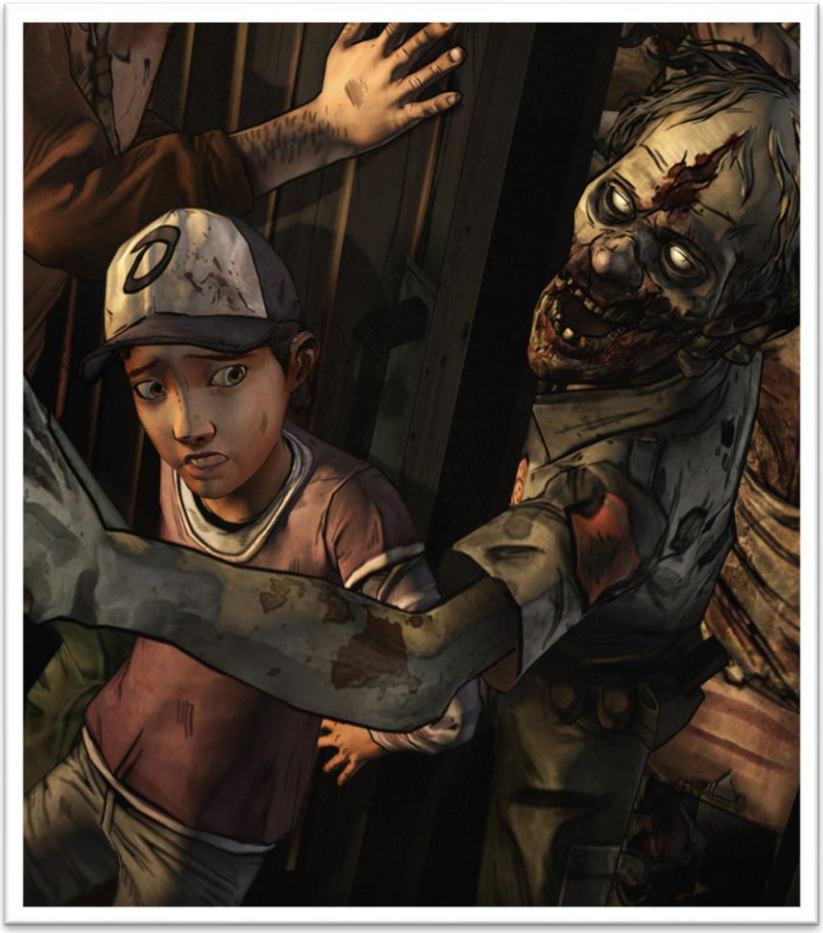

Zombies in the classroom

Video games for engagement in a new century of education

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Abstract

Bruken av dataspill i klasserommet har både sine forkjempere og motstandere, i denne oppgaven viser jeg resultater fra forskning utført høsten 2014. I denne perioden så fulgte jeg flere klasser på Nordahl Grieg videregående skole i Bergen, som bruke spillet *The Walking Dead*, laget av Telltale games i etikkundervisningen.

Denne oppgaven fokuserer på å knytte sammen helheten rundt både motstanden til dataspill i klasserommet så vel som å fremme de potensiale positive egenskapene de medbringer. For denne forskningen intervjuet jeg 17 studenter, fire lærere og gjennomførte to spørreundersøkelser, samt innhentet informasjon fra skolen. Den har vist en meget positiv innstilling fra elevenes side, samt fornøyde lærere som føler dataspillet har passet godt inn i klasserommet.

Videre viser resultatene at dataspill har ett potensiale i en læringssituasjon om brukt med omhu. Hva dette medfører er at lærerne som ønsker burde få muligheten til å bruke dataspill i sine klasserom hvor dette er hensiktsmessig.

Preface

Video games have been a part of my life since I was a young boy. My first memory of gaming was playing the Atari 2600 at a friend's place in primary school and later, the Nintendo Entertainment System (NES). On these video game consoles, I had my first experiences with this unique form of entertainment. They were not a medium that isolated me from my friends, but rather one that brought us together. We played both co-operatively and in friendly competition.

My first educational experience with video games came with the game Civilization, (by MicroProse, released in 1991). It was the first game where I could notice that I was learning something, not merely playing the game. I had never heard about many of the civilizations that were presented in the game, nor the "wonders of the world" or grand leaders in history that I had become familiar with through the game. I started asking my parents and grandparents about these people and places. Soon enough I got history books from all over the family and I devoured them all with curiosity. I also started to play adventure games, for example Police Quest 2 or King's Quest and I even covertly played the Leisure Suit Larry series. My main obstacle at the time was the fact that all of these games were in English. However, this never slowed my progress by much, and probably the majority of my English vocabulary came from these games. I remember being told that video games were bad for "children like me", but I could never relate to this. Video games had always been a positive part of my life. The notion that video games was something bad made no sense to me. Today I still have this fundamental view, that video games in general are not "bad".

Through my years at school, I did not experience video games in the classroom for educational use. However, I did experience the use of educational software. These early experiences shaped much of my curiosity towards technology, and towards computers in particular. These first experiences came on a "TIKI-100", which was a

computer made in Norway in 1984. It had a basic operating system and a few applications like word processing and calculator software. Around the fourth grade, we used basic typing programs to learn typing on the keyboard without looking at it. Later we also tried other software: a math program, a geography application and in recesses a few games. Additionally to the assigned software I would also play around on the computer, trying the different commands in the system, the different software on the 5'25" diskettes, and everything this strange machine could do. My own experiences began in the late 80's, but out in the world these experiences have started to catch people's attention even earlier.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

The project builds on the premise that video games are not a generally accepted practice in the classroom. The general opinion remains skeptical to use video games for more than entertainment purpose, despite of some notable exceptions. For this thesis, I followed several classes over the course of several weeks as they learnt ethical frameworks. The teaching process was achieved by employing a video game called The Walking Dead (by Telltale games). During this time, I observed the classroom, and conducted interviews and surveys with both teachers and students before, during and after the ethics module. The module is a part of the religion subject, which the last-year students in the high school have on their curriculum.

One purpose of this project was to examine the attitude students have towards using video games in the classroom. The majority of the students have prior experience with video games from earlier, making them well informed on the pros and cons of video games in an educational context. Another intention of this project is to identify the key success factors (KSF) for the implementation of video games. These factors point out sociological and human barriers we need to overcome, in order to successfully design, plan and implement video games in the classroom setting.

With my background in digital culture, I approach this topic with more focus on the games and their mechanics, the game genres history and the evolution of video games. I also examine sociological and historical reasons why video games for learning appear to be such a controversial topic, both in society and in schools. The foundation of this research is based on theories of ludology (gaming theory), as well as various social and technological texts.

1.2 SOCIAL BACKGROUND

Around the mid 80's, video games started to catch the eyes of experimental psychologists, who wished to look into the effect of this new entertainment form on children. These early experiments looked at the correlation between aggression in children and video games. In one study published in 1986, psychologists looked at how children behaved after playing the game "Missile Command" and a less violent game "Pacman" (Cooper and Mackie 1986). Their study showed that the girls had a small, but a noteworthy increase in aggression. The boys in the trial had no change in behavior. They expected the aggressive game to increase both genders' levels of aggression, but this was only true for the girls in the experiment. The conclusion was inconclusive and they found no cause to suggest any link between aggression and violent games.

However, claims that video games caused aggression in children did come from influential and powerful people in the early 80's. The New York Times reported on the 10. November 1982 in the article "AROUND THE NATION: Surgeon General Sees Danger in Video Games", that the United States surgeon general claimed that children are becoming addicted "body and soul" to these machines. Further, the report mentioned that "more and more people now understand the adverse mental and physical effects of video games". The author admits that he has no scientific evidence, but he expects this to be forthcoming in the next years from the health care field.

The same year, a renowned sociologist Philip G. Zimbardo also claimed that video games made children aggressive (Zimbardo 1982). The video game issue had thus become a political agenda. For example, local governments in the US started to take steps to "protect the communities" (Starker 1989, 150). In Bradley, Illinois, children under 16 was prohibited to use arcade games. Texas limited the use of

coin operated arcade machines to persons of 17 years and above, unless accompanied by an adult. Craig Brod charged video games for taking children away from "healthful physical activities" and for "disengaging youth from reality, giving them a false sense of omnipotence and impeding their imaginations" (Brod 1984). It further escalated with claims that youth gangs pressed people for money to fuel their game addiction (Cory 1983, 58). Video games had started to create a moral panic and needed to be shut down for any price. These media "witch hunts" are nothing new and this thesis looks into this phenomenon in Chapter 2. Nevertheless, the political and public pressure from over 30 years ago still is visible in the debate today.

This becomes particularly true in regards to schools. We always want the best for our children, and they are considered the weakest part of our society in need of our protection. Academic research has its limitations, but it is still our best option. As with video games, the problem comes when the research does not yield conclusive evidence. Emotions run rampant, they dominate the debate, and it degrades from a discussion to a shouting match.

From the start, video games would need to struggle an uphill battle for acceptance, and it would take quite some time before they recover even partially after this first initial public onslaught. Steven Poole, a writer and journalist, claims that: video games are not going away (Poole 2000, 11), and gives us two primary reasons in which he bases his claims. First, video games share the experience of "aesthetics". A well-designed game elicits the same response in a player as a work of art does on people. Second, with so much talent and investment poured into a field, it is bound to make a mark. Programmers, graphical artists, musicians and professional writers all have a place in this explosively growing industry.

In regards to video games in education, a growing amount of academic research highlight video games' potential value for learning (Gee et al. 2012, Prensky 2006,

Squire 2003, Dempsey, Rasmussen, and Lucassen 1994). Furthermore, more and more critical papers and books also look towards our school system, challenging the current, traditional system (Gee 2004, 2013, Halverson 2005), and asking how video games can be a step on the way to change the way we educate the next generation.

Video games presents some interesting challenges. On one hand, it is one of the largest media entertainments available to people today. On the other hand, it is still on a developing phase, having only been around since the early 1970's. In Chapter 2 I look more into this aspect, examine the history and evolution of video games, and present the relevant game genres which pertains to this thesis.

Today, both video games and video gamers are reaching a state of maturity that allows them to establish their place in the society. In this process, there will be scandals and problems in the video game industry like the recent "#gamergate" scandal, which dominated the media for a time.

Video games themselves will endure such episodes. Another major innovation - the cell phone - endured its own scandals, for example, with claims that phones caused brain cancer due to radiation. Society always challenge technologies in various ways. One might look at it like a protective mechanism: if a technology survives the scandals, then it deserves its place. If the technology should fade away, however, then it is not good enough and the evolution runs its course.

I have been a proponent of video games and quite vocal about the prejudice that exist towards video games. Similarly, researchers have also broken through some of this prejudice with their efforts.

> After years of research and proselytizing, the proponents of digital game-based learning (DGBL) have been caught unaware. Like the person who is still yelling after the sudden cessation of loud music at a party, DGBL proponents have been shouting to be heard above the

> prejudice against games. But now, unexpectedly, we have everyone's attention (Van Eck 2006).

Here, Van Eck is pointing at the pink elephant in the room: People are actually starting to listen, so how can we continue to promote video games for learning in an intelligent fashion?

It is easy to get lost in a "fan-boy" mentality, and forget academic responsibility to push the agenda. This would risk diminishing all the hard work put down by the pro-game community. These include the professionals who have put their names on the line and speak up positively and critically for video games, not only in an academic context. There are also artists, writers, game developers and the players in the community, who have all pulled their weight in an effort to legitimatize both gaming in general and video games in the classroom.

We owe it to all their hard work to keep up this steady and measured pace, where a balance of progress and caution is maintained. I think this is something that the community have largely succeeded. Van Eck writes this in 2006, close to a decade ago. The state of video games have not changed much since then, but there is positive trend in the air, and an anticipation of what is to come. The challenge is now for Game Based Learning (GBL) to avoid falling into the trap of edutainment, the movement that was said to revolutionize the educational world in the 80's and 90's. Edutainment used conventional learning methods and put them into a game, creating a rather dubious gaming experience (Egenfeldt-Nielsen 2011, 9). The edutainment industry pumped out game after game, but they were created solely for learning, with no thought put into game mechanics or engagement. Regardless of its intended mission, a bad game is still a bad game. An insufficient experience for the user that will serve no purpose, much like a poorly written book, it becomes more valuable as recycled paper than literature.

We need to create both a good game as well as a good learning experience. This can be achieved by either creating a game for the purpose from scratch or adapting an existing game to fit into an educational framework. Game Based Learning (GBL) might have a good future, but it depends on everyone to contribute and lay a solid foundation to show the educational potential in video games.

1.3 RESEARCH QUESTIONS / HYPOTHESIS

The goal of this research project is not to show that video games are the best and we will need no other forms of teaching in the future, but is to gain a better understanding of video games in the classroom.

My research questions are:

- Can video games in the classroom bring about engagement and positive experiences, creating a good atmosphere for learning?
- With video games engaging the student with a media they are familiar and connected to, do students feel they are learning as effectively as with the more established learning media?

Additionally, I wish to highlight the role video games play in the students' lives, in all our lives, to show how embedded video games and game elements are in our daily lives.

The focus is primarily on the perceptions of the students and the teachers. I will look at the history, the currently available video games and technology, and the classroom experience of the students and teachers. I am approaching this from the perspective of Digital Culture and gaming theory (Ludology), rather than psychology or pedagogy. Therefore, the focus will remain primarily on the game, the experiences, instead of on learning mechanism and theories. In this project I combine a broad approach that ties multiple fields of study together.

2 TECHNOLOGY IN SOCIETY

2.1 KEY THEORIES CONCERNING TECHNOLOGIES

Our culture is permeated by technology all around us, with the thoughts and innovations that brought us from the wheel to the gunpowder to the Internet. We now walk around with technology in our pockets or around our wrists that far surpasses what sent men to the moon in the 1960's. It has become so ingrained that we do not even question such wonders. We merely accept them for the normality of life that technology has resulted in.

Martin Heidegger is a German philosopher, who, amongst other things, concerned himself with our relationship with technology. In his book "Questions Concerning Technology", he contends that technology is not just a collection of tools, but rather closer to defining our way of Western living according to Michael Wheeler (2014). Furthermore, Heidegger suggests that our relationship with technology is akin of symbiosis, and one with which we cannot escape involvement. "On the one hand, humankind is the active agent of technological thinking, so humankind is not merely a passive element. On the other hand, "the unconcealment itself… is never a human handiwork" (Heidegger 2010, 106). What Heidegger highlights is that our society revolves around technology, as we are all subjugated to it, with technology being deeply embedded into our decisions and lives. He uses the example of a man working in the forest is there because he works there. Which the lumberjack only does, as society needs the product that comes from these trees, paper. He does not offer any solution, but only makes observations. He suggests that divine intervention might be our only hope. Nevertheless, he does question how much time we have left, as technology might come out of our "control".

> Everything depends on our manipulating technology in the proper manner as a means. We will, as we say, "get" technology "spiritually in hand." We will master it. The will to mastery becomes all the more

> urgent the more technology threatens to slip from human control (Heidegger 1977, 4).

Technology is perhaps the pinnacle of human achievements. We pursuit to better it, and it brings out the best in us and the worst. We fear it, we love it. Heidegger touches on something fundamental: What is our relationship with technology, and is technology passive or active? We face these little questions every day in our interactions with technology.

A theory that attempts to address this is Technological Determinism, the term is believed to be coined by Thorstein Veblen, an American sociologist. The theory is Marxist in origin, built upon the notion that "technology is the key mover in our in history and social change" (Kunz 2007, 2). A contemporary of Veblen, historian Charles A. Beard gives this rather fitting image of the what is understood by the term Technological Determinism: "Technology marches in seven-league boots from one ruthless, revolutionary conquest to another, tearing down old factories and industries, flinging up new processes with terrifying rapidity" (Beard 1927). Technological determinism receives its critics, in particular, as a strict interpretation of the theory exonerates humanity from change brought on by technology. We are merely onlookers, and the "key mover" is technology, not humankind. Therefore, it is not our fault if something goes wrong. As described by Jacques Ellul below, we are on a pre-destined path devoid of responsibility, and technology can be used to rationalize any action.

There are different degrees of this theory, the hard, the soft and the neutral perspectives. The hard determinist says that technology is in control, and humans need to adept and change to how technology develops (Ellul 1989). He explains that the work we do is so fragmented, that there is no one responsible anymore, if a dam bursts there is no one to blame. Jacques Ellul also shows through an example that technology has even been used as an excuse for actions, even atrocities, committed on an unprecedented scale. "What could I do? The capacity

of the ovens was too small. I couldn't process all those corpses. It caused me many problems. I had no time to think about those people. I was too busy with the technical problem of my ovens" (Boeckel 1992, 08:10). This citation is from the trial of the leader of the Bergen-Belsen concentration camp during World War II. He used the technical problems to explain why he did not care about the atrocities being committed around him. Ellul's point lies in that technology is so overpowering, that we are not really in control of our lives. Technology has taken over, and we are simply accepting our destiny as ordained by it.

The soft determinist would acknowledge that technology is still the driving force behind our evolution, but it can be tempered and directed through social and political means. I am more of a soft determinist, similar to that of William Fielding Ogburn, an American sociologist. He says technology is an integral part of how we have evolved for many millennia and built upon our knowledge, therefore after we create a technology, we create another based upon the previous one. However, it is not technology that builds itself, nor does it chose the direction it evolves. It is our choice, based upon the needs and state of our culture, one "brick in the wall" at a time (Ogburn 1922, 82-83). We invent according to a need of society, and we build upon our knowledge and accrued experience, each time slightly changing the path of our lives. Technology is a strong influence on our evolution, however, we do have a say in its direction. The trick is not to become complacent and recognize that we are not in absolute control.

The third view is that technology is neutral, that it is a tool used and controlled by humanity. A common example when describing this phenomenon is to use the example of a gun: "Guns don't kill people, people kill people". The gun by itself represents a deadly technology. Yet it is not the gun that kills, but the person that chose to use the gun as a weapon. Yet, this also comes with an issue. Guns are a part of our society. We know what they are and how they work. Can we say we are

disconnected from this technology? Laila Green, a professor of communication claims that we are naïve to think that guns are neutral.

> In effect, guns would be classified as neutral if and only if society were none the wiser of their existence and functionality. Obviously, such a society is non-existent and once becoming knowledgeable about technology, the society is drawn into a social progression where nothing is 'neutral about society' (Green 2002).

So according to Green, technology cannot be neutral; that would be ignoring all changes that technology has brought about to society. How has our lives changed since the introduction of the mobile phone and internet? Greatly. We are developing technology at an explosive rate, and our lives have changed much accordingly. The pace of development alone leaves us with a number of challenges.

Through history, change has come at a relatively calm and measured pace, and we have had generations to adapt and become accustomed to new technology. This pace seem to have changed around the time of the industrial revolution. We are now in a curve of exponential growth. Within the context of more recent technology, we often speak of "Moore's law", which states that processing power with roughly double every two years. Since 1965, this has proven to hold fairly true. This law is frightening in the fact that change is exponential, setting a pace that becomes impossible to keep for human evolutionary pace. Yet we are stuttering along with it. Comparatively, we are evolutionary snails that often need generations to adapt to significant change in meaningful ways, contra technology that does so virtually overnight.

We see this also in the case of video games. There is barely time for us to get used to this technology, and it is already spurring close to a universal usage pattern in the younger generation. Given that the previous generation had virtually no knowledge of this new technology, it creates a perfect situation for moral panic to occur, which will be examined later in this chapter.

We have had our share of technologies the last decades that have really changed us and how we live: television, Internet, mobile phone and computer to name a few. Some of these have even grown from each other or have hybrids between them, with facets of multiple of these technologies. Video games share modalities with books, film, radio and theater. With the addition of networking in the form of the Internet and wireless carriers, they now also have a significant social component. Like the Lernaean Hydra of Greek mythology, it keeps sprouting new heads, evermore connecting into our lives in new ways. At the same time, a sizeable part of society is wishing for its demise, treating video games as indeed would be a monster of legends.

2.2 EVOLUTION OF VIDEO GAMES

"Video games are just one subset of the grand category of games: structured activities carried out for pleasure, according to certain written or unwritten rules. Games are as old as civilisation itself and are found in all cultures" (Chatfield 2010, 133-134). In a historical sense, it is not that long since Estle Ray Mann and Thomas T. Goldsmith Jr. played their first game on a cathode ray tube in 1947 (Goldsmith Jr and Mann 1948), a moment that marks the start of video games. There are disagreements on exactly which game can be considered as the first. However, I have chosen to start at the very beginning considering "The Cathode Ray Tube Amusement Device" the origins of this concept. This first game was a game in which the objective was to shoot down aircraft, simulated on the Cathode ray tube. The other possible games (*Pong*/*Spacewars!*) are mentioned in

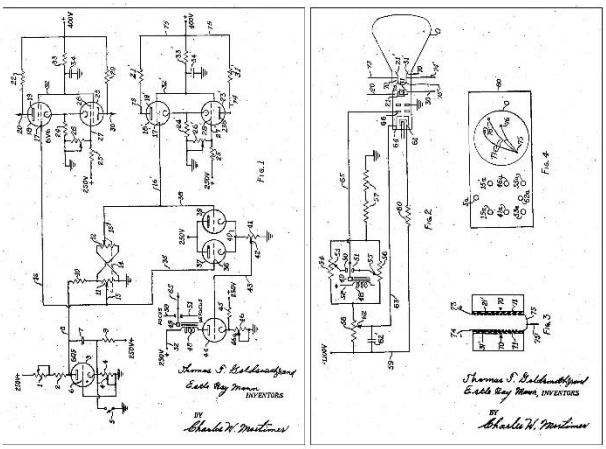


Figure 1 - "Cathode ray tube amusement device - schematic" by Thomas Tolivan Goldsmith Jr. - US Patent 2455992. Licensed under Public Domain via Wikimedia Commons

their appropriate contexts later. *Pong* is a contender as the first popularized game and *Spacewars!* as the first game created on a computer. Since these beginnings, video games have evolved at an incredibly rapid pace, like technology today. Mann and Goldsmith's first game was a simulation of shooting down airplanes. This first game had no memory or programming, but was a purely electromechanical device.

The mainstream breakthrough for video games is arguably *Pong* released by Atari in 1972 (Wolf 2012, 493). Atari was a small "entertainment engineering" company. In the early 1970's a company called Bally contracted them to make a hi-tech game. Alan Alcorn developed *Pong* as a tennis type of game. The initial trial runs at a bar was so successful, Atari could hardly believe them. Neither did their contractor Bally, who called the profit figures presented to them by Atari as "unbelievably high". In the end, Bally received a different game from Atari, fulfilling their contract. However, they would later release *Pong* as their own product, opening a new chapter in entertainment history.

With the introduction of video game consoles that could plug into any television, anyone could play video games in the comfort of their own homes. The first one on the market is the Magnavox Odyssey in 1972 (Wolf 2012, 371), developed by Ralph Baer. It was a fully dedicated video game entertainment system selling well over 300.000 units. However, it was not until the introduction of the Atari 2600 in 1977 following the popularization of the game *Pong* that video games started to come into mainstream media.

Video games were also developed for personal computer, from simple text based games to graphical ones like *Snake* or *Tetris*. Mostly anyone that has used the Windows operating system would know the games *Solitaire* and *Minesweeper*, which was pre-installed on the system ever since the first versions of *Windows*.

The progress of video games is quite astounding. Graphics, sound and the narrative complexity has grown in pace with our technical evolution. Even with

this progress, the basic gameplay is largely the same. In fact, the gameplay in many genres is mostly unchanged from their early ancestors until today. The First person shooter (FPS) genre started with "Battle zone" for the Atari in 1980 (Mead 2013). Today we would look at examples like Call of Duty, which employs essentially the same gameplay. The player controls a hero from the first person view, the player is then sent into a battle zone with missions to complete. The technical quality and complexity have improved, but the gameplay remains very similar. With each release, however, game developers found elements that people liked and disliked.

Each iteration of a game could be said to be an experiment in the maturation of video games. The success of the industry is beyond question. It now generates both jobs and revenues noticeable on the world stage, with revenues surpassing that of the music and film industry combined.

Video games are deeply entrenched in our daily lives. According to Statistics Norway 21% of the population in Norway would play a video game during an average day in 2013 (Vaage 2014, 68). The statistic also only mention PC and TV based games, meaning the referred 21% might not include the people that play games on their phones. In light of this, it is natural for researchers to explore the opportunities these games provide.

2.3 OMNIPRESENCE OF GAMES

Marshall McLuhan (2013, 3334) is not commonly associated with games, but he devotes a section to them in his seminal work: understanding media. He compares the bond between man and games as something tribal, "extensions of social man", woven in to our society through time and trials. They are "counter-irritants", a way for man to handle the stress put on us by culture and social challenges, and a way to unwind and escape the hardship of life, if only for a few moments.

How many times do we do something game-like or interact with a game element each day? More times than we think of. Frequent flyer miles, shop loyalty cards are both examples of real life gaming. Jesse Schell, a professor at Carnegie Mellon University, claims that "games have crept out everywhere, even my car has a virtual pet that rewards me for driving fuel efficient" (Schell 2010). He also expands on his thoughts, painting a big brother like game utopia or dystopia, depending on one's perspective: "there are sensors everywhere now, I can imagine everything from our toothbrushes to our cereal bowls and public bus system giving us points and rewards in the future, we will have reward programs and incentives on every action we do".

We use games for various reasons: to get away from everyday life, to feel some achievement and to be playful. Our lives are high-paced, we set a value on our time, and wish to maximize our life quality as a consequence. Why are games, or elements of games, so prominent all around us? We play to learn. A game of hide and seek is at its roots a practice to avoid hunters, and for the seeker it is a practice to stalk prey. We imitate and use symbolic play. By playing with dolls, we re-create and simulate events, we analyzing them as children to deepen our understanding of the adult life: "…the doll only serves as an opportunity for the child to re-live symbolically her own life in order to assimilate more easily its various aspects as well as to resolve daily conflicts and realise unsatisfied desires." (Piaget 1999, 107). Each game we play has an embedded meaning, and without this the imitation and symbolic play loses their meaning. Piaget writes: "Every symbolic game is both imitative and imaginative. To play at having a meal is both to imitate a real situation and to imagine a new one." (108) We have made up worlds, fantasies, and situations at an almost instinctual level since we became self-aware. This in an attempt to learn more and gain a deeper understanding of our surrounding world. Video games enable this activity at a completely new level, so it is not surprising that they have spread to be everywhere in our lives.

From 2004 to 2012, individuals have collectively spent more time playing World of Warcraft than it took the human race to evolve as a species, according to Jane McGonigal (2012, 889). Taking into account that these numbers are now starting to age, and we are looking at a few million collective years more since this estimation. This is one game alone - imagine if we were to count every game played. Jane McGonigal is a game designer and public speaker, who has her take on why video games are so attractive to us: "The real world just doesn't offer up as easily the carefully designed pleasures, the thrilling challenges, and the powerful social bonding afforded by virtual environments" (McGonigal 2012, 121). She thinks that video games are simply better designed that the real world. But we do have some hope, we can learn from how games are designed to better our world. It might be a utopian vision, but indeed life can sometimes seem rather dull compared to video games.

Video games are powerful motivators. They feed of our innate and primal instincts, and skills that we have developed to be the Darwinian success we are. Tom Chatfield is a game theorist and author, who have spent much of his life gaming and writing. He summarizes seven mechanisms how video games reward us:

1. Progress bar
2. Multiple short and long-term goals
3. Rewards for action
4. Rapid feedback
5. Element of uncertainty
6. Windows of enhanced attention
7. Social aspect

He presents these in his TED talk: *7 Ways Games Reward the Brain* and elaborates on them in detail in his book (Chatfield 2010), diving much more into detail on each point. First, video games give the player a sense of achievement through

showing their progress. A progress bar, experience-meter, or even just a point system shows the player explicitly that they are making progress. Second, for idle workers in an engaging game, there are always larger or smaller tasks to occupy the players' time. Video games are masters at always giving something. Furthermore, every little achievement is brought up to reinforce wished behavior. Feedback is given instantly, and there is no need to wait for 3 weeks to have your paper graded. The game shows the consequences of the players' actions immediately, putting the player into the situation, so they can learn and adjust constantly. Moreover, the game provides uncertainty, which feeds on our innate curiosity and a primal instinct of needing to know. Chatfield calls this the most compelling and basic of all the factors. Games are also exceedingly good at creating windows of time when the brain is primed to learn through the release of dopamine, which is a chemical released in connection to rewarding achievements. Finally, we enjoy the company of others. We are inherently social creatures that flock together for activities and bond through interaction. Collaboration is something that video games are amazing at facilitating, contrary to the popular belief that video games isolate people.

In 2008, the MacArthur Foundation supported the publication of a report by Pew Internet and American Life Project on teens and their relationship with civics and video games. In this report, we can see that 97% of teens aged 12-17 play video games, and of these only 24% is estimated to "play alone"(Lenhart et al. 2008), meaning that video games are a social experience for teens by large.

We see these rewarding systems in action all around us, but how many actually think of these elements as something from a video game? It might sound strange to remove some tediousness work by placing it into a playful environment, however, the use of games and game-like elements for leisure and learning has been with us from the dawn of time. This phenomenon did not suddenly arrive with video games.

2.4 THE CAVEAT – VIOLENCE IN GAMES

This thesis is built upon the premise that we can learn from video games. However, we cannot control each individual's experiences with the games, nor what they learn from them. The caveat would be that, we must then assume that video games can influence not only positively, but also negatively. This means, not all those that affiliates themselves with video games does so in a positive context. Some studies claim that excessive video gaming can cause severe psycho-social effects, like aggression, dependency and anti-socialization, even going as far as stealing to sustain their gaming habits (Anderson and Dill 2000, Ellis 1990). On the other hand, it is also suggested that aggressive play can reduce stress and serve as a relaxation (Bensley and Van Eenwyk 2001). This discussion is likely to be ongoing, and will not be ending in the near future.

In the 1980's, there had been a great interest in children's behavior in regards to this new and politically charged media. As I mentioned in Chapter 1, there was a lot of effort put into proving how video games was affecting our youth, however, the research results seldom showed any clear answers.

The studies generally had the same procedure; a group of children played video games, either violent or non-violent. This was compared to either a group playing the opposite type of game, or one engaged in another media related activity, like watching a cartoon. Afterwards their aggression was measured, mostly commonly through free play and observation. This entails to have the child under observation for a certain amount of time, recording statement and actions that exhibits emotions (Clark and McDowel 2006). This provides the basis upon which it is possible to quantify an increase in aggression, anger or other emotions like sadness. The method is scientifically recognized and appears in a number of studies, however, the method has some clear limitations: Firstly, the research is not done in a gaming environment, rather in a laboratory setting, excluding many factors that play into the game experience. Secondly the research is only focused

on short-term effects rather than long-term effects, which limits the findings significantly.

From the mid 80's, results of these trials showed several things. In some cases it showed a plain, increase in aggression, similar to what has been observed with violent cartoons (Silvern and Williamson 1987). One showed that girls aggression increased, while the boys did not change after playing either type of game (Cooper and Mackie 1986). Another study showed a short term increase with no difference between the genders (Anderson and Ford 1986). And finally, one showed no increase or inconclusive results (Graybill et al. 1987).

One point of contention in regards to video games is the idea that they promote and glorify violence and desensitizes players to the violence they experience in them. The debate rekindles intermittently, in particular if there has been an act of violence or tragedy involving youths. When some link is found between the tragedy and video games, the media often pursue it vigorously.

School massacres are such incidents that usually spark these discussions. Even if extraordinarily rare, they spark an incredible amount of attention and debate (Barbieri and Connell 2015). The 1999 school schooling at Columbine High school, Colorado, in the United States. Another occurred in Winnenden, Germany and the "Sandy hook massacre" all come under shootings in which video games came into limelight. In the first example, the youths that committed the massacre was linked to playing *Doom*, a first person shooter game, also modding the game (creating one's own content to the game, and changing how it looks and plays). Tim Kretschmer, the perpetrator in Winnenden, was said to be fan of first person shooters, *Counter Strike* and *Far cry 2*. In the third case, Adam Lanza was portrayed as a fan of video games as well, as police found many games at his house according to the police report (ct.gov 2012). Senators and official figures blamed the incident on video games, even though the police report did not. It only

referenced Lanza's favorite games *Super Mario Bros*. and *Dance Dance Revolution*. Neither of the games can be called violent games: the former is a platform game from the late 80's, the latter is a dancing gaming in which the players dance on a mat on the floor attempting to match a pattern shown on the screen. Associate Professor of psychology Christopher J. Ferguson, says there is no good evidence that video games contribute, even in a small way, to mass homicides or violence among youth in a TIME article regarding the Sandy Hook massacre (Ferguson 2012). Furthermore, he says that sanctions against video games might be tempting, but nonsensical.

Over decade after the shooting, there are still articles written in the media concerning the Columbine shooters alleged addiction to *Doom*, a first person shooter, and how the game might or might not have contributed to the shooting (Blevins and Simpson 2014). Neither article relate any actual evidence other than speculation. However, even if it is clear that both shooters in the case loved video games, the hypothesis that the games lead them to commit these atrocious acts is inconclusive and only one possible theory.

The same year as the school shooting in Germany, 2009, the country banned all violent video games that depict humans killing other humans or humanoids, or in which the majority of the game play revolves around the killing of humans. This was probably a direct response to this shooting. There was no evidence of any links between video games and the massacre, nevertheless the media frenzy and moral outcries for action spurred the government into action.

Why these speculations still come into the media stream is an open question. It might be due a need to explain a situation that cannot be explained. The shooters' connection to video games becomes a lifeline of sorts for some to cling on. Any explanation, good or bad, is better than no explanation for tragedies that touched so many people's lives.

Even if loud, the connection between video games and violence is at best a tentative one, with no proven causality. There are some interesting cases made, however, none is really provable, but rather has a ring of "common sense" to them. One such situation is highlighted in a study of the interaction between the military and the entertainment industry: "Adopting the role of shooter, gamers are positioned to identify with the aggressor. Educators understand that active participation increases learning, and young gamers actively control the characters they inhabit" (Andersen and Kurti 2009). This is an interesting observation, and is the kind that is frequently referred to in regards to video games and violence, which might be true. But no tangible or reasonable amount of causality can be connected to it.

According to media researcher Henry Jenkins: "The overwhelming majority of kids who play do NOT commit antisocial acts. According to a 2001 U.S. Surgeon General's report, the strongest risk factors for school shootings centered on mental stability and the quality of home life, not media exposure" (Jenkins 2006). Jenkins also suggest that blaming video games for such incidents takes away the attention from the real reasons. Another study, conducted by the Secret Service and the Department of Education, is arguably the most comprehensive study on the topic covered 37 cases of school shootings in the United States of America. This report concluded the video games was "the least significant factor" found among the respondents that had "some interest" in violent media of any kind (Vossekuil et al. 2002). The discussion around video games and violence is mostly misguided, and at worst blinding, as they lead the attention away from the difficult questions we should be asking when a tragedy occurs. Blaming video games is the easy way out.

2.5 MORAL PANIC – MORAL GUARDIAN AND OBFUSCATOR

Academic research in media and violence causality has been dominated by scientific effects studies. "Despite 60 years of effects research, the relationship

between representation and reality remains hotly contested and reviews of the findings of this vast body of scientific research is notoriously inconclusive." (Boyle 2005). Furthermore, she states that there are large amounts of research that leans both ways. If people look for evidence that media and violence is connected, they would find it; same as would anyone looking for evidence to the contrary, that violence and media does not have a causality relationship.

What is played out in these situations is a phenomenon called "Moral panic". It is defined as "a situation in which an inordinate amount of concern and attention is rather suddenly focused upon some particular behavior, condition, or social group that is perceived as a threat to the interests or values of society" (Arford 2014). This attention is usually brought about by the mass media like newspapers or television that present some sort of study or expert opinion. Every technology has a period where it is comes under attack from the general society, it could be thought of as a test of the media, if it can hold up under scrutiny. Television, radio, cinema even writing was under attack from authority figures.

One author who have addressed moral panic very well is Stanley Cohen. In his book: *Folk Devils and Moral Panics: the Creation of the Mods and Rockers,* he describes the circle of moral panic:

1. Someone or something is defined as a threat to values or interests
2. This threat is depicted in an easily recognizable form by the media
3. There is a rapid build-up of public concern
4. There is a response from authorities or opinion makers
5. The panic recedes or results in social changes
   (Cohen 2011, 46)

The defining character in addition to Cohen's list is reoccurrence - whether or not this concept comes back into public scrutiny. The concept, item or questionable content either vanishes from society at large, and becomes a part of our history and our folklore, or it reoccurs and faces another round of public prosecution. The

third option is that it retains a solid place in our society, a place like writing or the book, which is commonly accepted and rarely returns to the public testing cycle.

This cycle of societal testing is best shown through some examples. Look at these two passages:

> It gives its disciples not truth, but only the semblance of truth; they will be hearers of many things and will have learned nothing; they will appear to be omniscient and will generally know nothing. (Plato 390BCE).
>
> It is a pastime of illiterate, wretched creatures who are stupefied by their daily jobs, a machine of mindlessness and dissolution. It requires no effort, raises no ideas, raises no questions … (Duhamel 1931).

The authors of these passages are about two millennia apart, yet their tones and languages are similarly concerned and damning. Plato, in the first passage asserts that writing will take away humanity's ability to remember and understand. The second passage has a very similar concern: The "evil media of film" would cause us to become "illiterate, wretched creatures" and never raise new ideas or questions.

Coming to video games, it is hard to ignore the statement from the mayor of London, Boris Johnson, who in 2006 claimed: computer games rot the brain, is a drug on our children and leaves them as "blinking lizards, motionless, absorbed, only the twitching of their hands showing they are still conscious" (Johnson 2006). Johnson is no scholar, but a politician. As such, he is a public figure that has an audience who will listen to his opinions, regardless of his qualifications, which is another facet of discussion. A loud voice is sometimes more important that facts when it comes to public opinion and in particular when the message have some ringing of "common sense". What is said about video games in regards to violence that they might desensitize people from violence, is a statement difficult to prove. Jeanne Funk et.al (2004) for example points to that it is difficult to quantify this data, and recommend further study into the field even if their results proved

inconclusive. Two studies, one conducted by the Swedish Media Council (2012) and by Holly Bowen and Julia Spaniol (2011) both conclude that there is no evidence to support the claim that video games desensitize or negatively impact youth in regards to violence. Nevertheless, even if there is no evidence, put into a flaming oratory it can become a powerful message regardless of the validity or truth of the statement.

"Moral panics, once the unintended outcome of journalistic practice, seem to have become a goal… … moral panics have become the way in which daily events are brought to the attention of the public" (McRobbie and Thornton 1995). Through headlines and public outcries, we are constantly bombarded from every direction. This has only been amplified by social media platforms that potentially set friends against friends in a semi-public sphere using the same rhetoric. The mechanical principles are unchanged, only the arena and participants have changed.

Moral panic is a necessary evil in a society. It acts like a quality assurance for new "products" that come into our lives. It tests, prods and tries to highlight any perceived flaws. This is done again and again until this new product is either accepted or removed from our society. Video games have had such a prominent role as a target for moral panic in the last three decades, perhaps due to its sheer speed by which it has come from nothing to become virtually a universal behavior. Additionally, it threatens several other well-established media, which essentially in self-defense lash out to protect themselves from this new invader. The reactions is understandable, and video games will just have to endure them stoically, as media and technology before it have done.

2.6 ADDICTION, LEGAL AND ECONOMIC CHALLENGES OF VIDEO GAMES

Finding a causal relationship between video games and violence is perhaps a fool's errand. Video games does have their negative sides, as will anything done in excess

or without reflection. In this section, I wish to highlight topics that are generally not in the public eye, and should be investigated in more depth.

Addiction is a word that is lightly thrown around when negative sides of video games are discussed. The term and its implications might have overshadowed facts in the debate, so that beneficial sides have simply been ignored (Squires 1999). Addiction conjures up images of drug abuse, and worn down lost souls of society with no glimpse of hope in their future. Yet, for some media the term is considered positive, even a sign of praise. “It was impossible to put down.” “What an addictive read.” Such phrases are considered the highest praise in regards to a good book, yet no concerned scholars or politicians speak out about the “alarming book addiction” we face in our time. As I discussed previously, video games is still the target of moral panic, and thus a convenient target to blame should the need arise for a scapegoat.

The problem of addiction is however something to be considered, gamers themselves are the first to admit that this is the crux of their preferred pastime. A study conducted in 2009 shows for an example that 8% of the roughly 1100 respondents exhibited signs of a pathologically negative relationship with video games (Gentile 2009). This study differs from many others, in that the criteria for an unhealthy relationship to games is based on the Diagnostic and Statistical Manual of Mental Disorders (DSM) for gambling, a behavior disorder, rather than addiction or substance abuse. This approach seem to be a step in the right direction, and another interesting find from this study was that time spent playing did not equal an unhealthy relationship to video games.

In 2006, in Amsterdam the Smith and Jones center opened. It is an institution with the goal to treat video game addiction. Many took this as a sign and proof that video games were indeed a problem. Two year later, however, the CEO of the center, Keith Bakker announced that the center would be abandoning their

"addiction style" of treatment (Chatfield 2010, 983). He further explains: "even if these kids come here showing symptoms of addiction, 80% of them can be treated with old fashioned communication. Their problems are largely social, not based on them playing a video game. We should be looking at the reason these kids started playing excessive amounts of video games in the first place." This highlights what was mentioned before, and was echoed by media researcher Henry Jenkins previously in this chapter. The intense focus on video games can lead our attention away from the actual problems faced by our current and upcoming generation. Nevertheless, it cannot be completely discounted. A study done in Singapore shows that video games can have long lasting effects, even over the span of years (Gentile et al. 2011). It further suggests that the pathological gamers have a lower social competence and are prone to develop social phobias or lower their academic performances. Another study suggests that habitual video gaming can lead to increased aggression of people (Anderson et al. 2008), and suggests that we should "reduce their exposure to this risk factor".

We cannot assume too much about video games, because we simply know too little and should increase our efforts to learn more. An intriguing book written by Susan Greenfield, a professor of Pharmacology, suggests that it is possible to effectively drug ourselves with video games by a overproduction of dopamine that affect our pre frontal cortex. Essentially we will render ourselves less empathic and less able to relate to due to an overproduction of dopamine (Greenfield 2009). Her book highlights an area that is lacking in research. She does not really address video games explicitly. Nevertheless, this research could enlighten us more to the effects video games have on us.

A final area is the economic and legal areas that the virtual worlds of video games have brought with them. In China there has been a murder over the theft of a game item. In Shanghai, a man attacked and stabbed a friend he had lent a game sword to. It was a 'Dragon Sabre' from the game Legend of Mir 3, that his friend

had sold on e-bay for 7200 yuan (7500 NOK). As there are no laws in China covering such incidents, the courts could not assist, so the man took the law into his own hands (Chatfield 2010, 733, BBCNews 2005). In South Korea, there is a division of the police, which specifically works on incidents relating to in-game thefts or activities in these virtual worlds. International treaties will need to come in place eventually, on how to handle virtual goods, as well as non-virtual goods.

Edward Castronova is one of the few that have studied the economies of virtual worlds, in his 2001 paper he explores the planet Norrath placed in the virtual world of Everquest, an MMORPG game developed by Sony Entertainment. He claims that "virtual worlds may soon become the primary venue for all online activity" (Castronova 2001), also adding that virtual worlds are in general making money, unlike many other internet startups. Later he also added the possibility:

> If virtual worlds do become a large part of the daily life of humans, their development may have an impact on the macroeconomies of Earth. It will also raise certain constitutional issues, since it is not clear, today, exactly who has jurisdiction over these new economies. (Castronova 2002)

This echoes concerns raised by several of the academics, even the players themselves, what reside in these virtual worlds. In some ways, the virtual worlds are lawless, with a Darwinian survival of the fittest mentality. "Thou shall not get caught, else ye may do as ye like" could as well been the motto for the average virtual world. Enforcement of rules is largely up to the internal ethics of players. The company that runs the game has a difficult position, for they need to both enforce "the law", and think of the bottom line of their financial reports by retaining as many paying players as possible. It is not all gloom and darkness. There has been suggestion that virtual worlds like *World Of Warcraft* (by Blizzard Entertainment) can be training grounds for "good capitalists" (Rettberg 2008) and teach players about the intricacies of economies by virtue of practical experience within the world.

None of these questions can be easily addressed. However, there is a limit to how long we can live in this blissful ignorance. Each of the points mentioned above, from addiction to legal and economic matters, can influence us significantly with a butterfly effect felt far into the every corner of the real world.

3 VIDEO GAMES IN EDUCATION

3.1 VIDEO GAMES AS EDUCATIONAL TOOLS – AN OVERVIEW

Video games are not new as educational tools, but their use have generally been limited in scope, in particular in schools. However, a survey in 1987 show that 4600 larger companies in the United States reported to be using "instructional games" in some part of their training programs (Dempsey, Rasmussen, and Lucassen 1994). Their use seem to be accepted for companies and organizations, including the United States military, however, it is in dispute for schools. Video games have been used as educational tools since their creation on the various computers invented in history, since *Spacewar!* was written by Stephen Russell and his fellow colleagues at Massachusetts Institute of Technology (MIT) in 1961-1962 on the PDP-1, one of the most advanced computers available at the time (Chatfield 2010, 238). The game showed the potential of the computer to its fullest, research fellows and students alike was encouraged to experiment on the code, optimizing or expanding on the game. It became such an effective show of the capabilities of the computer the manufacturer soon shipped every PDP-1 with a pre-installed version of *Spacewar!*.

The US military have been a driving force in the use of video games for instructional use for several decades already. An example is the "Flatworld" project that was a collaboration with the University of South California, the goal with this project was to create a mixed reality experience that would be undistinguishable from a battlefield experience (Mead 2013, 01:50). Additionally soldiers are now instructed in various skills, from cultural interactions between tribal elders and how to train a police force, all through video games.

Colonel Casey Wardynski is the man behind *America's Army*, a first person shooter (FPS) that the US military developed as a recruiting tool and training platform. At

a conference of educators, he gave this brazen response to a claim from the audience that the army used video games to teach people to kill:

> You should feel embarrassed that the military embraced this type of learning before you did. Our problem is that we end up with the 17 year olds who failed in school. And if we teach them the way you do. That is, through skill and drill and standard methods, they're going to die. Because they don't learn that way, so we've got to teach them for real (Mead 2013, 02:49:20).

Wardynski's direct response represent the military's view very well, they have successfully used video games for decades for training soldier, and the potential is doubtlessly there. It is now up to society to embrace the technology, or find good reasons as to why video games should be rejected, by disproving the military's success.

Educational software does not need a base in game mechanics, though they usually have some elements, such as instant feedback and scoring systems. An example of these non-game software applications are educational programming languages. These are created to be similar to, but less complex than a full-blown programming language. *Logo* is an educational programming language developed in 1967 by a team lead by Seymour Papert, a professor at Massachusetts Institute of Technology (MIT). The language was created to teach programming to students, in particular younger pupils, so they might gleam an understanding to how a programming language works. Today, the principle of the language is still in use in numerous iteration. One such is *Scratch*, also developed at MIT, that is employed by "Lær kidsa koding" (Teach Kids Coding) to teach younger children how programming languages works in Norway (Kidsakoder.no 2015). Such initiatives can be instrumental to open young people's minds to understand how programming and the principles behind coding for the future. Considering our

society today, it is quite likely most innovations will require programming of one sort or another.

According to a Dutch study, video games are implemented in the classroom mainly in three ways: 1. the use of commercial video games, adapted to use in an educational context. 2. Introducing serious games, created specifically for a subject into the learning process. 3. Game development with the students as an educational practice (Bourgonjon et al. 2013). This thesis primarily concerns itself with the first approach: the use of commercial games, adopted by a teacher to suit his classroom as a supplementary tool. The other approaches also have merit, to introduce serious games into the classroom can be beneficial if done correctly, serious games like *Kodu*, *Enki* and *Dragonbox* have all shown promising results. *Kodu* is developed by Microsoft, it builds upon the premise of *Scratch*, a simple educational programming language from MIT to make programming an accessible experience. *Enki*, by Asio, is a web based game system focused on primary school math and science. *Dragonbox*, developed by WeWantToKnow, focus on algebra and mathematical problems. The third approach is to make a video game in the classroom with the teacher directing the effort and creating tasks and guidelines around this premise. Mark Overmars, a Dutch professor and Michael Macedonia, an American professor suggest *Stagecast* or *Gamemaker* as good tools for this process (Overmars and Macedonia 2004). When the students create a game they are pushed into a creative process, in which the students need to plan, create and follow through on a complicated development process. Using this contextual backdrop the educator can teach the skills within a meaningful context, rather than the traditional "workbook" classroom.

Humans respond to challenges, it drives us to new heights daily, there is no surer way to motivate then to claim: "that is impossible". However, the opposite is also true, if something becomes tedious and repetitive, it becomes boring and we often abandon the activity. Seymour Papert spoke about the potential of computers in

education as early as in the 1960's. In his capacity as a professor at MIT, he conducted some of the earliest research on what makes this new technology so interesting. He quotes a young student that has attended a programming class in logo: "It's fun. It's hard. It's Logo" (Papert 2002). Papert emphasizes that the student says this in a positive context, the enjoyment stems from the difficulty, the challenge of overcoming an obstacle. This coincides with Bernard Suits definition of what a game is: "the voluntary attempt to overcome unnecessary obstacles". Further he elaborates that to play a game is to attempt to obtain a goal using the rules, even if using the rules makes the goal more difficult to obtain (Suits 2005, 54-55). He does however stipulate a prerequisite: an environment where these rules are readily accepted and followed by all participants.

Logo is not a video game, but what the young student said is equally important when speaking of video games. Players do not want an easy win; they create conditions of success, rules that must be followed to obtain victory. To just being presented information is not always the best way to learn, to struggle, and work for the knowledge is healthy and character building.

We have all, sometimes, zoned out at work or at home. While reading a book or playing a video game. Suddenly, we are jolted awake. We realize that we existed, far away, in a world of our own imagination. Johan Huizinga (1971) writes that we create "a magic circle" around us when we play a game. A separate world in which the rules of the game defines the rules of the world. Our minds have the ability to create these abstract spaces, to fill them with rules that does not need to adhere to any logic or laws of nature. The ability create a virtual world is not a new phenomena that came with video games, this is something we as humans have done for a very long time indeed. We can dive into the world of a book, the well played narrative of a film, an intriguing theater show or loose ourselves in the music of Mozart.

Video games however, have brought this up to yet another level, they have created vast worlds that we can even walk around in and explore. Worlds like Azeroth (*World of Warcraft*), Rapture (*Bioshock*), Hyrule (*Legend of Zelda*) and Nirn (*Elder Scrolls*). All of these come to life in ways we could only dream about in the past. The modern modalities of old are all there. Enchanting narratives, vivid images and dreaming sounds. The innovation is the ability of interact with the images, reading or hearing the narrative and listening to the creaking of the doors as we open them. How do we actually use these games? The United States military is a prime example on an organization that have taken the new medium to heart. Institutions like the high school in this thesis is another. However, there are still many prejudices games need to contend with before a more wide spread acceptance of video games as an educational tool is obtained.

We have opened a new level of opportunities in education. Corey Mead (2013) describes the various ways the United states have used video games in their military. On anything from logistics, cultural preparation, language training, combat simulation, recruitment and even post-combat psychological treatment. There are some prominent people asking for improvements to educational software, like United States president Barrack Obama, in a speech in Boston 8. March 2011: "I'm calling for investments in educational technology that will help create digital tutors that are as effective as personal tutors, and educational software that's as compelling as the best video game. I want you guys to be stuck on a video game that's teaching you something other than just blowing something up".

President Obama is concerned that our educational software is not as good as the best video games and he would like to see that change. He would like to see that our educational software, he does not explicitly say video games, probably as it still retains a negative political discourse. However, for something to be "better than video games" it needs to be either something completely new, which is unlikely in

the near future, or game based educational software as good as the best on the market.

We are only starting to see the top of the iceberg in regards to what video games can do for education. However, we cannot think that video games will solve our educational needs. They might be part of the solution, but there are limits and problems associated with video games as mentioned earlier in the thesis, a "step forward cautiously" policy seems prudent.

3.2 HOW HUMANS LEARN FROM VIDEO GAMES

There are many ways to describe a video game, one is from game theorist Jesper Juul: "To play a video game is therefore to interact with real rules while imagining a fictional world, and a video game is a set of rules as well as a fictional world" (Juul 2005, 43). There is more to video games than just the rules and a world however, the players need to be able to interact with the world, which means to learn to play the game.

We need to know what button cause which action, for example, what button causes the avatar to jump. What elements in the game are dangerous to the player, and which are beneficial. It is fine art to design the game so that it teaches the player to play the game, and retain the magical feeling of gameplay.

Exactly how this is done varies greatly, virtually every game have their own unique twist in how they teach their players to play, but I will point out some basic principles, as well as give an example from an iconic game, *Super Mario Bros.* Video games teach through a rather simple combination of written documentation, trial and error as well as feeding on our constant drive overcoming challenges.

The video game *Super Mario Bros.* from Nintendo, released in 1985, can be used as an example of how a video game teaches the player how to play through a fairly simple trial and error process. The level design below based in parts upon a blog post (Anthropy 2009), I have simplified and shortened the content to be in line with the thesis.

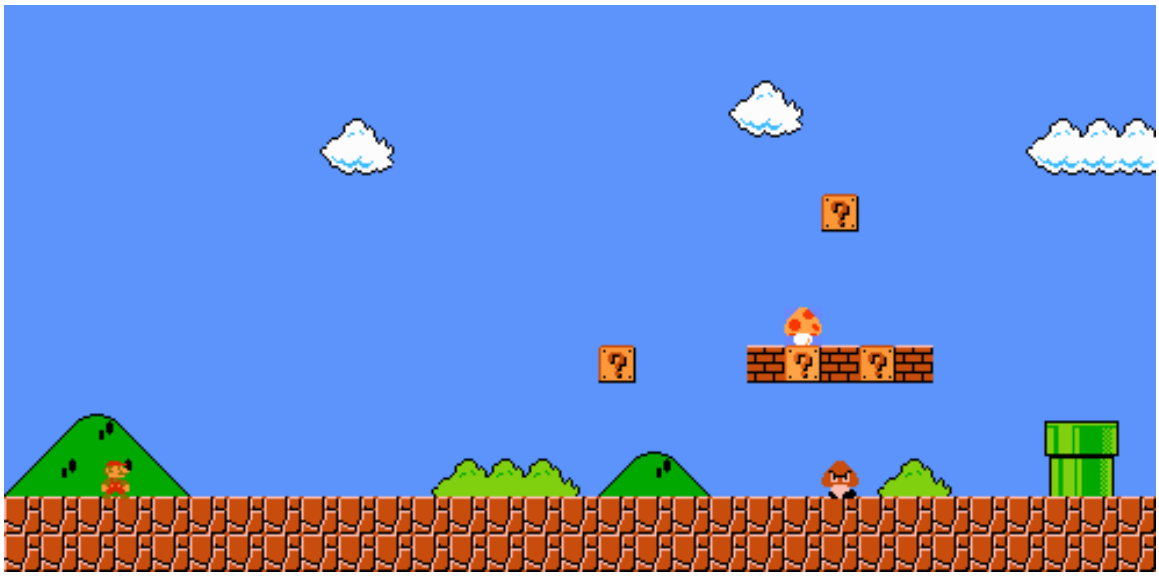


Figure 2 - Initial two screens from Super Mario Bros. ©auntiepixelante.com

After starting the game itself, the player is presented with the initial screen (left half of Figure 2), which is an open space with a noticeable, inviting open space to the right. As the player starts to move, the rolling screen reveals tiles that looks like bricks, one that has a question mark on it and a slow moving mushroom that is heading towards he player. In fact, these two first initial screens give the player all the essential tools to play the game.

As the player moves to the right, he faces a few choices: just run ahead, in which case the character dies by hitting the slow moving mushroom-like creature. Jump over the creature, either avoiding it or landing on it, with the result of killing the mushroom. Eventually, the player will also jump into the brick tiles, revealing that they are also more than just scenery, but part of the game's mechanics. By jumping into the brick tiles or the '?' tiles, the player can affect them in various ways, for

example releasing various power ups. These affect the game avatar, the character the player plays, so it becomes larger or gaining new abilities like being able to shot or invulnerable for a short time.

Soon the player has learnt to move, to jump and run, understood that enemies can be jumped on to defeat them, there are gold coins or power-ups in some of the brick-like squares that makes your character stronger. He is also shown the basic hazards of the game like bottomless pits, simple moving platforms and some other forms of enemies that all need different strategies to defeat. Each in small chunks that takes a relatively short time to master. The first level in its entirety takes between 1-2 minutes, if we add on some deaths and restarted games the player probably need less than 10 minutes to understand the basics of gameplay and consistently defeat the first level.

The next level progresses with new challenges and variations on previous challenges, each challenge slightly harder, increasing both difficulty and sense of mastery. Every few levels the player needs to defeat a "boss" that challenge the skills the player has accumulated and provide yet another hurdle for progression. In principle, not unlike an entrance exam to the next levels. These "bossfights" are not unsurmountable, the player can beat them with a little practice and dedication. At least in theory, however there will be players that fall off before they complete the game, never beating the game.

This process is very similar to that which Edward L. Thorndike describes in his experiments with cats and puzzle boxes (Thorndike 1898). The learning is done through trial and error, a failure does not stop the effort, it rather becomes the key

Figure 3 - Snippet from the game Super Mario Bros. showing the scoring, located at the top of the screen.

to understanding what is an undesirable state for the player. Each time a death occurs in the game the player evaluates the taken path and examines alternatives to avoiding this state in the future. This idea was further built upon by the experiments of Burrhus Frederic (B. F.) Skinner and his Skinners Box. However, Skinner looked at changing behavior through giving out explicit rewards, rather than merely avoiding an undesirable state. Video games does both. The player wish to play, so they wish to keep alive within the game, additionally it provides multiple awards to the player throughout the play experience.

Figure 3 shows the top of the screen from *Super Mario Bros.* It starts with the players score, which increase with every success the player achieve, every power up, enemy killed or coin collected add to the score. Secondly, there is the special coins that is scattered along the level, each one is counted here and to collect them all is very challenging. Thirdly, the level indicator, this shows to which level the player has progressed. Finally, the time indicator. This is not part of the reward system, but another game mechanic. This timer counts down, showing how long the player has to complete the level before he fails due to a lack of time.

Video games from the start needed to teach the players how to play them, this was done as shown above with intuitive game design, creating small trial and error scenarios in which the player would learn what worked and not. Now, in the later years there is a trend of uniform interface design, spanning over a large part of the industry. If we look at PC-games today, the buttons used for controlling the character are almost the same. 'W,A,S,D' controls movement, the mouse pans the viewpoint, action buttons are located near the "movement buttons", typically 'F, R, E, Q' and 1-4 on the numerical bar and the mouse buttons. Each game would have small variations, but the controls mentioned above, cover the majority of the first person shooters released the last two decades.

The effect of this is twofold, gamers can move between games with relative ease, however it does not solve the "lock-out" that non-gamers feel towards games. For those that do not really play video games, nor really have an inclination to do so, video games can seem like a forbidden world for those initiated. Perhaps creating a conscious chasm of distance between those that play and those that do not. My personal belief is that crossing this chasm, to the realm of games, opens a world of opportunities. Yet, it does not lock a person into a new identity as a gamer; it only provides the option to explore for those that wish.

There is more to mastering a game than just playing it, the player needs to invest thought and time, but above all, they need to understand the ecology of the system in which they are playing. This according to Paul Gee entails "system thinking"; the player needs to understand how things within a system work, how each part relate to each other. In an interview with Jordan Shapiro, scholar James Paul Gee describes systems thinking like this: "System thinking involves being able to think in terms of complex interacting variables that make a system more than the sum of its parts" (Shapiro 2014a). He here talks about the fundamental notion that we are a part of something bigger, we need the ability to see the overall picture, not only the tiny part in which we exist. In addition, he thinks video games are excellent training ground for just this. They provide full eco-systems with rules that the player needs to adept to and live within, and to play the game well, these eco-systems need to learnt and mastered. This is something that Gee highlights also throughout his book (Gee 2014), the notion of deep learning contra to "test passers".

His two primary tools is system thinking as described above and embodied or situated learning. This is the ability to be able to gain knowledge gained in a similar context to where it is applied. The theory of situated learning comes from Jean Lave and Etienne Wenger (1991) which states that: "situated learning is learning that takes place in the same context as it is applied, that learning is not

only a transfer of knowledge, but also reliant on context and social or physical environments". Gee argues that video games give a better chance at learning knowledge that is rooted in an understanding of the context surrounding what the student have learnt, not only the ability to recall and write the correct answer on a test. His favorite example is of physics students that have perfect test scores, but struggle with explaining a practical example laid out in front of them (Gee 2014, 435-442). This is not saying that someone that plays and master the FIFA series will be the next Lionel Messi, the point is that video games can provide a context for learning above that of traditional media like books. There for examples a genre of games called "simulation games", which is virtually dedicated to this kind of contextualization.

The game *Harpoon* 3 is for example used as a training game for the US military along with a list of others (Hussain and Coleman 2014). Harpoon 3 is a naval battle simulator, the series was first released in 1989, and versions of it has been released until 2013. In this game, the player takes the perspective of a naval theater commander, issuing orders to a smaller or larger taskforce in an attempt to achieve various objectives. From defending Scandinavia from a Soviet naval invasion, protecting the west coast of the USA from nuclear submarines or protecting Iceland from Soviet bombing to name a few missions. Regardless of the game however, the common denominator is that video games create worlds in which the goal is not only to play, but also to learn. Ever since the first video game was created, it was crucial that the player could play them. Video game designers had to keep learning in mind, and as a result, video game designers became masters of this process. Not perhaps something that was intended, however, necessity provides very good incentives for the evolution of a craft.

3.3 CHOOSING A GAME FOR AN EDUCATIONAL CONTEXT

When employing a video game in a classroom, it is vital to find the right game, but choosing this is challenging. However, is this radically different to choosing the right text for English class or selecting the scenes in that YouTube clip or movie that provides that perfect examples for the students? Every subject comes with its unique set of challenges, they all need require certain things to be understood by the students, herein lies one of the cruxes of teaching. Finding the right tool for the job.

> …as much as I might want to assign James Joyce's "Ulysses" to a class of sixth-graders, the chance that it will engage them is pretty slim. They would likely struggle with the complexity of the language and we would hardly be able to address the thematics. It would be an uphill battle against student boredom that would not serve anyone (Shapiro 2014c).

By this Shapiro is highlighting that the process of finding a video game for the classroom is in essence the same, regardless of the medium, it is about finding something that the students can relate to and the teacher can be comfortable using.

Further, he claims that the key factors to finding the right games are: Fun, not cool games, to remain comfortable with the mechanics, and to stay in the curricular driving seat. By "fun games", he talks about the difference between a game that looks good or has plenty of hype around it and a game with an engaging character, a reminder to keep the focus on the game mechanics, not the pretty box the game comes in. He also recommend the teacher to play the games he wish to use, see if they are comfortable with the game, gain some experience and knowledge with the game. The final point Shapiro highlights is to "keep in the curricular driving seat", understand how the game fits into the curriculum. He suggests take some time to actively understand and reflect upon what features in the game makes for good learning.

When entering a discussion of video games for learning one title that is bound to be mentioned is *Civilization*. Kurt squire, a well renown scholar in the use of video games for education looks at *Civilization* as a prime example of game that is excellent for use in the classroom for teaching, in particular for history and courses trying to understand civics and societal evolvement (Squire In Press, Squire 2004). The Nordahl Grieg high school for example use *Civilization*, employing the game as a way to teach English, history and social development (Husøy 2015), in a cross-class initiative. A brief examination of the game should leave little doubt that there should be potential for learning in this game if correctly contextualized.

Civilization is a series of games that was originally released in 1991 by Microprose. The player would be directing a civilization from the prehistoric age to a near future with space exploration and settlement. The civilizations the player could control were based on historical civilizations. As the game proceeded the player was presented with facts of on each discovered technology like the combustion engine or the wheel with an emphasis on how it changed history and society.

A rather interesting aspect was the *Wonders of the World* that gave global bonuses to the controlling player. These wonders could be *The hanging gardens*, *The Pyramids* or *The Great Lighthouse* (Figure 4). Upon completing a wonder, the player is presented with a large image similar to a classical painting (In the latest

edition). Underneath there would be a quote connected with the wonder and some information related to the wonder.

Figure 4 - The Great Lighthouse is presented with this image and the quote: "They that go down to the sea in ships, that do business in great waters; these see the works of the Lord, and his wonders in the deep." –The Bible, Psalms 107:23-24 ©Micropose, from Civilization V

The game also features something called a "Civilopedia", essentially an encyclopedia for the game, explaining all aspects of the game. Each entry does however not only provide game related information; they provide the historical context and a brief explanation, as any encyclopedia would. The entry for the Chinese leader Wu Zetian, for example provides an extensive biography of her life, rising from concubine to empress of China. I illustrate all this to show that this game spend as much "game space" on real human history as on the gameplay itself, in theory being a game that should have great potential as a learning resource. One that have used Civilzation in his course to teach students, not only about history, but politics and English is Alexander Husøy, a teacher at Nordahl Grieg high school. He is generally positive in regards to using the game, but he does warn that it is not for everyone to use (Husøy 2015), it is a highly complex game and to use it effectively requires extra effort from the teacher. He

recommends it only to teachers that have the will and personal interest to invest time into the game.

For all the qualities video games have, this does not mean that they automatically enable learning. Neither is it automatic if the class use video games that the students will learn from them. The case study done by Jan Arild Dolonen and Anders Kluge (2014) shows that those that used *Dragonbox*, an instructional math game scored generally lower than those that used *Kikora*, a math instructional application. Furthermore, the case study by Dolonen and Kluge, show that only the will of the teacher and the students alone is not enough for good learning. Both the educator and the students wanted this to work, even though the students that used *Dragonbox* spent considerably more time than those using *Kikora* the results was clear. *Kikora*, which essentially, does not use any game mechanics just instant feedback and suggestions for improvement showed clearly better results.

In their observations one thing in particular stands out. "It seems that in the case of *Dragonbox*, the teacher is teaching them the game, not math. As a result the connection between the game and the knowledge is too weak to yield tangible results" (Dolonen and Kluge 2014, 44-45). The conclusion might be that the teacher in this case does not have the knowledge and experience needed to use *Dragonbox* to its potential, which directly affect the students, causing poorer results.

Without this unlocking of games qualities into knowledge, it does not matter how good the game is, this responsibility lies primarily on the teacher's shoulders. For the student it would merely remain as "gameplay" not applicable knowledge in a subject. Educators would probably understand this, and if they do not have a clear idea in how to make this transition, the unlocking of embedded knowledge, it might dissuade many teachers from even trying.

3.4 PEDAGOGICAL PRINCIPLES FOR THE WALKING DEAD

Every time a teacher introduces something new into the classroom it should be brought in with a solid foundation in established learning principles. The material should be picked out well, with care and thought for what each example and text can bring to the classroom. In the aftermath of the research period, I spent some time shifting ideas back and forth with Tobias Staaby, the primary teacher responsible for the learning plan. From the exchange several key points arose, why this game was chosen, which considerations went into the learning plan and from where his inspirations came to initiate this project. The following quote is from an e-mail exchange concerning why Staaby chose *The Walking Dead*:

> Simply speaking, it was the way the dilemmas was presented: they were morally ambiguous as well as of a nature that the students would not have experienced them before. A rather natural consequence of there being no zombie apocalypse so far. Since the dilemmas are based on new situations, the students need to think themselves, rather than repeating arguments they have heard on the television or read online. (E-mail to author, 5. April 2015, *Translated by author*)

Staaby also explains the learning principles he based the teaching upon: Situated learning and scaffolding of emptiness (Staaby 2015). Situated learning is described as learning in the same space as where the knowledge is to be applied. In this context: that the student can see the consequences of their actions, and living with the virtual consequences. Scaffolding is a principle where the student is given mental cues to associate knowledge with, for example, a given situation in The Walking Dead becomes associated with a moral framework.

Tobias Staaby, the creator of the learning plan thought *The Walking Dead* video game had great potential as he played it, "it just seemed to fit the classroom perfectly", he told me. He further explains: "The game has a low threshold for new players to start playing, anyone can pick it up, and they will be able to master the gameplay very easily. The classroom activity also require only one player and one

copy of the game, the teacher does not need to an accomplished gamer, he or she is only required to moderate and direct the discussions, not play the game" (Staaby 2015, 2014). Furthermore he lays out the main teaching principles he has based his learning plan and classes on:

- Embodied learning
- Scaffolding of emptiness

Embodied learning comes from the linguist and researcher James Paul Gee which explains embodied learning as learning close to the context to which it is to be practiced (Gee 2007, 71-73). Good video games does not take long from the time the player gains a knowledge to when he needs to apply the knowledge to solve a problem. Another trait is that good games can force critical and reflected thinking (38-39), like what arguably *The Walking Dead* is capable of. But only in an environment that facilitate reflection (41), like a classroom.

In practice this means that the teacher is able to create a context using the video game in which the student is put on the spot, they need to make the decision, not only regurgitate words from a book. This ties the student to the narrative in a way that few other media can hope to match and give a meaningful context to both the game and the classroom activities.

The second principle is Scaffolding for emptiness, the principle of which originates from "The role of tutoring in problem solving*" by Wood, Bruner, and Ross (1976). Staaby bases his principle on a newer variant set forth by psychology professor Jordan Shapiro. In a conference on education in Dubai Shapiro he explains the method of "scaffolding for emptiness" (Shapiro 2014b): by teaching them creative problem solving rather than memorization they are better prepared for any challenge the world has to offer them. Video games enable this in a unique way according to Shapiro, particularly in that they create a space in which each student build their own structures in which to hold their knowledge. Essentially building a

set of skills based upon situations they have encountered and conquered. In practice, they can relate a dilemma in the game to the moral framework they are to understand in the curriculum with the video game as the backdrop.

The above-mentioned principles build upon the predominant learning philosophy in the Nordic countries, social construction, based on Lev Vygotsky's works. The Zone of Proximal Development (ZPD) stems from his book "Mind in society" (Vygotsky 1978), but Vygotsky himself does not use the term ZPD, this concept grew from his philosophy in later interpretations by scholars. This theory builds upon that peers and guides can help an individual to grow in experience and understanding. Figure 5 shows an illustration of ZPD, the individual is at the inner most zone, marked in light grey. The next tier represent the skills and knowledge the person can obtain on her/his own, using the skills already known. The next tier is another layer of knowledge, only obtainable through assistance, by a peer or guide. Finally, there is an open space beyond, representing all the skills and knowledge available.

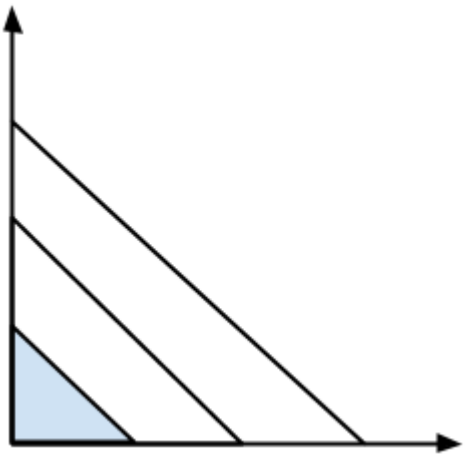


Figure 5 - Zone of Proximal Development (ZPD) Stig Andreassen 2015

Finally, Staaby told me his story, what inspired him to use video games in his classroom. "I had a teacher in secondary school; he brought out adventure games like *Kings Quest* or strategy games like *Civilization* as part of his classes." (Staaby 2014) He continues to tell the story how this teacher used video games, not as entertainment, but as engaging tools to meet the students on their own terms. "I remember my own excitement and engagement, how much time and effort we put into the games and all we learnt from them". He tells me that this was his first experiences with video games in school, he also, as many others played video

games outside of school. Essentially growing up playing video games, knowing the value they can bring, as Staaby became a teacher that wished to bring these experiences to his students. “Of course”, he somberly concludes, “it is impossible to catch everyone with video games. People learn in so many ways there will always be some students that video games does not reach, as with any method”. Variation in methods was a topic that frequently came into our conversations. “We teach in different ways so that we teach at least some of the class some of time, versus some of the class all of the time. This is not an ideal situation as one can imagine, but it is where we are now”, he concludes.

4 METHODOLOGY

4.1 INTRODUCTION OF STUDY

The data collection for this thesis was done at Nordahl Grieg high school in the autumn semester 2014. Prior to the research period I had various meetings and initial interviews with the involved teachers, obtaining background on them and their expectations and concerns in regards to the module. This is normally taught in the last year of high school at the "VG3" level, making the students 17-18 years old normally, preparing to go to university or university colleges the following academic year. The goal with the study is to obtain data from the students concerning their relationship with video games, to see their attitudes towards them in an educational context and analyze video games function in the classroom.

4.2 PARTIES INVOLVED

My primary contact at the school has been Tobias Staaby, he teaches amongst other subjects religion at Nordahl Grieg and is an eager proponent for using video games as an educational tool. He has been interviewed both by national and international papers, magazines and television channels.

The Nordahl Grieg High School have been very easy to work with from the first day. They showed openness to my research and was immensely supportive to any and all requests. Initially, I received a verbal agreement that the school would be willing to participate in the project, this was formalized at the start of the research period. In this meeting with the principal I informed about the project, and we reached an agreement that we signed in regards to the project (Appendix 10.3). Additionally, we agreed upon that it would be fine to name the school in the thesis, as long as the privacy of the students and staff was maintained and documented. The school is also planning to open a national competency center on

game based learning in the near future in collaboration with the University of Bergen.

Shortly before the research period began, I was made aware that there would be another researcher present at the school in the same time period as myself. This was a PhD candidate from the University of Oslo, department of pedagogy, Filipa De Sousa. Upon learning this, we established contact and decided to make the data collection a collaborative project. Even if our goals were different, we would have gathered essentially the same data so it made good sense. We changed the initial survey to suit both our needs and the interview scripts were changed to accommodate some extra talking points.

Six classes in all would use the video game *The Walking Dead*, each consisting of 20-30 students. From a logistical perspective it was impossible to follow all six, the classes I followed was decided by conversing with the teachers and looking at the schedule for each class, ascertaining which was possible to follow.

The first class, had the most experienced teacher in regards to using *The Walking Dead* in his classroom. The second class, had a new teacher with no prior experience in using video games to teach. Additionally, the teacher had a very limited knowledge of video games in general. The third and partially followed class was in a similar situation to the second, a new teacher with limited game knowledge, but willing to give video games a chance in the classroom. The latter was partially followed is it had an overlapping schedule with some of the previously mentioned classes.

4.3 THE PROCESS OF COLLECTION

The data collection was conducted using two surveys, interviews, audio-visual recording and field observations. The first survey was given on paper at the first hour of each respective class we attended together with a written consent form

from each researcher for participating in the project. To avoid giving two surveys that asked largely the same questions we merged them into one form. The students was required to fill this out during the first hour of class and hand them in.

The second survey was given as an online questionnaire towards the end of the research period. This was gathered using a google form, available for a set period from the last few days of the research period. The form was then disconnected and removed from the internet, only leaving an offline copy as part of the collected data.

Myself and De Sousa conducted interviews with 17 students, each interview ranging from 20 to 40 minutes. These interviews were semi-structured interviews, with key points from us both, covering all the core questions we wished to address. The interviews was conducted in pairs, except for one that was interviewed by De Sousa individually. We were not both present at each interview, each of us handled about half of these 17 students. Additionally, before the module began, I conducted interviews with three teachers, designated T1-3, to talk about their expectations, prior experience and concerns in regards to the upcoming module. This was followed up with an interview after the module was completed, then with a focus on what went as expected, what did not and where there could be room for improvement.

One class was chosen to be the primary class and both myself and De Sousa followed virtually all the sessions of this class. This class was also followed using video cameras. This process was conducted with three cameras, two in the back of the classroom and one, somewhat discreetly placed in the front of the classroom. Attached to these cameras was one microphone on the teacher and one had a table microphone on a preselected focus group. This group was chosen after consulting the teacher on who would be active students, so that we would get a sense of what

these students did in the class. The final camera recorded what amounts to "classroom noise", not having a focused microphone. The gathered audiovisual material is not used in this thesis, as the amount of data is simply too large to adequately process it within the allotted time. Additionally, the collected data is only partially relevant for my research questions.

A vocal student is generally not difficult to understand, however those that are quiet are also of great interest. We wished to understand their point of views are well, so we tried to identify these students as well, with the goal to include some of them in the interviews. The last group we wished to examine was those that showed aversion and the reason why they do no not wish to participate. These students we manually tracked using field notes. De Sousa interviews one explicitly negative student, providing insights as to the perspective from a non-participatory student. This student was noted to actively avoiding participation in the class. For example by talking to co-students, playing on the mobile, pointedly turning away from the front of the class or grimacing and hiding her face under a hat. We discreetly approached the student for an interview between classes and she agreed to this.

Normally an interview was drawn randomly from the students that had indicated they would be willing to participate in an interview through their consent forms. These would then be briefly discussed with the teacher in charge of the class for approval and we would then proceed to invite the student to an interview at a suitable time.

During each class I kept field notes using a template (Appendix 10.1). These acted as a list of notable classroom events, for example: how the students acted when they learnt they were to use video games, notes on the general mood of the class. how many seemed to be paying attention in class and how the discussions around the moral frameworks proceeded.

Each class was built up according to the learning plan created by Tobias Staaby (2015). As the class begin, there is a brief summary from the previous class, if there is one, before the gameplay started. One student would play while the other students watched, the ones that watch are encouraged to not be passive viewers, but to participate in the decisions being made in the game by shouting out dialogue choices. At predetermined points, the game would be paused and the teacher would explain an ethical framework, for example virtue ethics. Then a session of small group discussions followed by classroom discussions. Finally, after each student had formed their own opinions and before gameplay resumes, the class votes through Kahoot, an opinion and quiz application developed by Alf Inge Wang at NTNU (Norsk Teknologisk og Naturvitenskaplige Universitet), and the majority vote decides how the game continues. This structure repeats until the end of class when the teacher again summarizes the lesson and dismisses the class.

4.4 DATA CONCERNS

In any research project, in particular when concerning youths, privacy is of grave importance. The respondent's identities should be removed from their persons so that they could not be identified in any publication. The initial surveys was done with name, sex and age. De Sousa tracked individuals closer with names in her project, but mine did not require this, so names was scrubbed in my transcription, and only gender and age remained as identifiable traits.

Interviews was done on a first name basis as we primarily interviewed students in pairs, due to the need of something to distinguish the voices by. As with the surveys, the names was removed in the transcription, replaced with a designator consisting of one letter and a number. When the source interviews are destroyed upon completion of the project (summer 2015) no identifiable data will remain.

The collaboration with De Sousa allowed us to cover more students than what would have been possible individually. As a consequence however, with this kind

of collaboration we also gain knowledge that we did not need to have. Information concerning the respondents in regards to the other project in particular. I might "only" learnt about the students' ideas about moral in video games, and how they feel video games affect their decisions outside of the game and whom they would approach for moral advice. This might not be personally identifiable or sensitive information. However, the information is to be treated with the outmost care regardless, and fall within a researcher's outmost responsibility to his respondent's privacy.

In regards to privacy in Norway we have "Norsk Samfunnsvitenskapelige Datatjeneste or Norwegian Social Science Data Services" (NSD) which is tasked with overseeing research projects conducted from Universities in Norway. Their primary mandate is to ensure the privacy of the respondents are maintained and treated in an ethical manner. My project was approved and added to the NSD public archive on the 10. September 2014. This was amended when the collaboration with De Sousa was added, giving her access to my data, as well as I gaining access to hers. Since then, only minor alterations has been made to my project, none of which affected the respondent's privacy to any significant degree.

The classroom is a living entity with many variables we cannot control, and even the best plans sometimes fall short in the wild. For example: in the first class the students was given some time by the teacher at the start of the period to fill them out, this worked well and we should have kept this norm. Unfortunately, this was not consistently done in each class. As a result I observed in at least one case that some students was answering the forms as a group, and in another we could observe them scribbling very quickly through the form at the end of class.

When observing in class I tried to remain in the background, come early, and remain in impartial observer from a corner of the classroom. Largely this was not a problem, however, this was not always the case. In some instances, I ended up

becoming a participant in the classroom activities. In one class, the teacher asked me to help with some of the technical sides of the game, as well as tracking the events of the narrative. In this case, the teacher did not feel fully confident of being able to stop the game at the right time in the story for discussions. Additionally, the teachers on some occasions asked for my opinion with directed questions on some of the dilemmas, if I had another perspective to offer to the situation. Finally, I also walked around in the classroom to listen to the conversations as they unfolded during the discussion segments of the class. In the last example, I compromise my neutrality move actively moving around in the classroom versus keeping the neutral observer status I would normally retain.

How my presence affected the results I obtained I cannot say. I believe I conducted myself well, but I must assume that my presence had some effect. Ideally, I should have been able to remain a neutral observer, but perfection is elsewhere as someone told me. Research is not conducted in a black box, however much a researcher might like this, a perfect environment where all factors are within our control. We do try our best as observers to become a fly on the wall, but the reality is that we are there in the classroom and become a part of the eco-system. We cannot control all the present factors, nor should we try, we do however attempt to keep the data collected as pure as circumstances allow.

After the collection, I was left with an overwhelming amount of data, too much to present and use in the thesis. It became necessary to select carefully from the available data, pruning away the interesting data from the needed data, and forming a core that could fit within the constraints of this academic paper. The collected video material was kept, but is disregarded in the overall analysis, due to the amount of data and the time needed to properly process this. As stated, the total amount of data we collected amounted to being quite significant, quite too much for my timeframe. This overload of data provides both a luxury problem and

a potential quality problem. I have reviewed all the data collected several times, but with this amount of data, it is inevitable that something will omitted.

5 THE RESEARCH DATA AND FINDINGS

5.1 INTRODUCTION OF RESEARCH DATA

The research data and findings are presented in three categories: the endorsement of video games in education, negative aspects of video games in education, and insightful observations about the use of video games in the classroom. Additionally, I dedicate a section on the teachers, and the final part includes my own observations in the classroom. The latter also contain important insights that does not conform to any of the other sections.

Each statement from the student or teacher is marked using a pseudonym for ease of reference (A1, B2, C1 etc…). Some interviews was originally conducted in English, and others was in Norwegian, which have been translated during transcription. Citations from the teachers are marked with Tx and citations from the student surveys with Sx,

My entire dataset consists of one pre-survey interview, and one post-survey interview with 14 students, seven teacher interviews (post and pre-interviews), about 20 hours of video, and statistics provided by the school and teachers involved. I limited my scope to encompass the survey and the interviews with the teachers and students and statistics gathered from the classes. These sources give the most pertinent data and fit within the timeframe of this thesis.

5.2 ABOUT THE WALKING DEAD, THE GAME AND GAMEPLAY

The company behind *The Walking Dead*, Telltale games only produces games within this genre. Since 2004 when the company was started, they have produced a number of games: *The Wolf Among Us*, *Minecraft: Story Mode*, *A Game of Thrones* and *Tales from the Borderlands* to mention some titles. They consider themselves an independent game developer and is based in Marin County, California, USA.

The Walking Dead used in this thesis is classified as an adventure game. The genre has not changed significantly since its' first games. The gameplay is centered on puzzle solving, abstract thinking and the exploration of the world the player inhabits. It differs from similar genres like the Role Playing Games (RPG's), in that the main protagonist does not "level up" (becoming more powerful), the focus lies in the narrative experience and puzzle solving.

The Walking Dead video game is based upon a comic series with the same name created by Robert Kirkman. It features an episodic structure similar to that of the comic magazine, each telling another part of a larger story arch. Each episode takes no more than a couple of hours to play through and how each plays out is up to the players themselves. The game retains the scene perspective of the genre predecessors, keeping a relatively static viewpoint, as if the player is standing merely a few meters away as the story unfolds. The first few scenes in the game act as a tutorial for the player to learn the controls and navigation additionally to setting the premises and background for the story.

Essentially the game consists of a series of choices, each one made by the player, similar to the choose-your-own-adventures books, where the reader is asked to "go to page XX" depending on how they wish to proceed in the story. The reward, as mentioned before, lies in a progression of the story. It is on the surface a rather simple mechanic, nevertheless, it is also proved effective.

Each choice the player makes in the game changes the story, and the choices are created to be open-ended and within a moral and ethical grey zone, forcing the player to think about their decisions. At one instance, for example, the player needs to choose which character to save, dooming another to be eaten by zombies. This situation is further complicated by personal relationships between the protagonist and the characters that he must choose between.

The player is constantly under an "ethical assault" throughout the game, with choices ranging from lying or telling the truth about your life before the zombies appeared, to choosing who is to eat the sparse rations the desperate group of survivors have available,. In addition, each of their decisions plays out right in front of them, brutally showing them the reality of their choices.

The game is very forgiving to fatal mistakes. Decisions or hesitations that result in the main character dying can be replayed with only a minimum amount of lost time. The player is usually only required to replay from the last scene where the fatal mistake occurred, typically only a few seconds of gameplay back in time, making failure quite low impact. This feature makes *The Walking Dead* a good fit for the classroom, as it lets gameplay to be constant, rather than needing to wait for loading screens or more elaborate death mechanics.

5.3 SURVEYS AND STATISTICS PRESENTATION

The background questions are quite basic: gender, age, whether they play video games and an estimation of how much they play. The first survey received 69 responses, the post-survey 40 responses. The responses showed us that the gender distribution is very even in both surveys: 51% female versus 49% male in the pre-survey and 45% female to 55% male in the post survey. In regards to age, we found that the average age in the classes is 17.8 years old. When it comes to how many that play video games, we found that in the pre-survey 66% answered they played video games, in the post-survey, 70% answered they play video games.

Concerning how much percentage of the students play video games, the data is probably not accurate. My estimate is that the numbers are on the low side. Firstly because of inconsistency suggested in answers. In the surveys I found instances where the respondent ticked off that they did not play video games. However, later in the survey, the same person also indicate that they have some video game experience. My assumption is that respondents who play, however not regularly,

have indicated they are not gamers in the survey. Secondly, I observed that among the girls in the class there might have been a group mentality in their answers, even if asked to fill the surveys individually, I noticed they would gather around and discuss what to answer. “Do you play video games?” “No, no” a girl, presumably the leader of the group, answered quickly and decisively. All would then turn and to write on their sheets. This leads me to believe that that the numbers of those that play video games, amongst the girls in particular, might be inaccurate. The Pew Internet study on Teens and Civics (Lenhart et al. 2008) have found a similar pattern, even though they show that 94% of females play video games, the least active group is the “older” female group. In the Pew Internet study this would be about age 17, which coincides with my demographic group.

Figure 6 represent a collection of keywords the students associate with video games. Each respondent could choose up to three words which they associate with video games. They also had the option to add custom words, note that words occurring only once is not included in this figure.

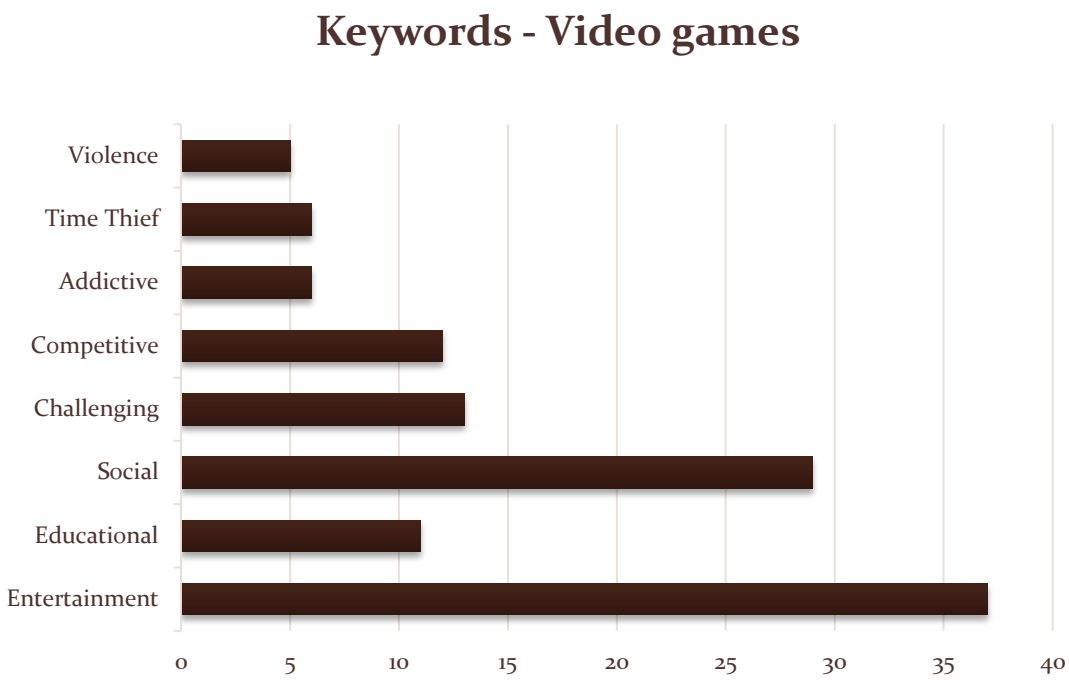
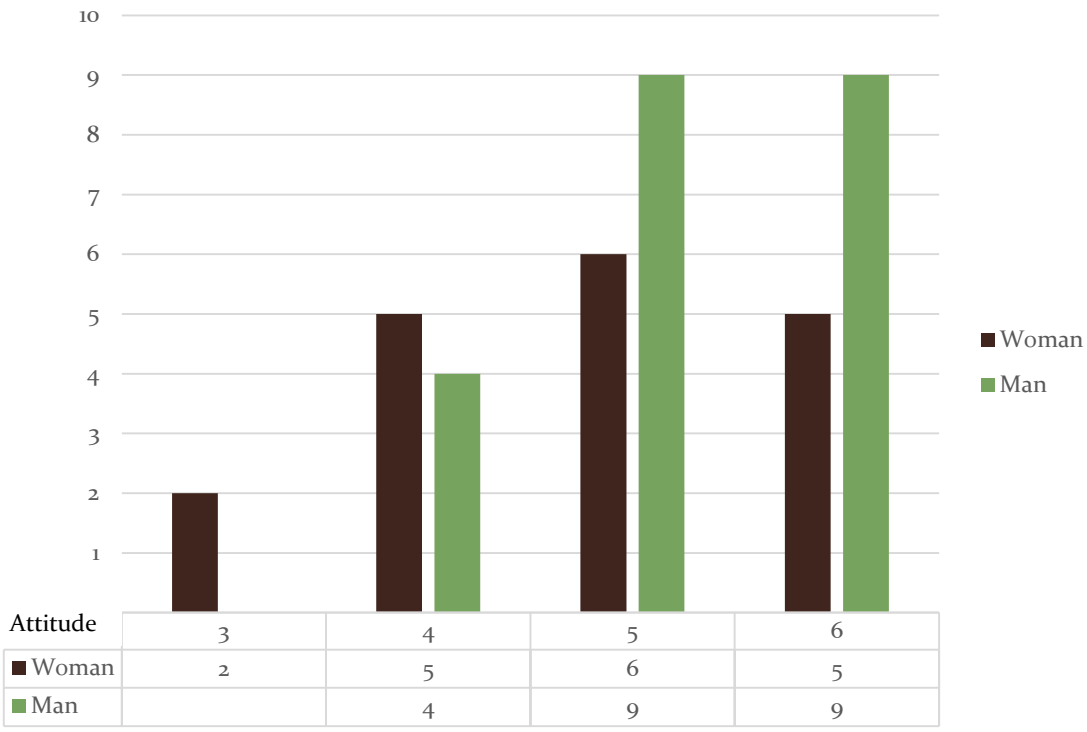


Figure 6 - Keywords associated with video games (Single occurrences of a word is not represented)

The two most reoccurring words in this associative exercise is “Entertainment” and “Social”. The third most used term is very even between “Competitive”, “Challenging” and “Educational”. This questions builds on a simple method of Mutual Frequency (Marshall and Cofer 1963, 410), where a response is triggered by a stimulus word, in this case “Video Games”. The thought is to indicate words associated with video games to understand not only how an individual is connected to video games, but also a mass of respondents. From the data it would seem that video games is considered entertainment, with a large social component, which is in line with research for example from the Pew Internet Project (Lenhart et al. 2008). Then comes the challenging, competitive and educational perspectives of video games. Considering the results from Figure 7, it might be expected that educational came even higher, but it does rank high.



Attitude	3	4	5	6
Woman	2	5	6	5
Man		4	9	9

Figure 7 - Attitude towards video games. Scale from 1-6, separated by gender

Figure 7 shows the results of the question: "Rate your attitude towards video games in the classroom". This was done on a scale from 1-6 where 1 is the most negative, and 6 the most positive result. Gender of the respondent is also correlated to their answer. Firstly, the figure shows that male students are slightly more positive towards video games. Secondly, it shows that there are no real negative attitude against the use of video games from the students' perspective. At worst, the response was a low to neutral response, indicating only a minor reservation.

When assessing how a student has fared in a course, their grades is what they bring with them in the form of quantitative results. I was provided anonymized grade statistics from each class to see an indicator to how each class had performed. Figure 8 shows the individual grades given to the students after assessing their competence of the subject. The average grade when totaling all the grades is 4,1 on a scale that range from 1-6, 1 being the lowest grade and 6 the

highest obtainable. I have been unable to find national averages to compare the results or historical data to support or disprove the quality of these grades, so what remains is the average grade of 4.1. The available historical data from the school would not be very insightful, in this case either, as the school is only a few years old. Additionally, they have not taught this module with traditional means, Tobias Staaby's learning plan has been used since the first year of the schools existence, meaning it has some years of testing behind it before it was formalized in its' current form.

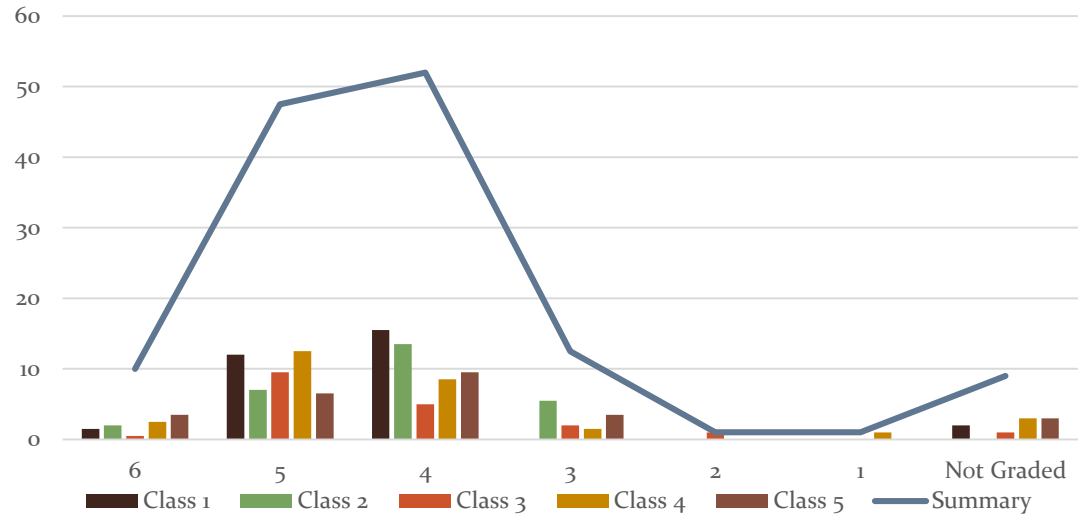


Figure 8 - Teacher assessment of students, divided by class

On the question whether the respondents believe they can learn something from video games, 79% answer yes, they can learn from video games. When it comes to what they think they can learn, the answers become very vague. Ethics and moral is mentioned multiple times, perhaps because the students know this is the topic they will be covering with *The Walking Dead*, and they expect the learning plan to work. Others point to language, history, reaction speed, and teamwork.

When I arrived at the school, I was told that most of the classes did not learn in the way of physical books much. The school actually provides most of the curriculum in a digital format, with the students having the option to obtain physical books upon request or via the school library. This prompted me to ask a question in the post-survey in regards to whether they thought video games was a good alternative to books, and whether they thought they could learn as much from a video game. The answer surprised me. 84% of the respondents considered video games a good alternative to books. It is hard to say how relevant the data is, however, I have considered it as an indicator to show the students preferance to a more familiar medium.

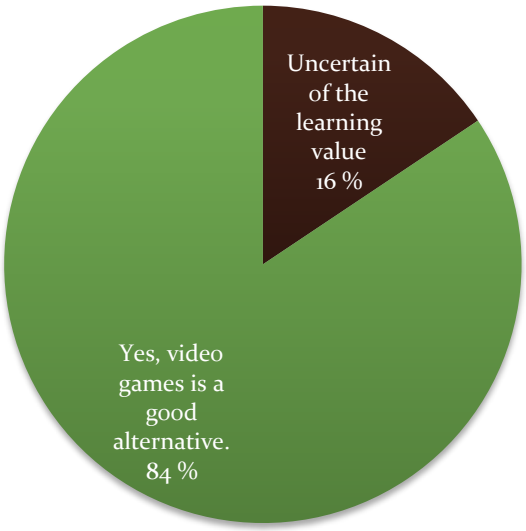


Figure 9 - Video games as an alternative to Books

5.4 INSIGHTS FROM STUDENTS CONCERNING VIDEO GAMES

In general, the students had positive tone and in many cases were curious towards video games. Nevertheless, the respondents were also very critical and reflected in their attitude towards video games. It became clear as the interviews progressed that this is something that each respondent have thought of before this interview. This is not a surprise, since many of these students have experience in using video games in a classroom situation from earlier years. In fact, 58% of the students responded that they have used video games to learn before this research period started.

Below I present the key insights from the student, with quotes preceded by a keyword highlighting a view or noteworthy point.

Keyword: Relevance

> It was surprising how easy it was to see the curricular relevancy of *The Walking Dead*, I didn't expect it would be that relevant and the frameworks we're presented are illustrated so well in *The Walking Dead*.
>
> -A1

This first quote reflects that a large portion of the respondents could connect the video game to the curriculum with comparative ease.

Keyword: Engagement

> "The moral choices we had to make involved us with the characters. We became attached to them, similar to books or films or series. When it comes to making the decisions, it becomes your personal responsibility to the characters to make an good informed choice. This really makes it personal and really something different than a linear problem-solving progression"
>
> -B1

That the respondents felt they became involved with the narrative was a reoccurring theme present from a number of interviews. Engagement and contemporary connections also resonated strongly with respondents.

Keyword: Connection

> In the classroom it's been more than a few times you think: What do I need this for? But, to see theories in action and how they apply for us through a new media is forever more awarding than sitting there with novellas and poems from the 17th century and just not getting it. We get to see how to use these "old theories" in something we relate to in our contemporary time.

-B2

The respondent is highlighting something that seem to be present for many respondents. It is important for them to find an application for the knowledge they learn, instead of the knowledge being pushed into their minds.

Keyword: Consequences

> You're not just learning about hammering a nail, you're actually hammering the nail at the same time. You see exactly what our choice does in the game.
>
> I1

Respondent I1 directly points out one of the learning principles of the learning plan - embodied or situated learning. The principle indicates that one learns in the same context as the knowledge is applied.

Keyword: Previous game experience

> To mention last year, we had students that played through all of *The Last of Us* in a few days, personally I found it really time consuming and struggled to have enough time for the homework. But the engagement in the class was really incredible. It was the talk of the class and beyond the class for weeks after we finished the course. I've never experienced to have so much talk around something we did in a Norwegian class ever. It was really a thing then.
>
> –B1

Many of the students mention their previous experience with video games in the classroom. They reflect not only their ongoing experience with *The Walking Dead*, but also their previous experiences. For example *The Last of Us,* a game from Naughty Dog, published by Sony Entertainment in 2013. During the interviews, the students' experience with this game was a reoccurring topic. I understood this as a sign of engagement that they really wished to lift up the game. The only complaints were concerning the time they spent on the game was too long, and

some students found the game difficult, but there was no real animosity towards the game.

To think that video games will solve all our issues in education is a fool's errant. We can learn much from video games, but as any learning tool, they do not apply in all situations. The following section include the more negatively laden comments and insights to the use of *The Walking Dead* and video games in general in a classroom.

Keyword: Boredom

> It would also depend on the subject, I don't think you can learn from a game in every subject, and games that are made for education are normally really boring.
>
> -B1

This quote highlights two things: 1) video games need to be chosen with care, and 2) games made with educational goals in mind tend to be less than engaging. This is not really an explicitly negative comment towards *The Walking Dead*, but more directed at educational games in general that these have a ways to go still. The comment also underline that we have a certain level of expectation to the quality of what we consume, as entertainment and education, we in simple terms demand more than before.

Keyword: Pace

> Proceeded too slowly. Every situation took far too long and I just wanted to move on in the game.
>
> -S10

This is a very gamer-like response. The person is focused on that, this is a game, and he wants to move on and not think about his actions. The cause of this might

come from different sources: teacher's clarity, student's lack of attention or lack of engagement.

Keyword: Time efficiency

> Takes a lot of time, could have been more effective to just do the teaching on the whiteboard. I don't feel we're covering the curriculum very well, we might be loosing something for the exams.
>
> -S19

This negative aspect was the most dominant by far. The perception that if the students had not been playing *The Walking Dead* and spent that time with standard methods they might have learnt as much, probably more than being "forced" into gaming. The latter part concerning grades or exams is mentioned in a minority of negative responses (5% of post-survey responses), some are concerned they will not get the grades they wish to achieve, by not having the standard teaching methods.

Keyword: Gender issue

> It can take a little too much time, and for us girls it might be more difficult to understand.
>
> -S23

To mention gender was a rarity, however, it highlights a still lingering perception that some still thinks that video games is "boys thing". Respondents, 3 female, 1 male in the post-survey, claim that: girls have a harder time understanding things from, or playing video games. One take on this is that girls might want to distance themselves from the perceived gamer identity, the asocial boy, that still remain the stereotype video gamer (Holmedal 2006, 15). This myth still pervades today, even when faced with massive evidence to the contrary both nationally and internationally as both the previously mentioned Pew Internet Project study and publications from the Electronic Software Association. The latter showing that

show the average gamer is 35 years old and of the 42% of the United States of America that play there are 44% female players playing video games (ESA 2015), meaning the difference between the genders is arguably rather small.

Keyword: Presence

> The activities made it hard to miss classes, as playing through it at home does not give the same benefits, unlike regular homework when we can just read ourselves up to speed in a book.
>
> -S39

To classify this statement was tricky, I believer however, the intent was negative. Therefore, I included it within the section dedicated to these statements.

Insightful comments

Not all statements made by the respondents could be thought of as negative or positive for or against video games. Throughout the interviews, there was many insightful comments about video games. Really showing good insight into not only their use in the classroom, but their place in society, a proof that at least some of these students have put quite some thought in their own situation. Within this section, I will highlight some of these responses, contextualizing their statements and explain why each provide an interesting insights.

Keyword: Generational gap

> Our parents generation didn't have these video games, but we do, it's a widely used medium. We've grown up playing these games, so it make it easier for us to relate to this medium, to analyze and reflect over them.
>
> -D1

On first glance it might be conceived as a jab at the previous generation for just not getting it. Research does show a strong tie between youth culture and video

games, (Randel et al. 1992, Anderson and Bushman 2001), this segment of society is also increasing as gamers mature and have children of their own. What this thing with video games it. It could be paralleled with the generation of Rock and Roll or the Television. Both of these was frowned upon by the older generation and hailed by the younger. The keyword here is "relate", the fact that students relate and connect to the medium. Just as Rock and Roll before connected to one generation, but not the previous. This also parallel the moral panic discussion from chapter 2, showing a repeating pattern in society, the older generation worrying about the emergence of something that might change "everything".

Keyword: The general teacher

> The education system seems quite inbreed and outdated when it comes to teachers. This school is different, it is a new school and they simply think differently.
>
> – A2

The student does not soften the blow on his opinion on the school system, he also thinks that Nordahl Grieg is one of the few exceptions to the rule, just by thinking differently.

> "The game by design force you to take difficult choices. You can't just play Walking Dead just for fun."
>
> -G2

The Walking Dead plays like a thriller/horror novel, it is by design a narrative experience, designed to provoke emotions. The game does not revolve around fast-paced shooting or against the clock deadly situations, but on impossible choices and the consequences that follow these events. The post-apocalyptic setting allows for extreme situations. Finally, it also show the suitable nature of this particular game, a choice based structural narrative and a dramatic and engaging storyline.

> We learn absolutely nothing without the teacher being there to provide the correct context. If the students are left to play all on their own, we learn nothing. We might as well have been home gaming.
>
> S31

The statement is typical of the students when asked about the role of the teacher in the classroom. In addition, it comes up frequently when asked about what is important to consider if video games is to succeed in the classroom. This came up both as a positive and negative, the students actually never blamed video games if something did not go well, they set the blame on poor planning or inexperience from the teacher or administration. They have a view of video games as a tool, not only that, but they understand it is something that is not infallible. These students might be wiser than many others out there living in a black and white world of is and is not.

5.5 THE TEACHER'S RESPONSES TO VIDEO GAMES

The teachers involved have very different backgrounds, one is well experienced with using games, and have done so since the first semester. The second started teaching in 2012, so she has little prior teaching experience, but long experience from an executive and managerial point of view. The third has been a teacher for a short time, but has not taught religion or ethics in the past, neither of the latter two have any noteworthy game experience to build upon.

> The class is both calm and academically fairly strong, to introduce them to *The Walking Dead* shouldn't be a problem. I try to keep my teaching as practical as possible, giving examples from my previous experiences, to really show them that what they're learning matters.
>
> –T1

The quote quite captures this teacher's essence, in addition to what the game offered, she used relevant examples to explain the ethical challenges both in the

game and possible real world scenarios. She also explains the she has been fascinated by the idea of using games to teach before, but was not expecting to actually be using them. She was a little nervous, but also excited, to try the learning plan in the classroom.

> Never thought I would use a video game in my classroom, however, it's exciting as well. I do worry a little about what could go wrong, but I'm not that worried as my students should be able to help me out on the technical side should that become needed.
>
> –T2

Being able to let go of the control in the classroom was an issue I ran into in several of the conversations I had with teachers during my research. This was also the case for *T1*, she was uncertain to which degree she could let go of her control versus keeping the authority role of the teacher, retaining her position in the classroom. Neither worried overly much about the pragmatic side of the project, trusting themselves, and their students to be able to handle anything that might happen.

Tobias Staaby is essentially a veteran in using video games, despite of only teaching for 3 years at the school. He started with a wish to be able to use video games as a part of his classes. On this premise, he went on to experiment: first in a smaller scale, then to more elaborate setups. He points out in an e-mail to the author on the 5.April 2015 that the school gave him support to try these methods from the start, without the school facilitating it would have been more difficult. One thing that also stood out in the interviews with Staaby was that he was adamant on that he did not use video games for the engagement factor, "the novelty and fun factor was never a thing for me, I wanted to show the quality of content of video games, that video games are engaging was secondary consideration" (Staaby 2014).

This sounded a little strange to me at the time, but I see the point, there is a novelty factor to video games in the classroom for now. If we consider another decade or two down the road we might be looking back at this discussion on video games and laugh at our ignorance. Video games will not retain the coolness and novelty factor forever. They essentially need to establish themselves as another tool in the 21th century teachers' toolkit.

5.6 OBSERVATIONS FROM THE CLASSROOM

As mentioned before, the atmosphere is the class was quite positive overall, nevertheless there was some worried faces when the teacher announced they would be using video games in this part of the course. The first response was from a group of girls at the front of the classroom that with worried voices asked if "they would be graded on their performance playing the game?" There was visible relief on their faces as the teacher told them that the game would be a basis of discussion, not what they would be assessed by. This response or a comparable one occurred in each of the classrooms, each time from a group or individual at the front of the class, this reaction was contrasted to the general reaction of the class. In one of the classes it was literally cheered in with an enthusiasm one generally see reserved for a sporting arena, the others was comparably more somber, but a cheerful atmosphere nonetheless.

The teachers that had not used video games in the their class before observed that even after the first period there was a different mood in their class. T2 for example observed that the students had already started to use the philosophical terms within the field correctly in the first class, which she had not expected. Additionally, she observed that students who normally remain silent and disinterested spoke up and was engaged in the class, another unexpected turn of events. She was surprised at the level of engagement it created, and I share this

observation as well, I had expected more resistance to video games than I observed.

I had expect video games to be engaging, that they would appeal to the students and in turn enable a good foundation for learning. What struck me however, was the sheer intensity of the discussions. They even intensified in the later classes, the story and the characters had clearly affected the students. They argued very strongly for their favorite characters, as one student puts it in an interview:

> The moral choices we had to make involved us with the characters. We became attached to them, similar to books or films or series. When it comes to making the decisions, it becomes your personal responsibility to the characters to make an informed choice.
>
> –B1

The respondent here makes an interesting case, firstly that the game has engaged the class and her personally, and that this is similar to what books, films and series can do. The student makes a good case for books, films and TV-series, she thinks they can be engaging and have characters that we can identify with, relate to and love and hate with equal fervor. At the time of writing the social media and talk in social gatherings have been filled talk of the TV-series Game of Thrones aired on HBO. From loving admiration of character traits to vicious condemnations as they describe the actions of these fictional characters. It is clear that a narrative engage us, whether it is fictional or not, is largely irrelevant. Moreover, unlike the purely linear experiences, where all is scripted and will only be viewed in one particular way. Video games offer a unique opportunity to affect the story, arguably making the engagement even more important, as here is a chance to change the narrative.

Ultimately, this ability to affect the story in a video game is an illusion. However, like special effects in a movie it makes all the difference, creating a new level of engagement that has the potential to surpass books in the right context.

6 CONCLUSION

6.1 SUMMARY OF RESEARCH FINDINGS

This project has provided evidence to support that video games have an untapped potential in our classrooms. First, it examines the societal and historical reasons why video games have been mostly shunned at schools. The case with Nordahl Grieg High School then shows that some pioneering schools have used video games successfully, despite of the few number of schools that dare to try them. Finally, based on knowledge gained from both theory and practice, the research identifies four key success factors for the future implementation of game-based learning in schools as a roadmap for educators.

My research questions concern themselves primarily with how video games have the potential to work well in the classroom, and whether the students feel they gained something. The feedback from the survey shows us that little negative consequences is reported when video games are used for learning, and that teachers do not necessarily have to be hardcore gamers in order to implement a video game in their classroom teachings.

The results also indicate that video games create a good atmosphere for learning, in which both the students and educators feel comfortable. The research has shown that video games have a potential in the classroom, and both the students and teachers participating in this project agree that they would be happy to use them again later. On the other hand, video games also seem to share the same weakness as other methods of teaching: They are not a universal approach. Same as some students are not good at learning with books, there are also some students who do not learn well with video games. Therefore a combination of educational tools is advisable.

6.2 KEY SUCCESS FACTORS TO IMPLEMENT VIDEO GAMES IN CLASSROOM

Based on the experience learned from Nordahl Grieg High School and other best practices, I have summarized four key success factors for the implementation of video games in classroom. These factors point out the societal barriers that educators and policy makers should address first, rather than providing direct pragmatic advice. Each of these factors could as well be examined in detail as projects for future research.

First, we need a holistic approach and ensure consistency in the implementation of video games in the education system. To integrate video games as a regular feature in Norwegian classrooms requires consistent support from every level, so that it becomes a sustainable solution. One enthusiastic educator can manage and even get very good results, but these initiatives tend to die out quickly as time, social pressure and administrative challenges mount. Therefore, it is imperative that not all the work is left to a few individuals, who have the responsibility to carry the momentum on their own. The keyword here is "sustainability". The novelty factor of video games will diminish, by then there needs to be a mechanism in place to continue carrying the momentum forward.

Second, we need to allay the fears of the people involved, especially address the uncertainty for the teachers. Handling fear is the key for implementing new media into an educational format, according Susan Braley (2005). The fear of the teachers is a major concern when implementing new content or methods to a course. For established teachers, it means they must step outside their comfort zone and take the extra effort of learning a new teaching tool, in this case video games. This process might be easier for new teachers who have not established their habits and patterns. These teachers already expect to learn something new. Therefore, they are both ready and prepared for this effort. It is the first step to look inwards and realize there is more to learn, and it can be a daunting one. To paraphrase another

man that made a step felt in history, this change is “one small step for educators, one giant leap for teacher-kind”.

Another prerequisite is a supportive atmosphere of the school’s management and administration. There needs to be room for a teacher to maneuver. The schools need to be on the teachers’ side, instead of fighting against the teachers every step of the way. The school I followed has a top-down policy: dare to be innovative and embrace new ideas. The teachers have the freedom to innovate, and are supported by the administration to follow their instincts as educators.

The final factor is the mental preparation of the students. It is a matter of mindset. Before the actual learning using video games in the classroom, the students need to recognize that video games is not only about fun and games, but can be used for serious matters as well. They need to treat video games with the learning potential similar to a book. The teachers should prepare the students well for the implementation, clarify the learning goals and align with the students on the learning expectations.

Besides the above-mentioned factors on individual school level, there are also challenges on the political level. Game-based learning in Norway has been a grassroots movement. It did not come from the top with established research, but rather from individual teachers that wanted to make a difference for their students. On political level, it seems to be barely palatable around the globe. For now the only real experimental schools that have embraced this fully, is the “Institute of Play” schools in the USA. Within a few years, these schools will graduate students to colleges and universities. This will finally provide more concrete evidence on how games and a culture of gaming affect students in the long-term.

We need to start establishing a national framework for game-based learning. This method is gaining a tremendous amount of momentum, which can be seen at May

2015 #NKUL conference in Trondheim. The winner for the most innovative use of ICT in schools was given to a pair of teachers, Tobias Staaby and Alexander Husøy, who have shown the positive result video games can bring to the classroom. The foundation is laid out. Nevertheless, the process has only started. We have now an opportunity to establish Norway in the forefront of Game Based Learning.

A unique situation is developing for game-based learning. The foundation is laid from the teachers' side, there is already some experimental schools running, we have a rapidly developing game development scene and a mildening political landscape for video games. Additionally, there are adaptable administrative frameworks, like those used by the Consolarium in Scotland that arguably can be transferred here with only minor changes. However, the timeframe is limited, before one or more of these factors fall away or leave the rest behind. Moreover we need more willingness and determination on a higher level to carry through the implementation.

6.3 REFLECTIONS ON THE PROJECT

In retrospect, this project has encountered several challenges. First, data collection towards two projects generated large amount of redundant and irrelevant information, resulting in the need to place strict limits on my data.

The second challenge was time. It was very short time between the start of the project and the change of the setup indicating I would have a collaborator. Neither Filipa De Sousa nor I had time to redesign new surveys prior to the start of the research period, so we had to amend existing ones. The first survey proved less than optimal for my research, yielding only a small amount of pertinent data.

In regards to the student interviews, I was impressed by the level of reflection from most of the ones I interviewed. It was clear that many of these questions have crossed their minds before. As about two thirds of them have experienced video

games in the classroom, it seems likely that the teachers here at Nordahl Grieg have discussed the pros and cons of video games with their class, at least with those who have used them in their classes. Students know what using video games in the classroom entails and what is expected from them. This has probably caused them to think about the role of video games, not only in the classroom, but also on the societal level.

During the research I also gained new insights to some societal barriers and challenges as we implement video games into an educational context. These are the dissonance caused by the nature of play, the expectations of a new generation and the public view of video games.

Dissonance is a state where there is interference in a concept, like going to war for peace, the very nature of the statement creating a situation of disharmony. The practice of using video games in an educational context offers one, where the nature of video games and classroom discipline collide, creating a potentially difficult situation. If we look at the spirit of games according to renowned historian and game theorist Johan Huizinga: "…all play is a voluntary activity. Play to order is no longer play: it could at best be but a forcible imitation of it" (Huizinga 1971, 7). With this prerequisite of freedom, it can be difficult to think of video games in the classroom as play. Nor is it, no more than a student should attend his or her classes; they take on a new quality as a tool for learning as they enter the classroom. This does not weaken the qualities of the game, it re-contextualizes them into a new paradigm: in the classroom, the game's primary goal is to educate, not entertain.

The growing generation, the one in school now, has expectations to what they experience in their everyday lives. "The growing population is used to experience adaptable difficulties, positive feedback, stimulating tasks and various other positive functions tied to complex video games" (Nilsson and Jakobsson 2011).

When they come to schools today, what meets them is outdated teaching methods and little understanding for the change that has happened the last few decades.

During my research, I have encountered numerous people, teachers, researchers, game developers, players, students, administrative staff and politicians. Each of these had their own ideas and visions on video games for better and worse. Manfred Spitzer, a neuro scientist, published a book in 2014 concerning digital dementia (Spitzer 2014). The viewpoint this book represents is one I found indicative in the debate, most notably Nobel Prize recipient Edvard Moser harshly debunked the book in the media.

The debate concerning video games has been an "us versus them" debate from the start, in particular as it became a hot political topic in the early 1980's. At a time when neither side has any facts to show, it became a shouting match about fear for the future and morals, aimed towards an emerging industry that could only hunker down and take whatever that was thrown at it. This mentality is still well in place, even after three decades of debate, I can only stop and wonder how things would have been if there had been a coordinated effort to map the pros and cons of video games. Where would we see this media today then? This should be the case for every new technology, however, it seems that we are still too confrontational in our protection of established habits. I might be utopian in my view, but I think we have the ability to better ourselves, also to this level.

6.4 FUTURE RESEARCH CONCERNING VIDEO GAMES AND EDUCATION

It is not directly in question for this thesis to examine whether video games bring good learning results. To do this would require national studies, akin to what was conducted in Scotland in 2008 (Chatfield 2010, 2496). That study was made on 32 schools using rigorous standards of scientific testing, and I would like to see such done in Norway as well. The one conducted in Scotland showed an overwhelmingly positive result. Over 50% overall increase in performance and

learning is observed, and even more for the students considered “limited in ability”. This thesis is showing the untapped potential in video games, and highlighting the need for a national study in the future.

I cannot provide an answer to how effective is learning from video games, however, one can argue that it is a moot point. Video games should not need to have a special position to prove them superior. Rather, they should need to prove themselves equal. The trick is to isolate video games as the deciding factor for improvement in the future comparative research.

Another direction of future research is how communication has changed between students and teachers after the introduction of video games and the rise of the digital natives, a term coined by Mark Prensky (2001). Already by 1984, teachers noticed that students had started to change, they could notice which children played video games. The students were not content with the “slow pace” of teaching at schools, they wanted the information quick and effective, like in a video game (Brod 1984, 144-145). The teachers found that to re-connect to these “video kids”, they needed to condense their instructions, communicate their points more efficiently, and change how they teach. Brod also notes that some teachers resented being forced to change their style, feeling they needed “to be more entertaining” to compete with video games.

Additionally, the generation gap was a factor I was curious about when my research began. This is especially interesting now that the first generation that grew up with video games is starting to have families of their own. A newly released fact states that 59% of adults play video games with their children, according to Electronic Software Association (ESA 2015). It seems to indicate that the status of the generational gap is changing. A study on how much it has changed, and how this has affected our perceptions of video games would be quite interesting.

The challenge in regards to video games and school in this context lies defacto upon the shoulders of the educators. We need to examine their roles, see how they can step up and recognize the challenge. First, one need to admit that there is a challenge to be met. Second, one wonders how to become a guide for tomorrow's generation. This research would be exciting to see or be a part of in the future. It seems natural to look at from a pedagogical point of view, though a humanistic or social science perspective could also work. Ideally, all of the above-mentioned research should be examined from multiple disciplines to broaden our overall understanding.

6.5 THE FUTURE OF GAME-BASED LEARNING - FINAL REMARKS

Great achievement takes long time to reach. I think we should we expect it to take decades for video games to go beyond the common preconception of entertainment, and even longer to become accepted commonly as a tool for teaching.

I think we are reaching a pivotal point in history where video games are being accepted into the classroom, given the right circumstances. There will be stories of success and failure, trials that show limitations, and pitfalls that needs to be overcome as with any developing method of teaching.

An initiative like "The Consolarium" in Scotland is a good examples to show in this regard. It acts like a hub for teachers to learn how to use video games and design a curriculum around these tools since 2006 (EducationScotland 2015). It also provides both the hardware and games by lending them out to interested schools. This enables low cost trials by schools that are interested but do not have the means, or uncertain whether they wish to invest in the needed infrastructure.

Here in Norway *The Norwegian Centre for ICT in Education* (Senter for IKT i Utdanningen) could potentially fulfill this role. This institution has the right

societal position, and it is already doing parts of this job. With an extended mandate and budget, it could very well become a Norwegian "Consolarium". The challenge for *The Norwegian Centre for ICT in* Education is that they are a political institution, meaning any change could take time and is prone to political whims, which complicate matters. Ideally, such an organization should be able to run on their own mandate, with full support from the Department of Education, for example. This requires political will, which is dependent on the current political winds.

The school system has remained static and profoundly unchanged for over a century. All while, video games have developed, redeveloped, resurrected, died, reinvented, reformed and purged themselves repeatedly the last four decades or so. Schools today are more about memorization of knowledge, and less about acquiring and handling problems and information. The basic knowledge is needed and should not entirely be removed, but our approach to students is in principal archaic. We know so much more about how people learn efficiently, yet we do not have the agility or seemingly the will to employ this knowledge. We cling to traditions as our species depend upon it. Perhaps this was needed to survive many generations ago, when our ability to transfer knowledge was very different, but now this has changed. By 'we' I mean the whole society, not only schools, and they are a reflection of society as well.

I understand that some will not agree with my last statement, however, outside of superficial changes the school system really has not changed much. What I experienced and saw in my research period could as well happen to my school in the 1980's. The difference is smart boards and projectors versus overhead projectors and blackboards. Teachers teach the same knowledge, largely in the same way, to the benefit of the same students as before. I would like to highlight two people that have said this better than I ever will: game designer James Portnow (2014) and Sir Ken Robinson (2011), a professor and writer on creativity in

schools. They both emphasize that schools have never been better, but they are teaching outdated skills, and schools need to change fundamentally as soon as possible.

We do not need any more industrial workers with basic knowledge skills. What we need is creative and knowledge-gathering people, with the ability to process vast amount of information, and create a tangible result out of this information. What we get from our school system now is perfect test machines, able to score and perform admirably in any test put in front of them. I think we need to rethink our schools from the ground and up. We cannot have school being the place in a youths' life they shut down and become bored because of a lack of dynamism.

"There is no best method for teaching, but there is truth in each method and potential for good teaching" (Prabhu 1990). I think video games do have a place in our classrooms and educational institutions, and Prabhu's statement should also be taken to heart. Video games is not the solution for all problems, rather an option among possible solutions. Potentially it is a great tool for the 21th century teacher. Educators who feel they can manage fine without them should not be pressured into using them. In the same spirit, those that wish to use video games should be encouraged to do so without prejudice.

7 ACKNOWLEDGMENTS

I would like to acknowledge all the helpful and insightful people that have participated in this project. There are too many to mention all by name, but I would like to mention a few individuals. My supervisor Jill Walker Rettberg (UiB) and co-supervisor Anders Kluge (UiO) has been patient, fiero inducing and instrumental to my results. The Nordahl Grieg high school that have been so easy to work with I could not ask for more. The staff and administration there have been simply amazing to work with. Of these, I do need to highlight some names: Tobias Staaby and Silje Morken Valdersnes for opening their classrooms to my research. The principle, Lin Holvik, for being a forward thinking leader that gives the game based learning program all the support it needs. An honorable mention also goes to Aleksander Husøy as well for his insights at my time at the school. The Norwegian Centre for ICT in Education (Senter for IKT I skolen) in Norway provided excellent networking facilities and many contacts came through meetings and events hosted by this wonderful institution. Finally, to those that wished to remain anonymous, thank you for your help.

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9 APPENDIX

9.1 FIELD NOTE TEMPLATE

Date:

Class:

Teacher:

Number of students:

Planned activity:

Mood of the class:

Moments of surprise:

Teacher impression:

Groups discussion participation:

General notes:

Conclusions:

Future work/questions:

9.2 PROJECT DESCRIPTION TO NSD

Project title:

The potential of video games as a learning too

Project description:

Dataspill er ennå ett meget betent tema innen klasseromms sammenheng. Noen få skoler og lærere forsøker nå dog å bryte ned noe av "demoniseringen" av dataspill og trekke frem de gode sidene ved dataspill om de er brukt på en god måte som ett verktøy for læreren i klasserommet. Elevene i dag har ett forhold til dataspill, de fleste spiller daglig, både jenter og gutter. Å ikke bruke litt av denne kraften og emosjonelle tilknytningen spill har i dag virker som en bortkastet resurs. Dette prosjektet ønsker å belyse verdien/problemene til Dataspill som ett verktøy for læreren i ett digital klasserom.

9.3 PROJECT INFORMATION TO SCHOOL ADMINISTRATION

Forespørsel om deltakelse i forskningsprosjektet

"Dataspill som læringsverktøy"

Deltakelse i prosjektet.

Med dette ønsker vi å informere om prosjektet og innhente tillatelse fra ledelsen ved Nordahl Grieg Videregående skole om deltagelse på forskningsprosjektet.

Bakgrunn og formål

Dette prosjektet er ett samarbeid mellom Universitetet i Bergen og Nordahl Grieg VGS. Formålet med studien er å vise hvilket ubrukt potensiale som ligger i dataspill som ett undervisningsverktøy. Vi ønsker å vise at en lærer kan bruke dataspill som ett verktøy for undervisningen sin uten at dette går utover kvaliteten på undervisningen. Dataspill har evnen til å engasjere på en helt annen måte enn det for eksempel en tekstbok kan, da spesielt mot yngre som har ett helt annet forhold til teknologien vi er omgitt av i hverdagen. Ønsket er hovedsakelig å gi lærere enda ett godt verktøy for engasjerende læring på elevenes premisser ved bruk av de nye mulighetene teknologien gir oss. Prosjektet er en master oppgave i faget Digital Kultur ved Humanistisk Fakultet, Universitetet i Bergen.

Alle elever ved Nordahl Grieg som deltar i undervisning med dataspill som analyseobjekt vil bli spurt om de ønsker å delta i studien. Alle elever vil bli bedt om skriftlig tillatelse for deltagelse i prosjektet. Deltakere kan trekke tilbake samtykke når som helst i løpet av studien ved å kontakte lærer eller daglig ansvarlig.

Hva innebærer deltakelse i studien?

Studien innebærer at de involverte elevene blir bedt fylle ut ett spørreskjema før undervisningen starter, samt ett etter undervisningen er gjennomført. Under undervisningen, i samarbeid med klasseleder, så kan det være en observatør til stede i timene. Noen elever vil også bli spurt om de ønsker å delta i ett intervju i forhold til studiet. Spørsmålene vil omhandle hva eleven synes om undervisningsopplegget og tanker rundt positive og negative sider ved bruk av dataspill som ett undervisningsverktøy. Det blir forespurt om karakter-statistikker i forhold til foregående år og dette år for sammenligningsgrunnlag. Dette vil bli overlevert i en form som forteller prosjektet at så mange i denne klassen fikk denne karakteren, ingen personlig informasjon blir overlevert. Dette samles inn for å vise hvilket nivå klassen er på etter bruk av dataspill som læringsverktøy.

Hva skjer med informasjonen?

Alle personopplysninger vil bli behandlet konfidensielt. Alle opptak vil bli gjort i en anonym form og tilgang er begrenset til prosjektansvarlig og veileder samt ett samarbeidende prosjekt ved Filipa De Sousa, Universitetet i Oslo. Hennes prosjekt heter «Videogames and Moral Reasoning in Educational Settings» Mer informasjon om dette prosjektet kan finnes hos personvernsombudet, prosjektnummer: 36730 eller ved å kontakte daglig ansvarlig for dette prosjektet. Lydopptakene blir destruert når prosjektet er ferdigstilt og evaluert. Ingen deltakere vil kunne gjenkjennes i en eventuell publikasjon av studien.

Prosjektet skal etter planen avsluttes November 2014. Evaluering skal gjennomføres Mai 2015. Etter evaluering så blir alle lydopptak slettet. Data fra spørreundersøkelsene blir arkivert på ubestemt tid etter alle persondata er fjernet (NSD anbefaler opptil 5 år). Dette for å kunne arbeide videre med prosjekt på ett mulig nasjonal nivå.

Daglig ansvarlig

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0377 Oslo

Dersom du har spørsmål til studien, ta kontakt med Stig Andreassen, 918 87 780.

Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS. Prosjektet heter: «The potential of video games as a learning tool», prosjektnummer: 39609.

Samtykke til deltakelse

Vi har mottatt informasjon om studien, og er villig til å delta

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(Signert på vegne av Nordahl Grieg Videregående Skole, dato)

(Signert på vegne av Universitetet i Bergen, dato)

9.4 INFORMATION GIVEN TO STUDENTS

Forespørsel om deltakelse i forskningsprosjektet

"Dataspill som læringsverktøy"

Bakgrunn og formål

Dette prosjektet er ett samarbeid mellom Universitetet i Bergen og Nordahl Grieg VGS. Formålet med studien er å vise hvilket ubrukt potensiale som ligger i dataspill som ett undervisningsverktøy. Vi ønsker å vise at en lærer kan bruke dataspill som ett verktøy for undervisningen sin uten at dette går utover kvaliteten på undervisningen. Dataspill har evnen til å engasjere på en helt annen måte enn det for eksempel en tekstbok kan, da spesielt mot yngre som har ett helt annet forhold til teknologien vi er omgitt av i hverdagen. Ønsket er hovedsakelig å gi lærere enda ett godt verktøy for engasjerende læring på elevenes premisser ved bruk av de nye mulighetene teknologien gir oss. Prosjektet er en master oppgave i faget Digital Kultur ved Humanistisk Fakultet, Universitetet i Bergen.

Alle elever ved Nordahl Grieg som deltar i undervisning med dataspill som analyseobjekt vil bli spurt om de ønsker å delta i studien. Det er naturligvis helt frivillig å delta. Deltakere kan trekke tilbake samtykke når som helst i løpet av studien ved å kontakte lærer eller daglig ansvarlig.

Hva innebærer deltakelse i studien?

Studien innebærer å fylle ut ett spørreskjema før undervisningen starter, samt ett etter undervisningen er gjennomført. Under undervisningen så kan det være en observatør til stede i noen av timene. Noen vil også bli spurt om de ønsker å delta i ett intervju i forhold til studiet. Spørsmålene vil omhandle hva eleven synes om undervisningsopplegget og tanker rundt positive og negative sider ved bruk av

dataspill som ett undervisningsverktøy. Det blir også samlet inn karakter-statistikker fra de som ønsker å delta i prosjektet. Dette vil bli overlevert i en form som forteller prosjektet at så mange i denne klassen fikk denne karakteren, ingen personlig informasjon blir overlevert. Dette samles inn for å vise hvilke resultater klassen har oppnådd ved bruk av dataspill som læringsverktøy.

Intervjuene vil bli tatt opp med en lydopptaker, men anonymisert for personvern. Ingen personlige eller sensitive spørsmål vil bli stilt.

Hva skjer med informasjonen om deg?

Alle personopplysninger vil bli behandlet konfidensielt. Alle opptak vil bli gjort i en anonym form og tilgang er begrenset til prosjektansvarlig og veileder samt ett samarbeidende prosjekt ved Filipa De Sousa, Universitetet i Oslo. Hennes prosjekt heter «Videogames and Moral Reasoning in Educational Settings» Mer informasjon om dette prosjektet kan finnes hos personvernsombudet, prosjektnummer: 36730 eller ved å kontakte daglig ansvarlig for dette prosjektet eller din lærer. Lydopptakene blir destruert når prosjektet er ferdigstilt og evaluert. Ingen deltakere vil kunne gjenkjennes i en eventuell publikasjon av studien.

Prosjektet skal etter planen avsluttes November 2014. Evaluering skal gjennomføres Mai 2015. Etter evaluering så blir alle lydopptak slettet. Data fra spørreundersøkelsene blir arkivert på ubestemt tid etter alle persondata er fjernet. Dette for å kunne arbeide videre med prosjekt på ett mulig nasjonal nivå.

Frivillig deltakelse

Det er frivillig å delta i studien, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Dersom du trekker deg, vil alle opplysninger om deg bli anonymisert eller slettet etter ditt ønske.

Daglig ansvarlig

Stig Andreassen

Hoffsveien 55b

0377 Oslo

Dersom du har spørsmål til studien, ta kontakt med Stig Andreassen, 918 87 780. Tobias Staaby, 414 36 078 eller eventuelt din ansvarlige lærer.

Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.

Samtykke til deltakelse i studien

☐ ***Jeg samtykker til å være med på prosjektet.***

☐ ***Jeg samtykker å være en mulig deltaker i ett intervju***

☐ ***Jeg samtykker i at opplysninger relevante til prosjektet kan innhentes fra klasselærer/skole***

Jeg har mottatt informasjon om studien, og er villig til å delta

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(Navn i blokkbokstaver)

(Signert av prosjektdeltaker, dato)

9.5 SURVEY QUESTIONS – PRE-SURVEY

- Gender?
- Do you play video games?
- How many hours a week do you play?
- Have you used video games in a classroom before?
- Do you think you can learn things from a video game?
    - If yes, what?
- Have you thought about moral questions and video games?
- Do you think playing video games can influence people's moral decisions in real life?
    - Why?
- What is it about video games that attract so many to them?
- What expectations do you have for the class?

9.6 SURVEY QUESTIONS – POST-SURVEY

- Er du mann eller kvinne?
- Hvilke ord resonerer mest med deg når vi nevner dataspill?
- Hva er dine to mest positive opplevelser forbundet med bruken av dataspill i klasserommet?
- Hva er de to mest negative ting du har opplevd i forhold til dataspill i klasserommet?
- Hva er det som skal til for at læreren skal kunne ta med seg ett dataspill inn i klasserommet? Hvilke tips kan du gi?
- Hva tenker du om lærerens rolle i klasserommet?
- Det er både positive og negative ting som kan bli sagt om dataspill, hvordan tenker du om dataspill og hvorfor? Hva er det dataspill bringer til klasserommet?
- Spiller du dataspill/videospill?
- Hvor mange timer i uka spiller du?
- Hvilke dataspill pleier du å spille?
- Hvordan er du innstilt til bruken av dataspill i klasserommet?
- Fra du startet dette undervisningsopplegget, hva har du forandret mening på?
- Tenker du på deg selv som en gamer?
- Dataspill er tilnærmet det samme som bøker?