How can game genres contribute to the learning process?

a bachelor thesis

Author: Jasper van Duijnhoven
Student number: 0824054
Supervisor: Prof. dr. ir. Theo van der Weide
Study: Information science
University: Radboud Universiteit
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Abstract

In this paper the need for an universal classification of video game genres and their educational benefits is argued. First some experts will formulate their list of aspects for each game genre. From these results there will be a matrix constructed with the genres and their aspects. Then a link will be made between the learning objectives from Bloom’s Digital Taxonomy and the aspects of the genres. This will result in a list of learning objectives per genre. Finally a school class will fill in a blank version of this matrix, so we can see if they also recognize all the aspects the experts defined for the genres. The results are promising, but further research is needed on a bigger scale.
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1. Introduction

Frazer et al. (2008) point out in their papers ‘The same, but different: the educational affordances of different gaming genres’ and ‘Demystifying the educational benefits of different gaming genres’ that there is no (complete) classification of game genres to this date. This is however very much needed to advance in the process of improving educational games. In their own experience in talks with teachers they find that most teachers do not use video games in their teaching because there is a very wide range of games available with no useful information about how they could contribute in the classroom or which game is appropriate for them. Every game genre has its own specific aspects which could contribute to the learning process. Most research papers however discuss the affordances of games to education as if they are equal for all genres.

We are now four years further since the research of Frazer et al. and there still is no complete classification of game genres available. In my research I am going to create a list of the most important game genres and then place them in a matrix on the X-axis. On the Y-axis there will be a list of aspects which are used to define the different genres. After this I will look for connections between the genres and learning objectives as defined by Churches’ ‘Bloom’s Digital Taxonomy’ (2008). I will do this by using the aspects of each genre and linking them to the learning objectives. Finally I will take a look at which aspects of the game genres can be recognized by high school students, to have a first indication whether active learning could take place, or just ‘stealth learning’.

In this research I will try to answer the following question:

**Which game genres can be distinguished and in which ways can they contribute to the learning process?**

To answer this question I need sub questions. First the game genres have to be defined. Secondly we need to look at possible connections between the aspects of each game genre and the learning objectives of Bloom’s Digital Taxonomy. Third and last we need to look at how non-experts define the game genres. This is of course needed because the learning targets are non-experts. We could say that the aspects that are not recognized by the non-experts will also fail to teach them something, because acknowledging or evaluating that what you have learned is very important. Resulting are the following sub questions:

**How do experts define the different game genres?**

**Which learning objectives can be linked with the aspects of the different game genres?**

**Do the non-experts recognize all the aspects of the different game genres?**
But why is this research worthwhile? People play games because they like it. This is for all sorts of games. Video games can be categorized in genres. Players of these games don't always like all the genres. They even only like one or a few genres most of the time.

If we keep in mind that people most of the time learn quicker or easier when they like the subject or the way they are learning, we can also say people could learn quicker or easier when they play games from their favourite genre than when they play games from genres they do not like.

Video games can support the learning process, because a game is a simulation of a situation in the real world, meant to reflect that situation. This will result in knowledge about this situation.

Jane McGonigal shows in a TED talk that in the current gaming culture the average person will have played 10,000 hours of games by the time he or she is 21 years old. Children in the United States spend 10,080 hours in school from the fifth grade till their graduation. This is with perfect attention.

Of course nobody reaches perfect attention, because someone gets ill or because someone simply does not pay attention, so there is a small knowledge gap. This could however be filled by the time spent gaming.

To know how to fill the knowledge gap you have to know which games can be useful to play. This is where the difference in game genres comes in. Let us say Strategy and Adventure games can be used to teach history and a particular student has missed a lot of history classes due to sickness. He or she likes Strategy games, but does not like Adventure games. We could let him or her play Strategy games at home to fill the knowledge gap in history. We should not let him or her play Adventure games, because this will not work or will work less because he or she does not like these games. This way games can be an effective and fun way to fill these knowledge gaps. Of course we do not want to run ahead of things and first there has to be proven that these genres can be linked to learning objectives.

Reinoud de Jongh’s article published in Psychologie Magazine april 2012 (a Dutch Psychology magazine), showed some promising results. He discovered four positive effects of video games on the brain. The first one is the information processing speed which is improved when playing games with rapid action. The University of Rochester discovered that people responded 13% quicker in handling tasks like spotting the letter B in an ocean of P’s. The second effect is the ability to keep a better overview. American researchers Green and Bavelier discovered that gamers are better in ‘subiteren’ (unfortunately I do not know the English translation for this word). When counting artefacts non-gamers can group a maximal amount of three artefacts together, while gamers can group up to five
artefacts together. The result is gamers can count much quicker than non-gamers. The third positive effect is the ability to switch quicker between tasks, the so called multitasking. The response time of the brain was much quicker with gamers than non-gamers after switching tasks, so found out the University of Leiden. The reason for this is that players of reaction-based games have to react to different stimuli very rapidly. This translate into a quicker response of about 0.1 seconds. This seems a very small difference, but add up the differences of all the tasks and then the difference is significant. The last positive effect is the improved spatial awareness. Canadian researchers discovered that both men and women scored better in mental rotating tasks, like the one in Figure 1. One of the most remarkable effects was that women that played a game for ten hours appeared to be on the same level after five months than right after playing the game.

These are all very promising results for the combination of video games and education. Now it is time to take a deeper look in the game world.

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\text{(a)}
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\text{(b)}
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\begin{center}
\text{Mental Rotation Test—Are these two figures the same except for their orientation?}
\end{center}

Figure 1: Mental Rotation Test(source: www.skeptic.com)

Answer to Mental Rotation Test: no they are not the same
2. What is a video game and which genres can be defined?

2.1 Video games

“A video game is an electronic game that involves human interaction with an user interface to generate visual feedback on a video device.” is the definition Wikipedia (http://en.wikipedia.org/wiki/Video_game) gives for video games. Video games can be played on a pc or console like the Xbox 360 by Microsoft or the Playstation 3 by Sony. Video games are very upcoming the last decennium. Many traditional board games are already for sale as video game version. Till a few years ago video games and movies had a one-way relation. Video games were made of movies. But nowadays we see the relation can also be the other way around. There are already many movies made of a video game, for instance: Hitman, Resident Evil and Prince of Persia which was a very large movie production.

“Gaming” appears to become a lifestyle rather than an activity. Words with the origin in the game world are often heard on the streets and the first game addiction clinics were built a few years back. So it is inevitable educational will be influenced by the game world. This however does not need to be negative. This research focuses on a possible positive aspect.

If we look at video games from a more conceptual view, we can state that video games are the visualization of a context where the user, the player, acts and feels as a part of the game as reaction to sound and video feedback. In video games the goals are predefined for the player. How to reach these goals however is not entirely predefined. The player has some freedom, in certain games more freedom than in others, in the way he or she reaches these goals. The player can make his or her own rules in some way. We also have to take a brief look at the differences in cultures. In Asia professional gamers are seen as a new kind of rock stars, while in Europe they are seen as players with no social life, often called “no-life gamers”. So if you say you play video games a lot, in Asia they see it as a good personal attribute, but in Europe they see you as a geek. This is something you have to take in account when using video games in education. Furthermore some video games also have a social aspect to them. Of course this is different from children playing with friends outside, but aspects as working together are more important in video games. So when people call the so called no-life gamers “people with no social life”, it is not entirely true. It is just a different type of social life.
2.2 Educational video games

According to Wikipedia (http://en.wikipedia.org/wiki/Educational_video_game) educational video games or serious games are: “Educational video games are considered a type of serious game, as these games have a strong purpose other than pure entertainment. Some people call these types of games edutainment because they combine education and entertainment. An educational computer game can be defined as an electronic medium with all the characteristics of a gaming environment that have intend educational outcomes targeted at specific groups of learners.”

Before the emphasis was always on the word education with the promotion of this type of games. Nowadays the emphasis is more often on the word game in commercials on television. A good example are the Braintrainer games on the Gameboy by Nintendo. This shows the game producers are not afraid to compete with the pure leisure games, in as far as you can speak of this sort of games. Educational games are already being used in today’s education. My own experience on the Radboud University with educational games in courses was in the course ‘Negotiation and change’ thought by Janos Sarbo and ‘Knowledge management’ thought by prof. dr. Paul Hendriks. In the first course there was a game where we had to negotiate with another student about a case and in this game we did not know who the other student was. In the second course there was a management game where we were acting as a knowledge manager in a virtual company.

2.3 Genres

Part of this research is defining a list of the most important genres. Wikipedia (http://en.wikipedia.org/wiki/Video_game_genre) gives the following definition of the word video game genre: “Video game genres are used to categorize video games based on their game play interaction rather than visual or narrative differences. A video game genre is defined by a set of gameplay challenges. They are classified independent of their setting or game-world content, unlike other works of fiction such as films or books.”

For defining this list I have collected all the game genres from Frazer et al. (2008) and Egenfeldt-Nielsen (2003). After doing this the result is this list:

- Shooter
- Role Playing Game (RPG)
- Strategy
- Puzzle (or Simple games)
- Adventure
- Simulation
- Action
Frazer et al. (2008) handle four genres in their research. They cover Shooters, RPG’s, Strategy games and Puzzle games. Egenfeldt-Nielsen (2003) uses more genres in his classification. However, he gives a classification for online games. He also gives the four genres as used in Frazer et al. plus the genres Adventure, Simulation, Action and Edutainment. I will not use the genre Edutainment in my research because in my opinion this genre is a whole different branch of video games concentrated on educational games. Furthermore the learning objectives in this genre are most of the time quite obvious.

2.4 Shooter
Shooters are games where weapons are the most important part of the game. Most of the time the weapon is a gun, hence the name ‘Shooter’. This genre is one of the most popular genres available. Battlefield 3 (developed by Electronic Arts) and Call of Duty: Modern Warfare 3 (developed by Activision) are the most famous games in this genre from this year. In the early days games like Doom (developed by id Software) were defining this genre. This genre is actually a sum of two sub genres: the first-person Shooter and the third-person Shooter. The difference between these two is the position of the camera. As the name already says, in games of the first sub genre the player sees through the eyes of the character, while in the second sub genre the player looks through the eyes of a non existing third person who walks behind the character. This genre can be played as single player or as multi player. The possibility to play with other players, both offline and online, helped to make this genre so popular.

2.5 Role Playing Game
Role Playing Games are also a very popular genre. What makes this genre so distinctive is the level of freedom. There is no best way to play this sort of games. You can choose in which order you play the ‘quests’ (the name of objectives in this genre). The battle between good and evil is also very characteristic in this genre. One of the most important parts of this genre is the development or training of the character. When you advance in the story, your character’s abilities will improve. Most of the time you can also choose a basic class for the character or special abilities. In battle with an opponent probability plays a great part, unlike in Shooters where the amount of damage is predefined. The damage done in an attack in RPG’s is defined by the chance of a hit, the defence of the opponent and possible weaknesses of the opponent. The most popular game in this genre is The Elder Scrolls V: Skyrim (Developed by Bethesda Game Studios). One of the most popular sub genres is the Massive Multiplayer Online Role Playing Game (MMORPG). In these games the player plays online with thousands of players at the same time on a server. This way you get an even greater feeling of being in another world. The most famous MMORPG is World of Warcraft (developed by Blizzard Entertainment).
2.6 Strategy game
In this genre the player acts as a commander of units and buildings. The player has to apply a strategy to create a base and an army to destroy the enemies. Often there are possibilities to make upgrades for the buildings and units to make them stronger or faster or anything like that. The player also has to keep in mind that the resources are not infinite. So the player for instance has to choose which units to produce in terms of expenses vs. abilities. The most famous game series of this genre are the Command & Conquer series (developed by Electronic Arts) and the Age of Empires series (developed by Microsoft).

2.7 Puzzle game
This genre is known by almost everybody. Games of this genre are Tetris and Minesweeper. Puzzle games are often also found in other genres like in Adventure games. In this genre the Puzzle games make a good variety to the running and jumping the player does most of the time. This is a simple but challenging genre.

2.8 Adventure game
Adventure games are games where the player controls a character, who is often a hero of some sort, and goes on a search for something or someone. The Uncharted series (developed by SCE) and Tomb Raider series (developed by Eidos) are good examples of Adventure games. Most of the Adventure games try to give the player an ‘Indiana Jones’ like feeling and thus story telling is very important in this genre.

2.9 Simulation game
In this genre the player controls something or someone. This something or someone can be anything or anyone. Airplanes in the Flight simulator series (developed by Microsoft), people in The Sims series (developed by Electronic Arts), a theme park in the RollerCoaster Tycoon series (developed by Hasbro Interactive), a race car in the Need for Speed series (developed by Electronic Arts) or the player’s favourite team in a sports game like the Fifa Football series (developed by Electronic Arts). Realism is a key concept in this sort of games, as the player wants to live the life of a pilot, a manager or a professional football player.

2.10 Action game
Action games can often be described as fighting games, platform games or arcade games. Games like Pong (developed by Atari), Pac-Man (developed by Namco/Midway), the Super Mario series (developed by Nintendo) and Mortal Kombat (developed by Midway) belong to this genre. Typically for these games is the way they are played. Often the player has to ‘bash’ the button combinations as fast as he or she can, so response time is very important.
3. What is learning?

“Learning is acquiring new or modifying existing knowledge, behaviours, skills, values or preferences and may involve synthesizing different types of information.” Is the definition which is given by Wikipedia.

When someone can apply knowledge from a situation, the learning objective is achieved is a more conceptual viewpoint of learning. Benjamin Bloom developed a taxonomy of educational objectives. He identifies three psychological domains in which learning can be fitted. The first domain is the cognitive domain of processing information. The second domain is the affective domain of attitudes and feelings. Third and last is the psychomotor domain of manipulative or physical skills. A more detailed description is shown in Figure 2.

Figure 2: Bloom’s Taxonomy, from Churches (2008)
Bloom says that someone cannot understand a concept if it is not first remembered and similarly someone can not apply knowledge and concepts if they are not first understood. Bloom describes a continuum from Lower Order Thinking Skills (LOTS) to Higher Order Thinking Skills (HOTS), as can be seen in Figure 3.

Figure 3: Bloom’s Revised Taxonomy, from Churches (2008)

In Figure 3 verbs are used instead of nouns and the ordering is different from Bloom’s original model. This is the revised version of Bloom’s Taxonomy by Anderson & Krathwohl (2001).

Each category of the domains is characterized by aspects just like we are going to do with the game genres. In the end we will try to link the aspects of the game genres and categories of the domains together. We will try to do so for all the three domains.
4. Game genres defined

Earlier in this paper we have taken a first look at the genres. Now it is time to answer
the first sub question: ‘How do experts define the different game genres?’ I asked eight
experts to define the genres I use in my research. I searched for experts in the game
community (students), the educational community (researchers on this subject) and the
game developers community. Each of them had some really interesting points of view, but
also agreed on a lot of things with the others. Some of them also pointed out that some of
the aspects might not define games of sub genres, because the sub genres sometimes have
their own rules.

4.1 Shooter

Shooters often simulate a war. The player controls a single character. Weapons play a
very important role in this genre, also because using the “right tool for the job” is very
important when defeating an enemy, this indicates there is a certain need for tactical or
strategically thinking by the player. Weapons do not necessarily need to be guns, it can
also be a knife or the fists, so the term Shooter can be a bit confusing. In Shooters you
kill other characters with a goal, sometimes because this is the objective and sometimes
simply because they try to kill the player. The story has a minor part in this genre and
the progression is largely linear. A very important skill for the player to be able to play
these sort of games is response time, as Shooters are reaction-based.

Because this genre has become very popular in the online community over the past
decade, it is fair to look at a few very important online aspects. I am talking about
competition and teamwork. The multiplayer of Shooters usually involves two teams
fighting for the collective win, so teamwork is vital to win as a team. But of course also
competition is very important because everyone wants to be on top of the score board. To
be the best a certain amount of intelligence is needed. You have to anticipate the
opponents moves, you have to know where the opponent is and which way he is looking.

All these aspects are again displayed in the following list:

- Single character
- Reaction-based
- Killing other characters with a goal
- Competition (online)
- Teamwork (online)
- Tactical
- Using the “right” Weapons
- Linear progression
4.2 Role Playing Game

One word which is central in RPG’s is the word ‘character’. The player again controls only one character at a time, but this time customization and improving the properties of the character are the key to success. This is one of the most important motivations for the player, because by the progress of the character unlocks new abilities and sometimes parts of the virtual world. Gathering information and items help the player to improve his/her character and explore the world. The story behind the main quest also plays an important role. The player is able to interact with other characters in the world. These are computer controlled, or controlled by humans in Massive Multiplayer Online Role Playing Games. In this last category teamwork is also very important, just like in online Shooters.

Another motivation for player is the amount of freedom in the games. The progress in the game is non-linear because the player can also choose to go on side-quests which have their own goals and rewards. The decisions and the side-quests the player takes define their character.

Below is the list of aspects:

- Single character
- Customizable properties
- Decisions
- Story
- Non-linear progression
- Interaction
- Exploring
- Reward system
- Teamwork (online)

4.3 Strategy game

One of the experts correctly stated out that the Strategy genre is a sum of two sub genres: Real-time strategy and turn-based strategy. The last one is much slower paced and it involves even more strategic thinking. But most aspects define both sub genres.

The player controls multiple characters, often called units, at a time. The player uses these units to achieve a certain strategic goal, which in the end is defeating the enemies most of the time. In most games of this genre the player has to build his/her own army and base. Doing this requires resources and efficient use of these resources. The player has to optimize the processes and search for the right combination of buildings and units to achieve the goals. We could say, the player has to choose the right specialisation of buildings and units to work with. Often the player has to keep in mind that all the player
have their own strengths and weaknesses. By example in the famous Age of Empires game the strengths, weaknesses and possible buildings and units depend on the civilization the player chooses. This is called asymmetric combat.

Again a list of the aspects of this genre:

- Multiple units
- Strategic goals
- Specialisation
- ‘God’ perspective
- Gathering resources
- Process optimisation
- Asymmetric combat
- Efficiency

4.4 Puzzle game

This genre is maybe the most simple looking genre of all, but the games are not always that simple to complete. It involves a lot of logic from the player’s side. The motivation for the player is the intellectual challenge. Commonly the player has no specific opponent and there sometimes is a time limit to complete the puzzle. Furthermore there are always some rules the player can not break.

If you look at games of this genre at a general level, you can conclude that there is no story in the game and the graphics are fairly simple. The player has to repeat some basic actions over and over again to complete a puzzle. The games are about developing and training the cognitive skills.

The list of aspects:

- Logical challenge
- Intellectual challenge
- Rules
- No story
- Simple graphics
- Repeating basic actions
- Training cognitive skills
4.5 Adventure game
Adventure games look like RPG’s in some ways and often combine elements of Puzzle games and Shooters in the game. Where in RPG’s the character is the most important part, in Adventure games is the story the most important part. In this story there usually are some puzzles to be solved. This genre often also has some reaction-based elements in it. For instance jumping from one platform to another or sometimes also some shooting. Exploration of the world and the story is a very important motivation for the player. Exploring the world the player will find items which could be of great importance in a later stage of the story.

Below is the list of aspects:

- Story
- Executing assignments or puzzles
- Single character
- Reaction-based
- Exploration

4.6 Simulation game
This is a very diverse genre with lots of sub genres. However they all have some key aspects in common. They are all a simulation of an activity that is most of the time one in the real world. Why do I say most of the time?

I was surprised that only one of the experts asked himself and me if the Simulation game is always a recreation of something in the real world. If we take the famous film series of ‘Star Wars’, we see in these movies a fictional world. In this world people can fly in space ships to combat each other in space. There are some games which recreate these fights. But can we speak of a real simulation, because the Star Wars world is fictional? Some dictionaries say a simulation is always a representation of some process or system in the real world, but others do not use the term ‘real world’. What if we look at the player’s wish for the Star Wars world to be the real world? Then the game is always a simulation.

My point is, not every Simulation game is a simulation of the real world. Even racing games sometimes apply an option in the game to turn off the possibility to take any damage to the car in the event of a crash. This is not possible in the real world either. Even ‘The Sims’ games, which simulate a whole life, are full of funny actions and stuff that are fictional and impossible in real life.

Simulation games always try to simulate the given world as close as possible. Some games use some assistant functions in the game for the player, like automatic gear changing in racing games. But some games really incorporate all the functions the real situation also
has, like in ‘Flight simulator’. Games in this genre have no story, in some sense you create the story in your head. In Flight simulator you pretend to be a real pilot by instance.

The resulting list of aspects:

- Simulating a complex activity
- Match the chosen world
- No story

4.7 Action game

One of the experts claimed this genre is not a real genre. His reasons were that a lot of games in this genre could also be in another genre. Other experts were convinced this really is a genre. Key aspects are the fast-paced action, the games are very accessible in a way that the rules and controls are very simple and easy to understand and remember for most people. Furthermore, the amount of actions which can be performed by the player are very limited. The player has to concentrate at the game at all time because the game continuously tests the player’s responses.

One of the experts made a very clear statement about Platform games, which are a sub genre of Action games. He said that the Platform games are special in a sense that they combine the fast-paced action with puzzle elements like in Adventure games, however they cannot be described as Adventure games because of the lack of an immersive storyline.

Below is the list of Action game aspects:

- Fast-paced action
- Reaction-based
- Easy Accessibility
- Limited actions possible
4.8 Summary

When we put the genres and aspects in a matrix, the result is the matrix in Figure 4. Most of the aspects are unique for each genre, but some share a link with more than one genre, like ‘single character’, ‘story/no story’, ‘exploring’ and ‘reaction-based’. A blank version of this matrix will be given to high school students in part three of this research in the form of questionnaire.

<table>
<thead>
<tr>
<th>Shooter</th>
<th>RPG</th>
<th>Strategy</th>
<th>Puzzle</th>
<th>Adventure</th>
<th>Simulation</th>
<th>Action</th>
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<tr>
<td>Single character</td>
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Figure 4: genres and aspects matrix
5. Game genres and cognitive learning objectives

Now it is time to take a look at the learning objectives from Bloom’s Digital Taxonomy and try to find a link with the aspects we defined for the game genres, so we can answer sub question two. I will do so by first listing the learning objectives and then searching for resemblances in the aspects of the game genres. The results are based on the input from the experts in the previous chapter and my own experience. Let us start with the cognitive domain.

5.1 Remembering

Retrieving, recalling or recognising knowledge from memory. Remembering is when memory is used to produce definitions, facts or lists, or recite or retrieve material.

The key terms for this aspect of the taxonomy:

- Recognising
- Listing
- Describing
- Identifying
- Retrieving
- Naming
- Locating
- Finding

First let’s take a look at the Shooter genre. We can definitely say Shooters have a link with remembering. The reaction-based element takes recognising or identifying the goals. In the multiplayer some goals also have to be found, so locating or finding goals is important too. Furthermore the player has to identify which weapon has to be used to reach a goal. In the RPG genre exploring is a key aspect. Exploring is the same as finding the unknown and making it the known. In RPG’s items also have to be found in exploring, so in that way finding and sometimes retrieving is also linked with this genre. In Strategy games there also is a link with an aspect of this genre, namely the gathering of resources. Also identifying the most efficient way for processes to run is a possible link. In Puzzle games we find recognising, identifying and finding in the logical challenge, in the way of relationships between artefacts. Next are the Adventure games. Because this genre also has reaction-based elements and puzzle elements, there also is a link with recognising, identifying and finding inter alia. The Simulation genre however is a bit more tricky. In a simulation it is about the simulated artefacts, naming and recognizing them. In this genre it depends on which game you play. Last we have the Action games. Again this genre also has reaction-bases elements, so also has a link with remembering.
5.2 Understanding
Constructing meaning from different types of function be they written or graphic.

The key terms for this aspect of the taxonomy:

- Interpreting
- Summarising
- Inferring
- Paraphrasing
- Classifying
- Comparing
- Explaining
- Exemplifying

If we look at the Shooter genre, we might say by thinking tactical you are comparing different actions you can take and in the end you take the best one. In other words, the player has to understand the movements of the enemy to anticipate. In RPG games the role of understanding is more clear, because interaction is an important aspect in these games. In the interaction with other characters one has to interpret what the other characters say in order to progress in the game. Strategy games have lots of different units, which are characterized by classes. The player has to quickly classify the units attacking his or her base in order to know their weaknesses. The player can then counterattack making good use of these weaknesses. In Puzzle games you also have to compare two tactics. The question is always: “Which move is the best move?” The Adventure genre has elements of puzzle games in it, so comparing is also an issue here. Again with Simulation games we must say it all depends on which game you play. Action games too have little need for understanding. Of course the goal of the game and the controls have to be understood, but after that it is simple ‘button bashing’ action.
✓ Shooter
✓ Role Playing Game
✓ Strategy
✓ Puzzle
✓ Adventure
× Simulation
× Action

5.3 Applying
Carrying out or using a procedure through executing or implementing. Applying related and refers to situations where learned material is used through products like models, presentation, interviews and simulations.

The key terms for this aspect of the taxonomy:

- Carrying out
- Using
- Executing
- Implementing
- Showing
- Exhibiting

Let us start again with looking at Shooter games. ‘Killing other characters with a goal’ is one of the aspects of this genre. So these games are all about killing other characters in order to be able to execute the goal of carrying out a mission. Some of these games are also used in military training where soldiers apply their basic training to be tested. Furthermore these games are built with most of the time a large arsenal of weapons, so using the right weapons for the job is also applying the knowledge you have of these weapons. This last part is also true in RPG’s, but here also non-weapon items count. But the main thing in RPG’s is executing quests. In Strategy games it is very important that the player is able to use the strengths of his or her units to defeat the enemy. While in Puzzle games implementing some kind of problem solving strategy is the most important thing. In the Adventure game genre the player has to carry out assignments in order to progress in the adventure. In Simulation games it is again a bit more tricky. In these games the player has to implement knowledge from outside the game in the game. For instance, in football you do not pass a player right in the feet when the player is already starting to run. You then give a through pass to that player, so the player does not lose any speed in receiving the ball. In some Action games there are special attacks or weapons that can be used to defeat the opponent. So we can conclude all the genres have elements of applying hidden in the games.
5.4 Analysing

Breaking material or concepts into parts, determining how the parts relate or interrelate to one another or to an overall structure or purpose. Mental actions include differentiating, organizing and attributing as well as being able to distinguish between components.

The key terms for this aspect of the taxonomy:

- Comparing
- Organising
- Deconstructing
- Attributing
- Outlining
- Finding
- Structuring
- Integrating

In Shooters the player has to compare the different properties of the weapons and choose the best weapon for the job. This is however more of interest in the online modus, because in the offline modus the player is directed to the right weapon most of the time.

In RPG’s the player can customize the character’s properties. With improving, the player has to make choices which attribute he or she values the most important to improve. So a little analysing of the possible upgrades is necessary. As described earlier, in Strategy games it is all about knowing the weaknesses of the opponents units. To know this, you first have to compare units. So in order to apply, you first have to analyse. Puzzle games are of course all about analysing. It is all about comparing different moves with their own outcomes. Adventure games gain their analysing need from the mini puzzle games in them. In the Simulation game genre it is important to compare the simulated situation with the real one, and then conclude what you should do. In Action games there is no need for analysing.
5.5 Evaluating

Making judgements based on criteria and standards through checking and critiquing.

The key terms for this aspect of the taxonomy:

- Checking
- Hypothesising
- Critiquing
- Experimenting
- Judging
- Testing
- Detecting
- Monitoring

In Shooters the tactical aspect plays a big role, especially in the online modus. This could be linked with testing or experimenting, because when you apply a tactic, you don’t know yet if it will work. If it doesn’t work you have to alter this tactic or choose a different one. In RPG games it is all about making choices. Where do you go to explore, which properties do you improve. After making those choices it is very important to evaluate. Did I take the right path? It is all experimenting. In Strategy games there is a different kind of testing. There you test not only test your own army, but you also test the enemies defences. In the Puzzle game genre there are also aspects of evaluating recognizable. More than in other genres you have to detect your errors in not being able to solve a puzzle. Adventure games also have some evaluating in them. But here it is because of the puzzle elements. Simulation games are again special. In these games the player is constantly experimenting. For instance in Flight simulator the player decides to see what happens if he/she takes a fast dive. Will the airplane break or not? In Action games no form of evaluating is needed.
✓ Shooter (mostly online)
✓ Role Playing Game
✓ Strategy
✓ Puzzle
✓ Adventure
✓ Simulating
× Action

5.6 Creating
Putting the elements together to form a coherent or functional whole; reorganising elements into a new pattern or structure through generating, planning or producing.

The key terms for this aspect of the taxonomy:

- Designing
- Constructing
- Planning
- Producing
- Inventing
- Devising
- Making

Creating is the highest order thinking. There is only one genre which has a little creating in the games. This is the Strategy genre. Here the player has to design the defence structure. This is all about placing the defence towers and walls at the right place. In Simulation games there is a different kind of creating involved. In Simulation games the player produces his/her own game course. There is no end goal. All the other genres have no aspects of creating in them.

✓ Strategy
✓ Simulation
× Shooter
× Role Playing Game
× Puzzle
× Adventure
× Action
5.7 Summary

When we put the results together in a table we get the table in Figure 5. Some people might argue that the outcome is wrong because Simulation games and Action games cannot have aspects of Applying without aspects of Understanding. I like to emphasize that some aspects of the missing lower order thinking might be used in playing the games, but the games itself do not deliver any ways for using those aspects directly. Furthermore some of the critics on Bloom’s Taxonomy was that the categories might not be sequential ordered but parallel.

<table>
<thead>
<tr>
<th></th>
<th>Shooter</th>
<th>RPG</th>
<th>Strategy</th>
<th>Puzzle</th>
<th>Adventure</th>
<th>Simulation</th>
<th>Action</th>
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<td></td>
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<td></td>
</tr>
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</table>

Figure 5: Genres and their cognitive learning objectives
6. Game genres and affective learning objectives

6.1 Receiving
Awareness, willingness to hear and selected attention.

The key terms for this aspect of the taxonomy:

- Asks
- Chooses
- Describes
- Follows
- Gives
- Holds

In Shooter games the player has to follow a predetermined path. This is called linear progression. To follow this path, the player has to follow hints given in the game. So there are aspects of receiving in this genre. In RPG games the player often has to ask other computer controlled players for more information. So in this genre there are also aspects of receiving. The player also chooses which quests to take and which not to take. In the Strategy game genre the player receives information by sounds most of the time. Examples are a computer voice saying that the enemy is attacking or the resources are depleted. In Puzzle games the player often receives tips which the player has to follow in order to complete the puzzle. Adventure games are in certain degree a storytelling. So the player has to follow that story. Simulation games the player receives through audiovisual stimuli, recognizing artefacts from the chosen world. In the Action game genre no receiving takes place.

✔ Shooter
✔ Role Playing Game
✔ Strategy
✔ Puzzle
✔ Adventure
✔ Simulation
✗ Action

6.2 Responding
Active participation on the part of the learners. Attends and reacts to a particular phenomenon. Learning outcomes may emphasize compliance in responding, willingness to respond, or satisfaction in responding (motivation).
The key terms for this aspect of the taxonomy:

- Answers
- Assists
- Aids
- Complies
- Conforms
- Discusses

In the offline modus in Shooters no responding takes place, but in the online modus aiding your teammates is a very important aspect. In RPG’s the player sometimes has to aid other characters or players in both the online and offline modus. In games of the Strategy genre it is also about assisting or aiding allies. But in this genre there is not always an ally. In Puzzle games the player has to answer difficult issues. Adventure games again have puzzle elements, so also have a bit of responding, but far less than the other genres. In both Simulation games and Action games there is no responding.

✓ Shooter (only online)
✓ Role Playing Game
✓ Strategy (only with allies)
✓ Puzzle
✓ Adventure
✗ Simulation
✗ Action

6.3 Valuing

The worth or value a person attaches to a particular object, phenomenon, or behaviour. This ranges from simple acceptance to the more complex state of commitment. Valuing is based on the internalization of a set of specified values, while clues to these values are expressed in the learner’s overt behaviour and are often identifiable.

The key terms for this aspect of the taxonomy:

- Completes
- Demonstrates
- Differentiates
- Explains
- Follows
- Forms

There are only three genres which incorporate valuing, namely RPG’s, Puzzle games and Adventure games. In RPG’s the playing can choose which side quests he/she wants to
complete. In Puzzle games completing a puzzle is the only goal. And in Adventure games completing the story is the most important thing. If the story is thrilling enough, you want to see how it ends.

- Role Playing Game
- Puzzle
- Adventure
- Shooter
- Strategy
- Simulation
- Action

6.4 Organizing
Organizes values into priorities by contrasting different values, resolving conflicts between them, and creating an unique value system. The emphasis is on comparing, relating, and synthesizing values.

The key terms for this aspect of the taxonomy:

- Adheres
- Alters
- Arranges
- Combines
- Compares
- Completes

No signs of organizing can be found directly in the game genres.

- Shooter
- Role Playing Game
- Strategy
- Puzzle
- Adventure
- Simulation
- Action

6.5 Characterizing
Has a value system that controls their behavior. The behavior is pervasive, consistent, predictable, and most importantly, characteristic of the learner. Instructional objectives are concerned with the student’s general patterns of adjustment (personal, social, emotional).
The key terms for this aspect of the taxonomy:

- Acts
- Discriminates
- Displays
- Influences
- Listens
- Modifies

No links with Characterizing can be found with the aspects of the genres.

- Shooter
- Role Playing Game
- Strategy
- Puzzle
- Adventure
- Simulation
- Action

### 6.6 Summary

When we put the results together in a table, you get the table from Figure 6.

<table>
<thead>
<tr>
<th></th>
<th>Shooter</th>
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</tr>
</tbody>
</table>

Figure 6: Game genres and their affective learning objectives
7. Game genres and psychomotor learning objectives

7.1 Perception
The ability to use sensory cues to guide motor activity. This ranges from sensory stimulation, through cue selection, to translation.

The key terms for this aspect of the taxonomy:

- Chooses
- Distinguishes
- Identifies
- Isolates
- Relates
- Selects

In Shooters it is all about identifying the enemy. The player also has to do this as quickly as possible. In RPG’s the player has to choose which direction he/she wants to go. In Strategy games the player selects which units he/she wants to move or attack with. In the Puzzle game genre the player has to choose or select an artefact for the next move. In Adventure games the player has to react quickly when for instance objects are moving and choose to which object he/she will jump. In Simulation games it is all about relating artefacts to the chosen world. When you are in a race game you have to relate the steering wheel to a steering wheel of a real car. Lastly in Action games you again have to react very quickly and identify enemies.

✔ Shooter
✔ Role Playing Game
✔ Strategy
✔ Puzzle
✔ Adventure
✔ Simulation
✔ Action

7.2 Set
Readiness to act. It includes mental, physical, and emotional sets. These three sets are dispositions that predetermine a person’s response to different situations (sometimes called mindsets).
The key terms for this aspect of the taxonomy:

- Displays
- Moves
- Proceeds
- Reacts
- Shows
- States

Of course in Shooter games it is all about reacting as quickly as possible. In the RPG genre the player has to proceed or move through the world. In Strategy games the player has to react to attacks from the enemy. In Puzzle games the player sometimes also has to react use other aspects of set. In the Adventure genre again reacting is a very important thing. In the Simulation game genre the player has to move or proceed through the world. This could also be said of the Adventure games world. In Action games the player has to react as quickly as possible, very much like in Shooters.

- Shooter
- Role Playing Game
- Strategy
- Puzzle
- Adventure
- Simulation
- Action

### 7.3 Guided response

The early stages in learning a complex skill that includes imitation and trial and error. Adequacy of performance is achieved by practicing.

The key terms for this aspect of the taxonomy:

- Copies
- Traces
- Follows
- React
- Reproduce
- Responds

Earlier we said that in Shooters the player has to react as quickly as possible to possible enemies. This is not the entire truth. The player also has to be very accurate in his/her reacting. The player has to respond to threats. In the RPG genre the player also has to react to certain threats along the path he/she is following. In Strategy games the player
also has to react in a certain way. Not every attack can be countered with the same type of units. In Puzzle games the player also uses a guided response. The player uses trial and error more in Puzzle games than in any other genre. The Adventure games have some resemblance to Shooters, RPG’s and Puzzle games for this part. So also there guided response is applied. In Simulation games often there is no clear end goal and the path to any end goal is totally free. So also here trial and error is used, but here it is in a way that the player tries something until he/she is happy about the outcome. In Action games no or very little guided response is applied. We used the term button bashing a couple of times, the player just has to press the right buttons at the right times. This is very basic compared to the aiming in Shooters for instance.

✓ Shooter
✓ Role Playing Game
✓ Strategy
✓ Puzzle
✓ Adventure
✓ Simulation
× Action

7.4 Mechanism
This is the intermediate stage in learning a complex skill. Learned responses have become habitual and the movements can be performed with some confidence and proficiency.

The key terms for this aspect of the taxonomy:

- Assembles
- Calibrates
- Constructs
- Displays
- Fixes
- Organizes

There are only three genres which incorporate Mechanisms. First we have the Strategy genre. When a base camp has to be built, the player has to do so every time he/she starts a new game. When the player found that constructing the buildings in a certain way (number and place) is very successful, the player will repeat that way of building every time. Second we have the Puzzle game genre. Solving puzzles successfully and quickly depends on developing mechanisms. A formula in math for instance is a mechanism to solve certain problems very easily. Third and last there is the Simulation genre. Let us again take a racing game as an example. The player develops mechanisms for racing as fast as possible. He/she does so by taking each turn in a specific way, braking and hitting
gas at approximately the same point in that turn. In Football games the player lets his/her team play in a specific system every time when it proves to be successful.

- Strategy
- Puzzle
- Simulation
- Shooter
- Role Playing Game
- Adventure
- Action

### 7.5 Complex overt response

The skillful performance of motor acts that involve complex movement patterns. Proficiency is indicated by a quick, accurate, and highly coordinated performance, requiring a minimum of energy. This category includes performing without hesitation, and automatic performance. For example, players often utter sounds of satisfaction or expletives as soon as they hit a tennis ball or throw a football, because they can tell by the feel of the act what the result will produce.

The same key words as Mechanism, but in an improved way.

The only genres which have elements of complex overt response are the Puzzle game genre and the Simulation game genre. In Puzzle games you train your cognitive skills and by doing so you become more efficient and effective in solving puzzles. In Simulation games the player becomes better at the simulated activity when he/she plays more. A simulation can be for practicing, so the responses become faster and better.

- Puzzle
- Simulation
- Shooter
- Role Playing Game
- Strategy
- Adventure
- Action

### 7.6 Adaptation

Skills are well developed and the individual can modify movement patterns to fit special requirements.

The key terms for this aspect of the taxonomy:
• Adapts
• Alters
• Changes
• Rearranges
• Reorganizes
• Revises

In only one genre can adaptation take place. In some Simulation games unexpected situations are programmed. The player has to deal with these situations and learns how to deal with these situations when they come up in real life. This is however not in every Simulation game.

✓ Simulation (only when unexpected situations are applied in the game)
  × Shooter
  × Role Playing Game
  × Strategy
  × Puzzle
  × Adventure
  × Action

7.7 Origination
Creating new movement patterns to fit a particular situation or specific problem. Learning outcomes emphasize creativity based upon highly developed skills.

The key terms for this aspect of the taxonomy:

• Arranges
• Builds
• Combines
• Composes
• Constructs
• Creates
• Designs
• Initiate
• Makes
• Originates

In none of the genres origination takes place.
7.8 Summary

Again when we put the results together in a table the result is Figure 7.

<table>
<thead>
<tr>
<th></th>
<th>Shooter</th>
<th>RPG</th>
<th>Strategy</th>
<th>Puzzle</th>
<th>Adventure</th>
<th>Simulation</th>
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Figure 7: Game genres and their psychomotor learning objectives
8. Validation

For the last part of the research I handed out a questionnaire on my old high school. Because elementary schools and high schools are seen as the basic education. However, for this research the level of education needed to provide meaningful answers is quite high, elementary schools are not suited for this research. That is why I chose a high school. Fourteen students filled in the questionnaire, eight women and six men. In the questionnaire I asked them to fill in the blank version of the matrix I constructed in chapter 4. It was also a good moment to take a look at gender differences.

8.1 Gender differences

This topic has not yet been mentioned in this paper. This is because gender differences are not very visible or important in my research, because this research is about defining genres and looking at the possible learning abilities of the different genres. This should be equal for both men and women. But is this the case? In this questionnaire it was possible to integrate a small research in gender differences quite easily. Let us first take a look at the differences in average time spent gaming each week.

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<th>Male</th>
<th>Female</th>
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<tr>
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<td>0 - 1 hours</td>
<td>0</td>
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<td>1 - 2 hours</td>
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<td>&gt; 4 hours</td>
<td>1</td>
<td>0</td>
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Figure 8: Amount of time spend on average gaming each week

As we can see in Figure 8 most of the women did not spend more than one hour on average gaming each week, while the diversity in amount of hours with men is bigger. Another thing that could be concluded from the questionnaire results was that most of the women participating only play Puzzle games. If we look at the results in terms of missed aspects in the genres, we can conclude that the amount of aspects women did not recognize in genres (in this case only the Puzzle genre) was about the same as the men did not recognize. The questionnaire however discovered a very critical point in the usability of this research. Earlier I claimed that the possible learning abilities of the different genres should be equal to both genders, but we now have the problem that women play far less games than men do and women play less different genres. So the question is if the results of this research matter for women, because they do not play as many games as men do and they play for less time. We could ask ourselves if girls would play more video games when it is proven they can help in the education of the girls. One
of the things that could be the reason for women less playing video games than men is the missing of elements from the affective domain. This is however just a hypothesis and has to be further researched.

8.2 Questionnaire results

We have to take in account the value of this questionnaire is limited, because of the participants seven people played Puzzle games, five people played Shooters and Simulation games, two people played RPG’s, Strategy games and Action games and only one person played Adventure games. However there were some obvious missed aspects with almost all the participants. In the Shooter genre the majority did not recognize the competition aspect. This is however not very important, because this aspect is only true when playing online. In the RPG genre they recognized almost all the aspects. In Strategy games the most important not recognized aspects were specialisation and process optimisation. In the Puzzle game genre some pretty shocking results were revealed. None of the participants recognized that Puzzle games can train your cognitive skills. Is this the case because they cannot or because the aspect was not clear to them? Furthermore most participants did not recognize there are certain rules the player must obey, they did not recognize the player has to repeat certain basic actions and last but not least, most people did not recognize the intellectual challenge. Also the aspect simple graphics was not recognized in some cases, but this aspect is also not very important because it cannot be linked to learning. In Adventure and Action games most of the aspects were recognized by the participants. In the Simulation genre more shocking results were revealed. The participants recognized a lot of aspects in Simulation games, but most of them did not recognize any of the three aspects the experts linked to Simulation games. Even the aspect simulating an activity was not recognized by four of the five people.
8.3 Critical note

According to the CBS (Central Bureau of Statistics in the Netherlands) there are around 950,000 high school students in the Netherlands. Let us take a look at the following formula which is for calculating the trial size for a certain population and error margin (http://marktonderzoek.punt.nl/?r=1&id=355720):

\[ n = \frac{N \cdot z^2 \cdot p(1-p)}{z^2 \cdot p(1-p) + (N-1) \cdot F^2} \]

\( n \) = the trial size
\( z = 1.96 \) (for 95% reliability rate)
\( N = 950,000 \) (the population size)
\( p = 0.5 \) (for 50% scatter)
\( F = 0.05 \) (for 5% error margin)

If we calculate \( n \) with the given values, the outcome is about 384 people. Our trial size was only 14 people. The error margin on \( n = 14 \) is about 26,19%. The questionnaire was however only meant as a way to get a first indication of the aspects the high school students can and cannot recognize in games. For further research it is important to have a trial size of around 384 people. In this research we have not looked at elementary school students which are around 1,500,000 in the Netherlands. This could also be included in future research.
9. Conclusion

9.1 How do experts define the different game genres?
In chapter 4 we have seen that the genres can be characterized by almost all unique aspects. In Figure 4 all the aspects and genres are put together in a matrix.

9.2 Which learning objectives can be linked with the aspects of the different game genres?
In chapter 5, 6 and 7 we tried to link learning objectives to the different game genres. Let us take a look at the possibilities per genre.

Shooter:

In the cognitive domain Shooter games appeared to be very strongly linked to the categories. Shooter games have elements of remembering, understanding, applying, analysing and evaluating in them. The only category that is not present is creating.

In the affective domain Shooters appear to be less linked with the categories. Only elements of receiving and responding are present, while valuing, organization and characterization are absent.

In the psychomotor domain some categories are present in Shooter games and some are not. Receiving, set and guided response are present. Complex overt response, adaptation and origination are not present.

Role Playing Game:

The same categories of the cognitive domain are present in RPG’s as in Shooters. Only creating is missing.

Compared to Shooters, RPG’s have one category more in the affective domain. While Shooters only incorporate receiving and responding, RPG’s also incorporate valuing. Organization and characterization are still missing.

In the psychomotor domain again the RPG genre and the Shooter genre share some resemblances since they both cover the same categories. Complex overt response, adaptation and origination are missing.

Strategy:

Strategy has elements of all the categories of the cognitive domain. As the word strategy already might imply, in Strategy games the player has to ‘use’ his or her brain a lot.
Strategy is the most successful genre in the affective domain, as it is the only one to incorporate all the categories.

In the affective domain Strategy games are not as successful in incorporating the categories as in the cognitive domain. Only elements of receiving and responding were found, thus valuing, organization and characterization are missing.

In the psychomotor domain Strategy games have elements of five out of seven categories in them. Only adaptation and origination are missing.

Puzzle:

As we might have guessed Puzzle games also have a lot of categories of the cognitive domain in the games, but not all. Creating is a missing element in Puzzle games.

In the affective domain the Puzzle game genre has elements of receiving, responding and valuing. Organization and characterization are missing.

In the psychomotor domain Puzzle games are also fairly successful, as they have elements of receiving, set, guided response, mechanism, complex overt response and adaptation. Only origination is not present.

Adventure:

Adventure games show elements of all the categories of the cognitive domain but one. Only creating, as by many genres, is missing.

In the affective domain Adventure games do not go further than the first three categories. Organization and characterization are not present.

In the psychomotor domain the Adventure game genre has elements of the first four categories. Complex overt response, adaptation and origination are not present.

Simulation:

The only category that is missing in the cognitive domain for Simulation games is understanding. Some might say of course understanding is part of Simulation games, but I ask you: “Do you understand how football works after playing Fifa?” or “Do you understand how to be a theme park manager after playing Rollercoaster Tycoon?”. My answer to those questions would be no, because the games are always a bit simplified from reality.

In the affective domain the Simulation game genre scores far less than in the previous one. Only signs of receiving are present, while all the other categories are missing.
In the psychomotor domain Simulation games however are the best. They incorporate all the categories. However, we have to point out that because the genre is very broad, this might not be true for all the Simulation games.

**Action:**

Some people call the way you play Action games ‘brainless button bashing’. Nonetheless we found signs of two categories present in the cognitive domain, namely remembering and applying. No signs of the other categories were found.

Not very surprisingly no signs whatsoever were found in the affective domain.

Elements of receiving and set are present in the Action games when talking about the psychomotor domain. The other categories are not present.

**9.3 Do the non-experts recognize all the aspects of the different game genres?**

In chapter 8 we looked into the ability to recognize all the aspects of game genres by high school students. Since this was a very small sample test, no real conclusion can be tied down on the results. What was a bit shocking was that aspects as ‘training the cognitive skills’ and ‘simulating an activity’ were not recognized by the high school students. Also a very important aspect as ‘process optimization’ was not recognized by some of the students, while this aspect is linked to a lot of learning objectives. Furthermore we found that girls in that classroom played very little video games. More research in these results is needed.

**9.4 Answer to the research question**

The research started with the question: ‘Which game genres can be distinguished and in which ways can they contribute to the learning process?’. Of course we will end with an answer. The game genres we distinguished were Shooter games, Role Playing Games, Strategy games, Puzzle games, Adventure games, Simulation games and Action games. When looking at the cognitive domain all the genres but the Action game genre had elements of most of the categories. Strategy games are the only games with all the elements. When we look at the affective domain, we see that the genres have very few to no elements of the categories. Role Playing Games, Puzzle games and Adventure games scored the best with three out of five. Last we have the psychomotor domain. The differences between the genres are a bit more visible in this domain. Action games scored the worst again. Simulation games score the best here with elements of all the seven categories present in most of the games. The Puzzle game genre is a good second with only origination missing. If we could convert the results into marks from zero to ten, the
results would be Figure 9. However we cannot really look at it this way. Because teachers might value one category more valuable than the other.

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<tr>
<th></th>
<th>Shooter</th>
<th>RPG</th>
<th>Strategy</th>
<th>Puzzle</th>
<th>Adventure</th>
<th>Simulation</th>
<th>Action</th>
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<tbody>
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<td>Cognitive domain</td>
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<td>10</td>
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<td>6</td>
<td>7</td>
<td>9</td>
<td>6</td>
<td>10</td>
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</tbody>
</table>

Figure 9: Scores for each genre in each domain

**9.5 Further research needed**

Because this is a bachelor thesis time was limited. However the results are promising for further research. New research should focus on the same parts as this research. First the genres and their aspects should be fine tuned. The input from the game industry is needed. Unfortunately I was not able to get input from them. The simulation genre could be split in sub genres, because the difference between these sub genres is far greater than the sub genres of the other genres. For the second part the links between the genres and the learning objectives should be discussed with educational and psychological professionals. The last part of the research should be resubmitted in greater numbers. I still think this research is worthwhile, because it could be a big step forward in using video games in education and maybe even adapting modern video games to education.
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Appendix

Survey on game genres (chapter 4)

Introduction

This survey is the first part of my research. I ask you to fill in this survey because in my opinion you are an expert in this area. I need some experts to define the genres to create a matrix to compare the different genres and their defined aspects. This result will be used in the other stages of my research. I will first introduce the genres I use in my research, followed by a short explanation of the genres, by giving examples of sub genres and famous games in that genre. After each explanation you can define that genre in as many aspects as you need.

Genres

Wikipedia gives the following definition of video game genres: “Video game genres are used to categorize video games based on their gameplay interaction rather than visual or narrative differences. A video game genre is defined by a set of gameplay challenges. They are classified independent of their setting or game-world content, unlike other works of fiction such as films or books.”

To create a list with all the main genres I did a literature study and looked at the categories game sellers use. After doing this I have come up with the following list:

- Shooter
- Role Playing Game (RPG)
- Strategy
- Puzzle (or Simple games)
- Adventure
- Simulation
- Action

First I will give examples of sub genres and some of the most famous games of the genres to give an idea which genre I have in mind when I talk about this genre. You can define the genre after each explanation of the genre.

Shooter

Sub genres: First Person Shooter, Third Person Shooter.

Famous games: the Call of Duty series, the Battlefield series, Doom, Half Life.

Definition Shooters
Shooter games are games which:

- Please fill in the aspects which characterize this genre.

**Role Playing Game**

Sub genres: Massive Multiplayer Online Role Playing Game (MMORPG).


**Definition Role Playing games**

RPG’s are games which:

- Please fill in the aspects which characterize this genre.

**Strategy**

Famous games: the Age of Empires series, the Command & Conquer series.

**Definition Strategy games**

Strategy games are games which:

- Please fill in the aspects which characterize this genre.

**Puzzle**

Famous games: Tetris, Mine sweeper.

**Definition Puzzle games**

Puzzle games are games which:

- Please fill in the aspects which characterize this genre.

**Adventure**

Famous games: the Tomb Raider series, the Legend of Zelda series.

**Definition Adventure games**

Adventure games are games which:

- Please fill in the aspects which characterize this genre.

**Simulation**

Sub genres: Sports Games, Manager games
Famous games: the Sims series, the Fifa series, RollerCoaster Tycoon, the Need for Speed series.

**Definition Simulation games**

Simulation games are games which:

- Please fill in the aspects which characterize this genre.

**Action**

Sub genres: Platform Games, Fighting Games.

Famous games: Pong, Pac-Man, the Super Mario series, Mortal Kombat.

**Definition Action games**

Action games are games which:

- Please fill in the aspects which characterize this genre.

**Peroration**

I would like to thank you very much for filling in this survey, as it helps me a great deal in my research. If you have any questions or remarks on this survey or my research, you can send an e-mail to jaspervanduijnhoven@student.ru.nl.
Enquête over video game genres (chapter 8)

Please note that this survey is in Dutch, because the participants were Dutch high school students.

Deze enquête gaat over genres in video games. Er bestaat vandaag de dag nog geen goede indeling van video games in genres. In deel 1 van mijn onderzoek probeer ik er een te maken. Ik heb zeven verschillende genres gevonden en aspecten van verschillende video games geanalyseerd. Deze zijn in de tabel op bladzijde 2 opgenomen. Ik zou het erg fijn vinden als jij deze aspecten met de genres wilt koppelen, zodat ik een betere beschrijving van de genres kan geven die voor iedereen hetzelfde is.

Zet telkens een kruisje in het vakje, als jij vindt dat het aspect bij het betreffende genre hoort. Doe dit alleen voor de genres waar je zelf ervaring mee hebt, dus waar je verschillende video games van gespeeld hebt. De namen van de genres waar je geen ervaring mee hebt mag je doorstrepen. Om je op weg te helpen zal ik eerst nog een aantal video games en subgenres geven per genre, om je een indruk te geven van de genres.

**Shooter**

Subgenres: First Person Shooter, Third Person Shooter.

Bekende video spellen: de Call of Duty serie, de Battlefield serie, Doom en Half Life.

**Role Playing Game**

Subgenres: Massive Multiplayer Online Role Playing Game (MMORPG).


**Strategy**

Bekende video spellen: de Age of Empires serie, de Command & Conquer serie.

**Puzzle**

Bekende video spellen: Tetris, Mine sweeper.

**Adventure**

Bekende video spellen: de Tomb Raider series, de Uncharted serie.

**Simulation**

Subgenres: Sports games, Manager games, Race games
Bekende video spellen: de Sims serie, de Fifa serie, RollerCoaster Tycoon, de Need for Speed serie.

**Action**

Subgenres: Platform games, Fighting games.


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<tr>
<th>Tabel</th>
<th>Shooter</th>
<th>RPG</th>
<th>Strategy</th>
<th>Puzzle</th>
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</table>
Wat is je geslacht? m / v

Hoeveel uur per week speel je games gemiddeld? ...... uur

Tot slot wil ik je hartelijk bedanken voor het invullen van deze enquête en het helpen van mij bij mijn onderzoek. Voor vragen of opmerkingen kun je mailen naar jaspervanduijnhoven@student.ru.nl