. Most of the goals described by the participants or present in the courses' syllabi focus on development of lower order thinking skills, but there are also goals that relate to the development of higher order thinking. Games are predominantly used in few lessons, not the entire courses.

Table 17 summarizes the answers to the question, For what types of courses, objectives, and students do teachers in Higher Education integrate commercial games?

Table 17

Findings related to the courses and the students

Description	#Participants	Pattern
Background		
Face-to-face	13	Dominant
Small classes (3-15 students)	12	Dominant
Course syllabus created by participant	14	Dominant
Initial description provided by department	12	Dominant
Course is required	4	Interesting
Course is elective	7	Weak
Students have other options	11	Strong
Game used in one or few lessons	11	Strong

Game used in entire course	3	No pattern
Courses related to new media	9	Weak
Courses related to urban planning	3	No pattern
Courses related to English writing	2	No pattern
Goals		
Remember	10	Strong
Understand	11	Strong
Apply	3	Interesting
Analyze	7	Weak
Evaluate and Create	4	Interesting
Students		
Age: 18-24	14	Dominant
Level: Undergraduate	10	Strong
Gender distribution: male dominant or even	11	Strong
Gaming experience [general]: intermediate-advanced	11	Strong
Gaming experience [game]: limited	13	Dominant
Reasons: Interest in topic	7	Weak
Course was required	6	Interesting
Fits with their schedule	3	Interesting
Majors:		
Arts or Media related	7	Weak
IT	1	No pattern
Urban planning	3	Interesting
Others	3	Interesting

Research Question 3: Why Do Teachers in Higher Education Use Commercial Video Games as Part of Their Courses? (3P Characteristic 3—Approaches to Teaching, Part 1)

The third research question and component of the 3P model seeks to analyze the reasons that guided participants' decisions to use commercial video games as part of their

courses. It addresses general reasons of using video games as well as specific reasons for choosing individual games.

As concluded earlier, participants used the individual games studied for these reasons:

- Minecraft. In general, participants use games because of their experience as gamers, interest in video games as part of their research, and its perceived learning value. They believe that Minecraft motivates students to create, increases social interaction, develops critical thinking, and helps them to conduct research. . With the exception of Peter, all participants considered using Second Life before deciding to use Minecraft. They chose Minecraft because of its popularity and its building capabilities. They also chose it because, it fit well with the class and could be used as a good case study.
- World of Warcraft. Participants used this game as part of their teaching because of their experience as gamers, their interest in games as part of their research, and its perceived learning value. Participants commented that they could use this game to illustrate ideas, and as tools to produce assignments using new media. Even though they thought about using other alternatives such as Second Life or other games, participants chose World of Warcraft because of its popularity in the general public, and social features such as collaborative quests , its fit with the content of the course and a context in which research can be conducted.
- SimCity. Participants used this game as part of their teaching because it fits with the content of their courses as well as its perceived learning value. In addition,

participants choose SimCity because of its popularity in the general public and it represents a good case study, simulating the development of a city.

Regardless of the actual game chosen, participants included commercial video games in their courses because video games are their main research interests, a dominant pattern across the cases. Some participants were interested in games as a new type of media (weak pattern), others as an educational technology (weak pattern).

Participants also chose games because they like them. A strong pattern across the cases is that participants have intermediate or advanced experience playing video games in general and playing the individual game used in their courses. For example, Sam is an advanced World of Warcraft player. His experience suggeste that the basic mechanics of the game served as a model for designing instruction.

Before settling on the game chosen for their courses, participants considered other alternatives (a strong pattern). Most of the alternatives considered included other games but also included virtual environments such as Second Life.

Participants decided to incorporate the games they chose because of the popularity of that game in the general public (weak pattern), For instance, James started to play the game because one of his students suggested it to him, while playing it, he noticed that it is a tool that his students should learn. Participants also chose the games because of the perceived fit with the content of the course (weak pattern). For example, SimCity has been a popular game because of its entertainment value and because of its capabilities to simulate cities. Jane, Charles and Dennis found the game closely related to their courses in city-planning. Similarly, participants see games as effective contexts for case studies. Students have to analyze in detail the characteristics of the game and their experience

when playing it. For example, in Brandy's course, students had to play and analyze specific elements of the game such as its role-play capabilities. Some participants expected that students could experiment with the game to understand its potential. For example, students in James' course played the game so they wouldbecome familiar with its potential as an instructional tool. Other participants felt that games would give a virtual context to the theory they tried to teach in their courses. For example, Jake used Minecraft as a context that could help his students write by describing their experiences in the game.

Although they chose games, participants were aware that some students would not be interested in video games (a strong pattern). They decided to use the games anyway because they felt that the game fit withing the scope of the course. A common solution (strong pattern) to this potential issue was to mention the use of the game from the start of the course, so that students could choose another course if they wanted.

Furthermore, some participants do not necessarily believe that games are effective teaching tools. For example, even though Peter believed learning took place in video games, he does not think of them as tools that help him teach. He sees them as an art object that people should understand.

Table 18 summarizes results from the question, Why do teachers in Higher Education use commercial video games as part of their courses?

Table 18

Why do Teachers in Higher Education use Commercial Video Games as Part of their Courses

Description	#Participants	Type of Pattern

Patterns explaining why participants use commercial video games:		
The games fit with the content of the course.	9	Weak
Learning value.	9	Weak
Good object of study.	7	Weak
Popularity the game.	8	Weak
Good tools for experimentation.	7	Weak
Put in context activities of the course.	6	Interesting
Additional factors:		
Participants' gaming background and experience playing the specific games.	9	Weak
Video games as part of participants' research interests.	13	Dominant
Others:		NA
Participants consider using other alternatives such as Second Life or other video games.	10	Strong
They thought about students who are not interested in video games. They decided to continue because the games fit with the content of the course.	12	Strong

Research Question 4: How Do Teachers in Higher Education Use Commercial Video Games as Part of Their Courses? (3P Characteristic 2--Approaches to Teaching, Part 2)

The fourth research question explores the ways in which participants incorporated commercial video games into their courses. This provides additional insights into the third characteristic of the 3P model.

As concluded earlier, participants used the individual games as follows:

- Minecraft was used predominantly for producing new digital media and as a context for in-class activities such as conducting research, building structures, and creating narratives. Participants were not aware of limitations regarding the use of the game in the classroom, but were concerned about possible limitations of creating and distributing new content using the game.

- World of Warcraft was used to build familiarity with this specific game and analyze its parts and events. Participants using this game typically the lesson by introducing the theory they want to emphasize with the game use. Then, participants asks students to become familiar with the game and complete the assigned activities with it. Participants are not aware of any type of limitations when using the game for instructional purposes; however, they believe it is the responsibility of the students to buy licenses for the game.
- SimCity was used to elaborate upon theory, especially to put theories of city planning into context. Participants would start a lesson using the game by introducing the theories pertaining to the course content and the basics of game play. Then, students had to build a city and execute a simulation using the theory presented. Participants followed game play with a post-play discussion.

This section explores the patterns that emerge across the three cases in terms of using games in the classroom. It first explores the goals and expectations participants bring to their use of tames, then describes how participants integrate games and then provides further insights into the use of games in the classroom.

Goals for Using Games

Goals of use refer to the teachers' beliefs, intentions, and expectations when using commercial video games as part of their courses. Across the cases, five types of goals emerged, although none dominated. These goals included:

- Illustrate something (weak pattern), using games as examples to explain an idea and to make connections with the content of the course. For example, in Donovan's course, the students often bring up games as part of the class discussions.

- Object of study (weak pattern), asking students to analyze different aspects of the game and events that take place within it. For example, in Minerva's course, in a lesson related to user-generated content in virtual worlds, students had to generate their own content using Minecraft. They also had to analyze issues relating to the topic and compare Minecraft to other similar virtual worlds or games.
- Context for activities (weak pattern), providing context to both in-class activities and research. Context for-in class activities refers to the use of the game as a virtual world in which students engage in activities that relate to the content of the course. For example, Jake and Renatta used Minecraft and World of Warcraft respectively as a context for inspiring writing. As a context for research, participants used the game as a virtual environment in which students could gather data that could be used for research purposes. For example, Peter asked his students to observe non-playable characters and analyze their behaviour inside of Minecraft.
- Production tool (weak pattern), using games as tools to produce new digital media. For example, in William's course, students optionally could use World of Warcraft to build Machinima, which is the use of video games to generate cinematic productions.
- Apply theory (interesting pattern), practicing, experiencing, and mainge concrete the theoretical content of the course. For example, in courses related to urban design, students built the simulation of a city implementing related theoretical elements.

How Participants Integrated Games into Their Classes

Pedagogical experts identify different phases in the integration of a game into a class: introduction, demonstration, practice or training, play, and debriefing (Greenblat, 1988). But few of the participants included all of these components into the lessons in

which they integrated games. In fact, the only phase widely used by participants was the opening, in which participants formally introduced the game to the students (a strong pattern). Some participnts did this verbally in class while others did this through pre-class readings and material distributed in class. For example, in Minerva's course, students had to read articles related to the content of the class and the game as homework before using Minecraft.

None of the other phases of game play was as widely used. In the next phase, demonstration (an interesting pattern), participants show students how to play the game. Participants in this study showed videos or screenshots of specific parts of the game to explain how to apply the gain. For instance, James frequently showed videos of Minecraft from YouTube to his students as to show how the game can be used to create art. In addition, in some cases, participants actually played parts of the game in the classroom as to illustrate complex concepts. For example, Donovan played SimCity when lecturing to show how the game works as a system.

After demonstrating the game, pedagogical experts suggest that participants should practice or receive training on playing the game. During this phase, students become familiar with the game by playing it under supervision and guided to see the application of the content to the course. Use of practice or training was a weak pattern. Practice or training only continued for one or two lessons depending of the complexity of the game. For example, Minecraft was easy to use, so students only needed one or two hours to experience the basics of the game. James expected that after this phase, students would understand the potential of Minecraft as a tool for developing art and as tool for supporting the teaching of art in schools

During the next phase, gameplay, students played the game at a more advanced level, they are no longer experimenting. This level compares to that demonstrated by users playing games for entertainment purposes once they have learned how to play the game. In five courses students played the game at this level. This was an interesting pattern. [Participants hoped that the game would provide the context more advanced level of thinking about the subject. For example, Charles expected that students could experiment with the game at the start of the course. Then, for more advanced lessons, students could model a city using SimCity.

Gaming experts distinguish between general gameplay and serious game play. Serious game play goes beyond playing for entertainment purposes. Playing takes place for serious purposes such as learning (Susi et al., 2007)**.** Reaching serious gameplay indicates achieving a different level of gameplay. At this phase, participants expected students to connect gameplay with the content of the course. For example, in Brandy's course, while playing the game, students also had to analyze the main social elements of the game. In the context of the games studied, serious game play was only observed to be a weak pattern.

The last phase in the integration of a game into a class is debriefing. During a debriefing, students reflect on their experience playing the game, synthetize what they have learned from the lesson with the game to the broader objectives of the course, and evaluate the learning experience. For example, in Dennis' course, students have to write a report discussing the main opportunities and limitations of using the game as a simulation of a city.TV Dennis also asked students to compare the gaming experience with real life

and reflect on what was learned from the gaming experience. Use of debriefing was a weak pattern.

Further Insights into the Integration of Games in the Classroom

Even though the participants all used interactive games, the manner in which they integrated them and the level of interactivity they actually asked of students varied among the classrooms and Laurillard's four types of interactivity in educational media characterize well these differing levels of interactivity:

1. Linear (a strong pattern). This integration of the game involves using the narrative and basic interactive feature of the game. The narrative is a linear and provides for little if any interacion; the narrative describes of teachers' conceptions and cannot respond to learners' enquiries (Laurillard, 2002). In linear media, users have the freedom to navigate content at will but cannot modify the content. Through linear media, students start to visualize and put in practice the theory of the courses. For example, James and Donovan often use YouTube videos of the gameplay of different games, including SimCity. Through these videos, they intend to illustrate specific parts of content of the course.
2. Interactive media (a strong pattern). This integration of the game involves students starting to produce deliverables and applying the theory of the course by using the game. For instance, in James' course, students start playing the game by building random structures and small houses. They experiment with the game. At this point, they are not yet connecting the game with the course, they are only playing it to learn how to use it and understand the basics.

3. Media for production (a strong pattern). This integration of the game involves students articulating their conceptions and producing new material and contributions via paper, discs, and other tools that allow producing a deliverable (Laurillard, 2002). that connects to the content of the course, and building something. After playing the game, students generally share their experiences as part of the class discussions, blog posts, or small assignments. For example, in James' and William's courses students use the game to create new types of media, such as a short film or sophisticated structures.
4. Media for synthesis (a weak pattern). This integration of the game, which Laurillard (2002) calls adaptive media, involves students changing the state of the game according to their. One of its main characteristics of this level is that it provides learners with ongoing feedback. Examples of media for synthesis are simulations, virtual environments, tutorial programs, and educational games. As media for synthesis, students articulate what they learned from the experience in a written way, such as an academic paper, or as a high-level product, such as a sophisticated simulation. For instance, in Jane's course, students have to build a simulation of a utopian city using the theories covered in class. Then, they have to analyze the behaviour of the city and report results, what worked and what did not.

Participants primarily limited the integration of games in their classes to the simpler types of interaction, 1 (linear media) and 2 (interactive media). The first level is the easiest to use; it is not expected that students will be fully immersed in the game. After using the game, a common practice was to have a discussion. Although more demanding, Level 2 interactions also remained relatively unsophisticated. Participants

often skipped the gameplay and serious play aspects of the game. The in-class debrief started right after experiencing the game.

In the case of Minecraft, paticipants might not have played the game because they used it as a production tool and asked students to use the game to create something. In contrast, the key type of interactions for SimCity and World of Warcraft were type 2 (interactive media) and Type 4 (media for synthesis). It seems that in courses where they were required, it was expected that a higher level of immersion and expertise using the game would be achieved by the students. The difference between the two games was that World of Warcraft was used in more cases as a production tool and SimCity to put theory in practice through simulations.

Figure 2 shows the visual representation of this combination. The x-axis represents the level of integration, the y-axis the goals of use. Each of the resulting quadrants represents a type of use.

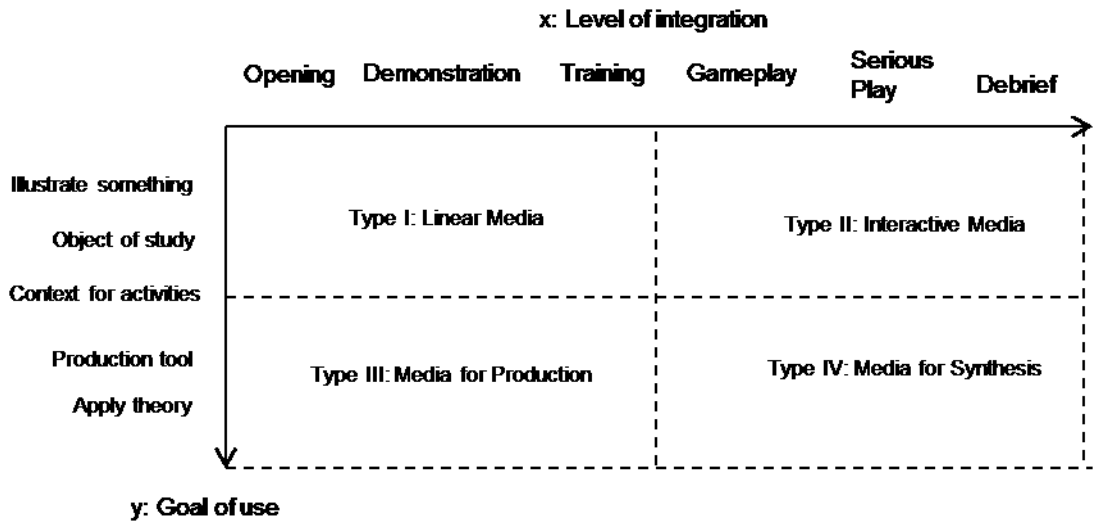

Figure 2.Types of uses of commercial games as part of the courses.

Common Practices

Several common practices in using games in class emerged in the study.

The first—a strong pattern--related to how participants introduced the game to the students. Participants would first introduce relevant theory and assign articles for students to read before the lesson. Students would then interact with the game in-class or at home. Later in class, as a weak pattern, participants would debrief the experience with students. It is important to note that, even though debriefing is a central feature of discovery learning activities, it was not being widely performed. For example, in a lesson in Brandy's course role-playing was discussed during class; then, at home, students had to collectively experience role-playing through playing World of Warcraft. This was followed-up on at the next class where the experience was discussed.

The second common practice —a strong pattern--is students building new digital media using the elements of the game. In some cases, building new media was the goal of the activity. For example, in James' and William's courses, students built structures using Minecraft or created short-films using World of Warcraft. In other cases, building new media was an intermediate step for other activities. For instance, in Dennis', Charles', and Jane's courses, students build a city that was used to apply the theory of the courses.

The third common practice—a strong pattern--is that students had to use the games as part of their major assignments.

The fourth common practice—a strong pattern--is that participants were not aware of limitations of the game when used as part of the course. They knew that copyright limitations may exist, but a common belief was that because the games were used for educational purposes, copyright should not be a problem.

The fifth and sixth common practices—both weak patterns--relate to the way participants supported students when learning how to play the game. In the fifth practice, participants provided either a session or explicit instructions about the basics for playing the game. However, participants did not help students during the gameplay. It was students' responsibility to acquire the required skills. For example, in Charles' and Dennis' courses, students had to play SimCity at home, become familiar with it and then do the assignment. In the sixth common practice, participants did not provide initial instructions about the use of the game. They did not mention why. However, they were present while students were playing it. In this case, the participants and other players were also providing support to the students. For example, when using Minecraft, Minerva and James were walking around in the lab providing support to the students. In Minerva's case, guest students who were experts in Minecraft, also provided support to the students from the class.

The seventh common practice —a weak pattern-- is that participants used technical benchmarks to make sure that all students were at the same level of the game. At specific parts of the course, the participants explicitly indicated the progress expected in the game. For example, in World of Warcraft, Brandy expected that by the end of the first week students will create a character and reach level 10 in the game. Using this strategy, participants expected that students would experience specific parts of the game at the same time.

The eighth common practice—a weak pattern—is that use of the game as part of assignments was optional. For example, in one of the assignments of William's course,

students had to do a short film. They could use any type of video game or virtual environment for doing it. Most of them chose World of Warcraft.

The last common practice—a weak pattern—is that participants expected students to pay for the license of the game if payment was necessary.

The issue of licensing and copyrights is a rich one for this study and arose in all of the interviews. A topic that was discussed during the interviews was the fair use of the games. Stanford University defines fair use as:

> Any copying of copyrighted material done for a limited and "transformative" purpose, such as to comment upon, criticize, or parody a copyrighted work. Such uses can be done without permission from the copyright owner. In other words, fair use is a defense against a claim of copyright infringement("What is Fair Use?," n.d.).

In the United States, according to the Copyright Act of 1976, section 106:

> The fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright. In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include—
>
> (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
>
> (2) the nature of the copyrighted work;

> (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
>
> (4) the effect of the use upon the potential market for or value of the copyrighted work.
>
> The fact that a work is unpublished shall not itself bar a finding of fair use if such finding is made upon consideration of all the above factors.

In the Canadian copyright law, fair use is called *fair dealing*.

Literature regarding the fair use of commercial video games is scarce and fair use may have different interpretations. Therefore, it was necessary to look at what the publishers of the games analyzed in this study say about it.

Mojang, the publisher of Minecraft, is flexible regarding the fair use of the game and content created using the game when used for non-commercial purposes. In their website they state:

> We are very relaxed about things you do for yourself. Pretty much anything goes there - so go for it and have fun just don‘t distribute anything we've made etc. We are also quite relaxed about other non-commercial things so feel free to create and share videos, screen shots, independently created mods (that don't use any of our Assets), fan art, machinima etc. […] You are allowed to put footage of our Game on YouTube or any other website. In fact, we like you doing so. You may create, use and distribute videos of you playing or using our Game for any lawful reason provided that you don't make any money from them ("Guidelines for the Name, Brand and Assests of any of our Games," 2013).

Blizzard, publisher of World of Warcraft states:

> Blizzard Entertainment supports the use of its game assets for educational purposes, and you are welcome and encouraged to create a Production for a school project, master's thesis, etc. All limitations above still apply to Productions created for educational purposes.

Regarding SimCity, there were no resources indicating the position of Electronic Arts about the fair use of the game for educational purposes. The game has been used in the last decades for educational purposes; it is possible to assume that, at least for educational purposes, they have a similar policy than in the two other games.

Even though a deep analysis of this topic is out of the scope for this study, it was briefly discussed with the participants. They were not aware of whether there were any types of restrictions. This is a factor that cannot be ignored when choosing a commercial game for teaching.

Participants believed that there should not be limitations when using video games for educational purposes as long as the students or the institution acquires the required licenses to be able to use them. However, participants were concerned about the limitations in regards to new content produced using the games. These may vary from one game to another.

Table 19 summarizes the findings for the question, How do Teachers in Higher Education use commercial video games as part of their courses?.

Table 19

How do Higher Education Teachers Use Commercial Games?

Description	#participants	Pattern
Goals of use:		
Illustrate something	7	Weak

Object of study	7	Weak
Context for activities	7	Weak
Media for production tool	8	Weak
Apply theory	5	Interesting
Level of integration		
Opening	11	Strong
Demonstration	6	Weak
Training	8	Weak
Gameplay	5	Interesting
Serious play	6	Weak
Debrief	9	Weak
Uses of games		
Type I: Linear media	11	Strong
Type II: Interactive media	11	Strong
Type III: Media for production	10	Strong
Type IV: Media for synthesis	9	Weak
In-game activities		
Build new digital media.	11	Strong
Short activities (eg. do small quests)	5	Interesting
Collaborative activities.	5	Interesting
Research a phenomenon.	8	Weak
In-class practices		
Lecture and readings.	10	Strong
Experimentation with the game.	4	Interesting
Discussions.	11	Strong
Support		
Participants' support.	8	Weak
Peer-support	4	Interesting
Self-learning	7	Weak
At-home activities		
Technical benchmarks.	7	Weak
Projects	9	Weak
Research papers.	5	Interesting
Licensing and fair use		
Students bought the game or used the free version.	9	Weak
No limitations regarding the use of the game for teaching.	10	Strong
Limitations regarding user-generated content.	7	Weak

Research Question 5: What Are the Main Opportunities and Challenges When Teachers in Higher Education use Commercial Videogames as Part of Their Courses? (3P Characteristic 4--Outcomes of Teaching, Part 2)

This question and component of the 3P model explores—from the perspectives of the participants—the opportunities presented by the integration of commercial video games into their courses as well as the challenges posed by doing so and how participants would change the integration of games into their courses in the future .

This was done through critical reflection, a method that is often used for evaluating effective teaching. As mentioned in the literature review chapter, self and critical reflection is one of the best ways to receive feedback, evaluate effective teaching and improve the way of teaching (Wood & Harding, 2007). However, critical reflection requires skills that are developed with experience and maturity in the field (Walkington, Christensen, & Kock, 2001; Wood & Harding, 2007).

Following are the issues that arose in the analysis of the individual games:

- Minecraft. Participant the building characteristics, its collaborative game play, and the Minecraft community as opportunities presented by the game. However, technical issues and lack of students' motivation to use the game presented a challenge. Participants felt that they achieved their expectations regarding the use of the game, including experimentation and providing a context for activities related to the course. Additionally, students liked the experience. Participants definitely will use the game again but, to improve future experiences, would provide more guidance to students

- World of Warcraft. Participants found that this game offered a good platform to engage discussions, is easy to use, and provides a good context for in-class activities. However, the game was too distracting for some students. Overall students liked using the game and participants felt that they achieved their expectations for its use, including providing; a good context for in-class activities and helping students developed critical thinking skills. Like the participants using Minecraft, participants feel that they need to provide more guidance to students when using the game in the future.
- SimCity. Participants felt that this game effectively illustrated the theory of their urban planning courses and helped students put that theory into practice. The main challenge, however, was that the game presents an over-simplification of a city-simulator. Because of this over-simplification, participants felt that they did not achieve their expectations for the game. However, participants were satisfied with the results and they feel that students liked using the game. Participants would not use the game again and are exploring alternatives.

Across all three games, students liked using the games as part of the courses. This was a dominant pattern. Participants mentioned that was reflected in the students' evaluations of the courses, informal conversations with the students, their own personal observations, and the quality of the assignments. Note, however, that these are merely the participants' observations. As Selwyn (2011) points out, when there are expectations regarding the use of educational technology, the expectations tend to lean towards a positive viewpoint and it is possible that, in this case, participants perceived the students' use of the game from positive view point.

Similarly, for two of the games, participants felt that they achieved their expectations for the use of the game in their courses, a strong pattern. For example, in Minecraft, participants felt they met their expectation that the game would provide opportunities for students to experiment as well as a context for the activities of the course. In World of Warcraft, participants felt that they achieved their expectations for use of the game as a research context. Participants also found that students found the games relatively easy to use.

In contrast, participants who used SimCity did not feel that they met their expectations for the game. Students found difficulties using that game and participants felt that, in the end, it oversimplified the concepts. The fact that technical difficulties arose did not help matters.

Participants using Minecraft and World of Warcraft would definitely use the game again as part of their courses (a strong pattern) while participants using SimCity participants would not do so. So continued use of the game depends on the game itself.

When using the games, again, however, certain issues would have to be addressed. One is technical difficulties, which posed a challenge in all three games. For example, Minecraft was hard to install, to configure, and it was difficult to gather the students at the same point in the virtual world. World of Warcraft is constantly updated; it was challenging to update the games that were installed in the computer labs. In SimCity, some versions were too old and it was not possible to use on modern computers.

In addition, participants would like to provide students with more support for using the game next time that they teach the course, a strong pattern. For example, Jake felt that students faced problems figuring out what to do in Minecraft. The game and

related activities were to open for them. In such, he decided that for the next time he used the game, he would integrate detailed instructions in the description of the activities.

. Table 20 summarizes the findings to the research question, What are the main opportunities and challenges when teachers in Higher Education use commercial videogames as part of their courses?

Table 20

What are the main opportunities and challenges when teachers in Higher Education use commercial videogames as part of their courses?

Description	#Participants	Type of pattern
Opportunities		
Easy to use	7	weak
Specific characteristics of the game	7	weak
Illustrate	11	strong
Experience	12	strong
Challenges		
Technical issues	7	weak
Disengagement	5	interesting
Difficult to use	4	interesting
Limited for content	4	interesting
Distracting	5	interesting
Expectations		
They were achieved	10	strong
In Minecraft and World of Warcraft, they were satisfied with the benefits of the specific characteristics of the game.	9	weak
Achieved context activities	4	interesting
Achieved higher order thinking skills	5	interesting
Others		
Students liked the experience (participants' perspective)	13	dominant
In Minecraft and World of Warfract, yhey will use the game again	10	strong
They will increase the support regarding the use of the game.	10	strong

Figure 3 summarizes this emic—or participants'—view of the use of commercial video games in Higher Education teaching.

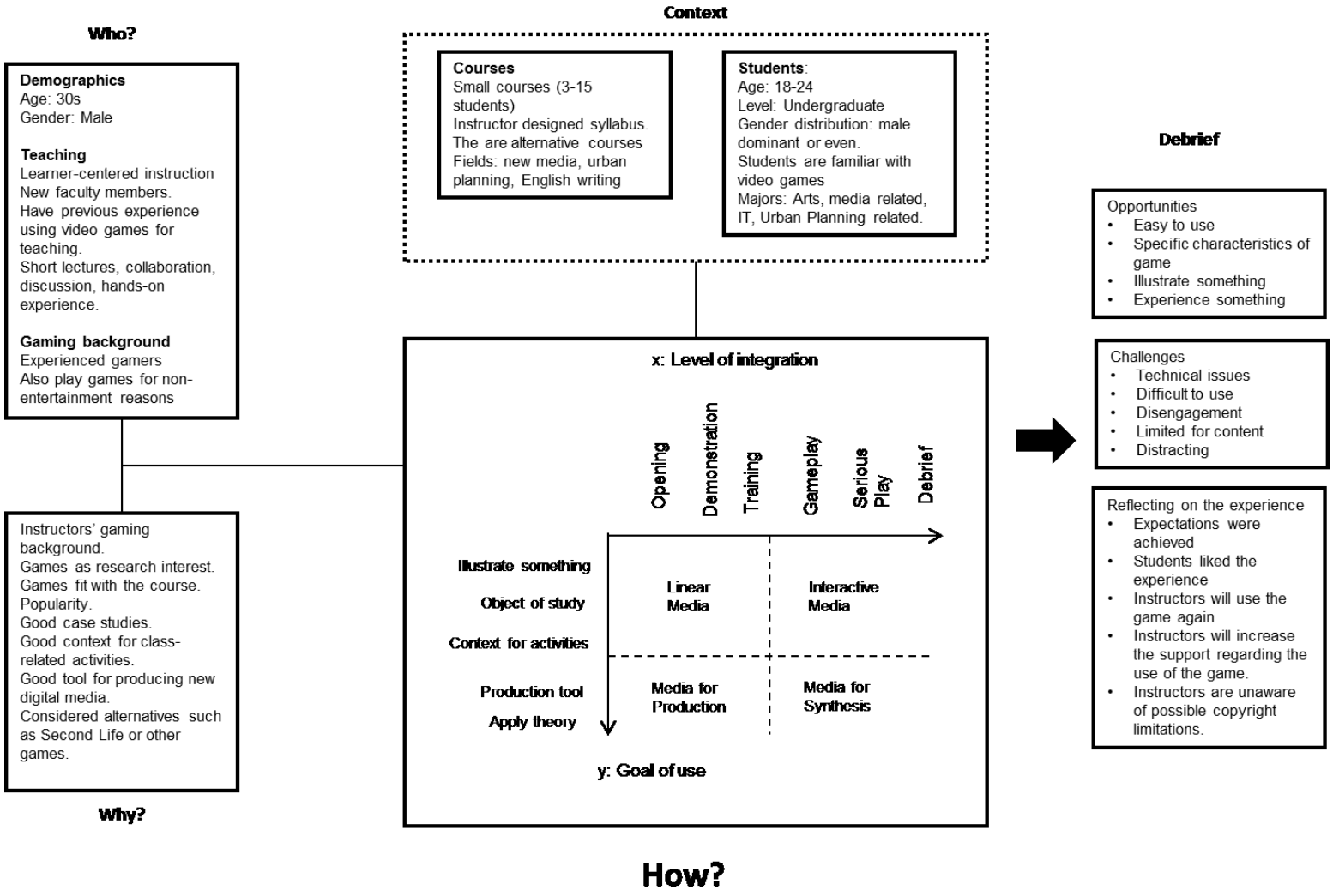

Figure 3. Summary of findings.

The Etic Perspective

This section explores the last research question, How does the use of commercial video games by teachers in Higher Education contrast with the recommendations of educational technology and related fields?

Until now, the analysis exclusively focused on the emic perspective: that of the participants in the study; the instructors of the courses. The focus of the analysis shifts with the last research question from the emic to the etic, or outsider, perspective. Specific issues to be explored when answering this question include the extent to which participants consulted the research and recommendations on using commercial video games before introducing them into the classroom, the link between the recommended benefits of video games as educational activities and the ones observed in this study, the link between recommended practices for administering educational. Similarly, this analysis moves away from the 3P model and attempts a more straight-forward answer to the question abased on the data.

In terms of familiarity with this body of literature, seven of the participants (weak pattern) mentioned that they had consulted part of the research on games and learning and the possible educational uses of commercial video games. However, only Jake, Renatta, Brock, and Seann explicitely mentioned that they knew about best practices of using video games in their classes. In terms of a direct application from original sources, then, the research and recommendations do not seem to have directly transferred to practice.

Even though participants did not necessarily consult the research and recommendations, it might have been reflected anyway in their teaching practice. One area in which the research and recommendations might have been implemented in

practice pertains to the nature of the learning objectives for which instructors used video games. One use of games posited by the literature is that they enhance motivation for students. Most of the participants reported that the games seem to have had this intended effect.

The literature recommends, too, that video games are useful in building critical thinking skills. Critical thinking skills are associated, in turn, with higher order thinking skills. But the strongest pattern with regard to using video games is that they were used for developing lower-order thinking skills. So it appears that the research-validated recommendations about the types of activities for which videogames would be ideal are being implemented in practice in a limited way at best among this group of participants.

Note, however, that the participants who used SimCity recognized this problem and plan to use different activities in the future. But perhaps they might have been steered towards a different activity in the first place had they made a closer correlation between the objectives of the lesson and the capabilities of the game.

Furthermore, one of the points in the game in which creativity and critical thinking reach their height are during serious gameplay. But few of the participants in this study let the use of games in their classes reach the serious gameplay phase. So even if they were emphasizing higher-order thinking skills in the objectives, the lesson structure would limit the possibility of that happening.

Another area in which research and recommendations might have been implemented in practice pertains the structure of lessons. Sweller, Kirchner, and Clark (2007) emphasize the importance of guiding the discovery learning that occurs with activities like games. Although all of the components of "guiding" the activity named by

Greenblat (1988) and Carliner (2003) were present across participants, few of the participants used all of the components and many components were missing in most classes. In other words, the evidence suggests that students received minimal guidance when using the games. So even though participants felt that they had achieved the goals for their games, and pointed to anecdotal evidence of it, previous research suggests that other evidence is needed to determine whether or not this belief is validated.

In addition to these specific issues related to the use of games, one concept of androgogy also seems appropriate to raise at this point: relevance of the activity to the learner (Knowles, Holton & Swanson, 2009). The use of games in general, and the use of two of the games in particular—Minecraft and World of Warcraft—are generally geared towards males. The participants in this study were predominantly male as were the students they served. One benefit of games is that they might help retain traditional male students in school, a demographic issue because the proportion of males in higher education classes has steadily dropped and graduation rates for females is starting to exceed that of males. But the flip side of this issue is whether the use of commercial video games will be motivating to female students, who are increasingly the majority of the population in certain fields and, in some institutions, the entire student body.

In other words, it appears that the research and recommendations from the field of Educational Technology have not transferred widely into the practice of the teachers who participated in this study, and their practices in the classroom are often at odds with the recommendations from the research and recommendations on the use of games in Higher Education.

CHAPTER 9: CONCLUSIONS, LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

This chapter concludes the study. It first presents the conclusions of the study. Then, it discusses its limitations and suggests future research.

Conclusions

This study offers several implications to the practice and theory of teaching and learning in Higher Education. On a practical level, this study suggests how Higher Education teachers integrate commercial games into their courses. Some of the findings corroborate earlier findings.

This study confirms previous findings, about the factors that prompt faculty to adopt and integrate technology into their practice. This study found that personal characteristics of the adopter, such as gaming experience, influenced the technology chosen. This confirms earlier findings by Dikkers (2012), who found that teachers are influenced by their interests outside of education to adopt games. Similarly, Mabret (2009), identified including the needs and characteristics of the adopter as one of the factors influencing the adoption of a particular technology

This finding also confirms earlier studies which found that teachers want to share their identities with their students by bringing parts of themselves and their interests to the classroom supports earlier studies. For example, in her study of Higher Education teachers who integrate the commercial software, Second Life, into their classrooms, Araki (2011) found that teachers were motivated by their interest in Second Life or their interest in confronting their fear of technology. The avatars (or online representations

used in Second Life) created by teachers reflected the ways that they wanted to be represented to their students.

Guided by their interest in games and beliefs and attitudes about the benefits of using video games for teaching and learning, participants tended to frame their use of commercial video games in a positive manner. However, none of the participants citied empirical evidence or empirically-derived benefits of adopting video games in the classroom. Furthermore, participants only provided anecdotal evidence that the games affected student motivation and learning. One (Peter) even conceded that video games do not necessarily contribute to learning and merely included the games as an artefact to study.

Some of the practices reported, contradict research-based recommendations. For example, although a purported benefit of using video games is to develop higher order thinking skills, the majority of the participants in this study used them to develop lower order thinking skills. Instead, participants merely used the games (1) as a way to illustrate something**,** (2) as an object of study***;*** (3) as a context for activities, (4) as a production tool, and (5) as a context to apply theory.

Furthermore, even though most creative and critical thinking occurs during serious gameplay, most of the participants did not let use of the game reach that point in their classes.

Similarly, although the research suggests that minimal guidance could impair learning (Sweller, Kirchner, & Clark, 2007), most of the participants employed that as a strategy for teaching anyway.

Few of the courses studied included all of the components of a class session that was supposed to provide guided discovery. For example, except for the instructors who used SimCity, lessons that incorporated games did not include a post-play discussion. Advocates for the integration of instructional games note that the post-play discussion is an an essential part of using games for instructional purposes (Carliner 2003, Greenblat, 1988), because that's where instructors elicit the lessons learned by students, correct any mislearned information, and link the learning to the larger objectives of the course. Merely playing the game does not verify and correct the learning.

Had participants consulted the empirical literature, they would have found limited support for the integration of commercial games into the classroom. For example, in an experiment that involved integrating the commercial games "Pharoah's Tomb" and "Time Capsule" (an abridged version of the game) in Higher Education classes, Whitton (2007) found no significant difference between the two conditions. She concluded that video games do not necessarily increase motivation and engagement but might have value because .they embody the principles of interactive, collaborative and experiential learning. Similarly, in his experiment that compared student performance on audio lecture, text lecture, and serious games, Gale (2011) found that participants using serious games significantly worse on a post-test examination than the other groups and concluded that other technologies may be more effective for increasing learning.

This design-first, then reflect approach that seems to have been taken by the participants in this study reflects broader practice not just by Higher Education Teachers, but also by professional instructional designers. For example, Zhang (2009) found that professional instructional designers in Higher Education institutions tend to implement

solutions without conducting a thorough analysis or thoroughly defining problems, and designers unconsciously take a technology-driven approach in their design.

Perhaps the most significant implication of this study is that the research and recommendations of Educational Technology are not reaching the intended beneficiaries and, therefore, not making their way into practice. Instead, practices are guided by beliefs and interests among the Higher Education Teachers.

In other words, much of their interest in gaming can be attributed to what sociologist Neil Selwyn (2011) labels as an optimistic view of educational technology, believing in the inherent positive nature of a given educational technology. He also raises concerns that educators are not sufficiently critical in their practice, an observation that is supported by this study. Although teachers reported that the games tended to create a more positive experience for them in their work and did not seem to have an adverse effect on their students, they are guided almost exclusively in their optimism by beliefs about the true educational value of these games rather than empirical evidence of their impact.

This belief, rather than empirically-based approach taken by the participants in this study supports a need for a more critical approach to educational technology, as advocated by Selwyn (2011):

> All I am advocating is that educational technology is approached from a position that expects nothing - a position that is not be confused with the nihilistic position of wanting nothing or even the sceptical position of knowing nothing (Selwyn, 2011, p. 716).

Limitations

The findings in this study are subject to several limitations. First, with a small sample size and a limited number of cases, caution must be applied; the findings of this study may not be generalized to all disciplines and settings in Higher Education.

Similarly, the study relied on volunteers as participants. Teaching varies according to the individual, the course, the discipline, and the educational institution; therefore, the findings may not be transferable to other contexts. Participants were predominantly male, in their 30s and 40s, and work in the faculties of fine arts, social sciences and humanities. They are not necessarily representative of the entire population of Higher Education teachers, nor reflective of them.

Third, this study focused on English-speaking North America, and particularly on the United States. Only two participants were from Canadian institutions. Results are culturally constrained to this geographical area.

Fourth, the games included in this study are open-worlds; gaming is non-linear and participants have the freedom to choose how to approach the goals. Results are bound to this class of games.

Fifth, this study is limited by the teachers-only perspective. The data is self-reported and based on their self-reporting of their teachingexperience. Other perspectives on the use of games are missing, such as students' reactions to their use and indicators of student performance, such as test scores.

Despite these limitations, results might be transferable to other situations. A possible way to strengthen the transferability of the results is through what Geertz refers to as "thick description" in which sufficient information about the research context is

provided so the readers can decide if the results apply to other context (as cited in Araki, 2011, p. 251). Based on the provided description of the game, how each participant used the respective games, and the main findings for each case, readers of this study might transfer the results to their respective disciplines. However, results might not transfer to other types of games or other disciplines. For instance, findings from SimCity may be tied to courses related to city planning.

Recommendations for Future Research

This research raised hypotheses and questions that would benefit from further investigation. First, this study could be replicated for other types of video games and settings to investigate the differences among game genres and how the type of educational level can influence the way Higher Education teachers use, not only commercial games but also serious games.

From those additional cases, research can determine whether the hypothesis emerging from this study—that video tames take the form of other types of educational media according to the level of integration and goals of use—holds in other teaching environments.

Third, further work needs to be done to strengthen the profile of the Higher Education teacher who uses video games for teaching. For example, personality is a factor that was not fully explored. Maslow and Zimmerman (1956) studied the personality characteristics associated with research creativity and teaching effectiveness in university psychology professors. They defined a creative researcher as “ambitious, enduring, seeking definiteness, dominant, showing leadership, aggressive, independent, non-meek, and non-supportive.” The effective teacher is described as “liberal, sociable,

showing leadership, extraverted, non-anxious, objective, supporting, non-authoritarian, non-defensive, intelligent, and aesthetically sensitive." The profile could be complemented by analyzing the teachers' personality, its relation to research creativity, teaching effectiveness, and the use of video games for teaching.

A fourth suggestion for future research is to compare experiences of individuals within the same field. For instance, in Computer Science, Bayliss (2012) used Minecraft to teach Artificial Intelligence; similarly, El-Nasr and Smith (2006) used Unreal Tournament's to teach a Game Design and Programming class. It will be very interesting to analyze common practices of Computer Science teachers' that use commercial video games as part of their courses.

Finally, this study employed qualitative methods and from the perspective of the teacher. It could be strengthened by using other research methodologies and data collection methods. For instance, a mixed-research study using surveys and in-class observations could be developed in order to analyze students' and teachers' practices, beliefs and perceptions about the use of commercial video games for learning and teaching.

APPENDICES

Appendix A:

Sample Letter Asking Teaching and Learning Groups and Video Games Research Groups to Participate in this Study

DATE

NAME AND TITLE

ADDRESS

Dear NAME:

Do you, or any of your colleagues, use one of these games in their teaching:

- SimCity
- Minecraft
- World of Warcraft
- The Elder Scrolls
- Civilization

If you do, would you be available to participate in my research study of the use of commercial videogames in Higher Education classes? If you know of a colleague who uses one of these games, would you share this request with them?

Some background: I am a doctoral student in educational technology at Concordia University in Montreal. For my dissertation, I am exploring how teachers in higher-educations institutions integrate video games intended for general use (as opposed to educational games) for classroom use.

Specifically, the goals of this study are

- Analyze how teachers in Higher Educationintegrate commercial games as part of their teaching.
- Explore teaching practices and decisions related to the design of instruction using commercial games.
- Explore teachers' experiences when teaching using commercial games.
- Analyze opportunities, challenges and limitations when using commercial games for instructional purposes.

To study this phenomenon, I plan to conduct in-depth interviews withHigherEducationteachers who use video games as part of their teaching. I will ask Higher Education teachers about their practices and their experience when incorporating commercial games in the classroom.

If you use the games and are interested in participating, please let me know.I will send additional details and can provide further information.

If you know of colleagues who use one ofthese games, can you please forward this note to them?

Thank you for your time.Ilook forward to hearing from you.

Sincerely,

Salvador Garcia-Martinez

Appendix B:

Post to Online Discussion Forums

Do you teach in Higher Education (Cegep, college, community college, or university)? Do you use one of these games in your teaching?

- World of Warcraft
- Minecraft
- SimCity
- Any of the Civilization series

If so, would you be willing to share your experiences of integrating the games into your teaching for my dissertation study?

For my doctoral dissertation in educational technology at Concordia University in Montreal, I am studying how Higher Education teachers incorporate commercial computer and video games in their classes.

Specifically, I am interviewing Higher Education teachers about why they choose commercial games, the subjects and objectives for which they use them, and how they integrate the games into the courses.

Interviews should last about one to two hours (if needed, over more than one session).If you work in Montreal, I can conduct the interview in person.Otherwise, we can meet over Skype or by phone.To protect your privacy, the interview data will be confidential and no identifying information will be provided about you or your employer.In the dissertation, only pseudonyms that are not traceable will be used.

If you are interested in participating or would like further information, please contact me atsalvador.garcia.martinez@gmail.com .

Thank you,

Appendix C:

Letter to Higher Education Teachers who Expressed Interest in the Study

DATE

NAME AND TITLE

ADDRESS

Dear NAME:

Thank you for your interest in participating in my dissertation study exploring how higher-education teachers use commercial videogames in their teaching.

The goal of this study is to learn how teachers in Higher Education use commercial video games in their courses.Specific issues to be explored in the interview process include:

- Identify the subjects and objectives for which teachers use video games
- Explore how teachers create learning environments based on their objectives and the commercial games.
- Explore teaching practices and decisions related to the design of instruction using commercial games.
- Analyze opportunities, challenges and limitations when using commercial games for instructional purposes.

To that end, I would like to conduct an in-depth interview with you about the use of any of the following video games:*World of Warcraft*,*Minecraft*, *SimCity*, the *Civilization series*, or the *Elder Scrolls* series as part of your teaching.The interview is expected to last between 1 and 2 hours.

The approximately one-hour interview has three parts.

- Explore how and why you use video games as part of your instruction
- Walk-through of the lesson(s) in which you use the game to see how you use it and integrate the game into the larger objectives of your course.
- Ask follow-up questions raised during the first two parts of the interview

If your time is limited, we can conduct the interview in more than one session.

The interview data will be confidential: neither your name nor the name of your institution will be reported, nor will identifying information be included in the dissertation.I will only use pseudonyms.

Thank you for your time.Might it be possible for you to let me know when you might be available for an interview in the next two weeks?

Thank you,

Appendix D:

Participant's Consent Form

I understand that I have been asked to participate in a program of research being conducted by *Salvador Garcia-Martinez* of the *Department of Educational Technology* of Concordia University, Montreal, QC. Contact information: Salvador Garcia-Martinez, salvador.garcia.martinez@gmail.com, tel: 514 560-4736. Supervisor contact information: Dr. Saul Carliner, saul.carliner@concordia.ca, tel: 514-848-2424 x 2038.

A. PURPOSE

I have been informed that the purpose of this study is to investigate how teachers in higher-education institutions integrate video games intended for general use (as opposed to educational games) for classroom use and to explore their experiences when using video games as part of their instruction. Specifically, the goals of this study are

- Analyze how teachers integrate commercial games as part of their teaching.
- Explore teaching practices and decisions related to the design of instruction using commercial games.
- Explore teachers' experiences when teaching using commercial games.
- Analyze opportunities, challenges and limitations when using commercial games for instructional purposes.

B. PROCEDURES

I understand that in this study, the researcher will interview me and will observe me while playing *[name of video game],* which I am using for educational purposes.The interview is expected to last between 1 and 2 hours and that the interview can occur in one or more sessions at my convenience. I am aware that the interview has three parts. In

the first part, I will be interviewed about how I integrate*[name of the game]* for classroom use. During the second part, the researcher and I will go through the lesson in which I use the video game. In the third part, the researcher will ask follow-up questions about issues raised during the first two parts of the interview.

C. RISKS AND BENEFITS

I also understand that the researcher do not foresee any risks from my participation in this study. Since participation is strictly **CONFIDENTIAL**, the only person who will have access to data collected is the researcher. In the final research report, names of all participants and the educational institutions in which they work will be changed to protect identities. Benefits of participation include the chance to discuss and reflect my own teaching practices and will help the researcher to understand teaching practices when using video games for instructional purposes.

I also understand that other staff members and I will have two opportunities to review the research before it is published and can request that confidential information be excluded.The first time is a review of the interview transcript.The second time is a review of the research report.Furthermore, I can also request that another member of my institution, such as (but not limited to) an attorney or representative of the Communications Department review the research report to ensure that no confidential information is inadvertently published.

D. CONDITIONS OF PARTICIPATION

I understand the following:

- That I am free to withdraw my consent and discontinue my participation at any time without negative consequences. Notice to discontinue may be given to Salvador Garcia-Martinez or Dr. Saul Carliner by email or phone.
- That my participation in this study is strictly confidential.That means the researcher and his supervisor will know, but will not disclose, my identity and the identity of my educational institution. My name and that of my institution will be identified by pseudonyms in any research reports.
- That data from this study may be published.But no identifying information will be included in that publication, only pseudonyms.

I also give consent to the researcher to record the interview on videotape or audiotape.The videotapes and audiotapes will be used for archival purposes only; they will not be shown to people outside of the research team.

I have carefully studied the above statement about the research and understand this agreement. I freely consent and voluntarily agree to participate in this study.

Name (please print) _____

Signature _____

If at any time you have questions about the proposed research, please contact the study's Principal Investigator, Dr. Saul Carliner, Department of Education, Concordia University, LB-589-5, 514-848-2424 x 2038, saulcarliner@gmail.com.

If at any time you have questions about your rights as a research participant, please contact the Research Ethics and Compliance Advisor of Concordia University at 514-848-2424 extension 7481, or ethics@alcor.concordia.ca.

Appendix E:

Plans for the Interview

Part I

Cover the following areas, probing when appropriate:

- Educational background and teaching experience using video games.
- Explore how the participant began to incorporate video games into her teaching.
- State the course and objectives for which the video game is used in the class of interest.
- Discuss the learning potential of using the selected game for learning purposes.
- Expand why the participant chose the selected game for instruction and why it was chosen above other commercial games, educational games and other educational technologies.
- Explore how the teacherintegrated the video game in the classroom.
- Discuss what the teacher was expecting to achieve using this game and what was actually achieved. Detail about how the learning experience achieved its educational role.
- Discuss what worked, what did not, and students' reactions.

Part II

The participant should go through the video game; she will have the freedom to choose to play the part(s) that she wants. During her game play she should describe the how she is using specific parts or elements of the game for instructional purposes and specific key decisions related to learning and teaching.

Make sure to cover the following points:

- Explore how each element of the game supported learning and how they were incorporated into the lesson.
- Inquiry about how was the students' experience and how they interacted and learned using the game.
- Discuss what are the most and least effective parts of the video game and why.
- Explore what the teacher liked the most and least about the game and why.
- Ask the teacher to compare the use of this game with previous experience using different technologies and instructional methods. Emphasize about students and teachers performance.
- Ask the teacher if she could change anything about the game and the way that the game was used for instructional purposes what would it be.

Part III

I will ask follow-up questions raised by the previous two parts of the interview.

Appendix F: Frame Interview

- What type of teachers or who do you think use video games as instructional tools?
- Why do you think that these teachers use commercial games as part of their courses?
- How do you think teachers are using videogames as part of their teaching?
- What are the strengths and limitations of your methodology?
- What are you expecting to find?
- How effective do you think is using games for teaching?
- How do you think students will react?
- Do you expect having teachers that have used the game more than once in their courses or have used other video games and do you expect something different from the first time?
- Would you want to add anything else?

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