LICENCIATURA EN EDUCACIÓN CON ÉNFASIS EN INGLÉS

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2018

NOTA DE ACEPTACIÓN

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Dedicado a…

Nuestro Padre Celestial, por darnos la oportunidad de vivir, por estar con nosotras en cada paso que damos, por fortalecer nuestro corazón e iluminar nuestra mente sabiamente para alcanzar tan anhelado logro. A nuestros padres por su infinito apoyo perfectamente mantenido a través del tiempo. A nuestros amigos por confiar y alentarnos en este proceso.

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ABSTRACT

Based on the amount of research, nowadays the education seems not to be quite efficient for students in terms of the needs that students have in each particular context. This perception is not only related to the teaching methods used nor the content being taught in class but also to the fact that the teaching strategies might not be the most appropriate for the students' needs and wants. These two aspects are essential when designing or developing a syllabus in an institution, but unfortunately most stakeholders focus more on administration of non-educational elements such as incomes and management of the personal. When talking about needs and wants of the students, it is common to hear that videogames are one of the most recurrent answers from students as a way of learning English. Videogames is one of the most criticized ways of entertainment for students, especially for young learners because they are usually associated with distraction and waste of time. However it has been found that videogames can be also used as an educational tool. This is the main purpose of the following project, showing different cognitive and physical abilities that are developed through playing video games. This case study intends to describe and analyze different cognitive and physical abilities that gamers develop through this activity and how these abilities have allowed them to improve their in different aspects of their daily life. As a result, it has been proved that videogames are more than a simple distractor or entertainment gadget and that they can also be taken into account at the moment of promoting the physical and cognitive development in different types of population.

Key words: Video games, Cognitive skill, Physical skill, Achievements, Tool, Gamers.

INTRODUCTION

Nowadays, technology has impacted on people's life in such a way that it has become a need in most of the activities that human beings develop in their daily routine. About this asseveration, Prensky (2001) claims: "Today's students – K through college – represent the first generations to grow up with this new technology. They have spent their entire lives surrounded by and using computers, video games, digital music players, video cams, cell phones, and all the other toys and tools of the digital age"(p. 1).

Thus, education as a general manifestation on humankind cannot be taken apart of these impacts; specially children and teenagers, because they are very interested in those phenomena such as technology advances, video games, computers, and so on. They are very visual and kinesthetic, and technology offers what they usually are looking for, entertainment. It has been told that education system has been working in the same way for thousands of years, and as result education process is a quite difficult process in most of the schools nowadays; nonetheless, the problem is not about educators as it has been seen, the point is to focus on what motivates people meaningfully. Prensky (2001) maintains:

The basic human motivators to do anything are relatively few, and come down to essentially two categories. On the one hand are the proverbial "sticks" which are basically some form of fear. On the other hand are a variety of "carrots" including love,

greet, power, lust, anticipation, ego gratification, winning and pleasure or fun. All these are found in learning into varying degrees (P. 101).

So far, some possibilities that videogames offer in the educational field have been expressed by several authors such as Prensky (2001), who is the greatest exponent in favor of teaching through video games. Gee (2006), that says we should use the learning principles built into good video games in and out of schools even if we are not using games. Frasca (2015), who has talked in TED's conferences says how children and young learners can grow up the cognitive skill through simulations and the physical skill through speed games which involves physical capacity that allows us to perform movements and displacements in the shortest possible time. About this, Horacek, Scolari, Ferdig have explained the various elements contained in video games as interactive digital texts that contribute to changes in the process of learning. Now, in terms of cognitive skills as attention and problem solving, videogames are also a helpful resource, even with physical skills such as visual speed and visual short term memory. It was found that those skills, both cognitive and physical are related to the time devoted to playing videogames and the type of video games. Most of those authors agreed, specifically Peppler and Kafai (2007) on this idea of playing video games as a method of enhancement for young adults. Through a case study they illustrated how youth integrate computation and the arts into video game design practices, express personal interests, and shift participation over time within the video game design culture.

For instance, Gee (2005) explains the abilities that take place in a simulation or video game. On a simulation the player has to achieve different goals in the game. So, he

first should recognize problems and solve them. This may be called a pattern. He figures out the pattern that constitutes the simulation and how this works.

In order to recognize problems and solve them it is necessary to remember the situation, it is in that point when video games have a meaningful role; they make the player remember and apply what was played in a simulation. To make sure what people can achieve through playing video games, a group of teenagers has been the focus of study in this research project which is a case study. Through explanations, descriptions, some playing narrations and their own experience playing, the participants showed what abilities they have developed and how simulation has helped them to solve problems in real contexts.

The previous set of ideas allow us to present the goal of this exercise, which is focused on a group of young learners who have been playing the same video game for about one year, all of them are sixteen years old, they study at a bilingual school located in Cartagena de Indías, Colombia, they are tenth graders, their names are Diego, Oscar and Javier. Diego is a C1 certified speaker, his socioeconomic status is middle class, and he is a shy guy with a high interest in video games, rock music and science. Diego does not like to read, instead of reading he prefers to solve Math problems. Oscar is still studying English, he has grown up in a middle social class. He has been playing video games since he was 6 years old, he loves music and he is interested in music. Both of these young gamers are very smart and they keep good grades in their schools, they are tenth graders and they study at Beverly Hills School. Javier is a certified English speaker and English teacher; his socioeconomic status is middle class and he is interested in new

teaching practices. Diego and Javier play video games in English all the time even though their mother tongue is Spanish.

Even when there are many abilities to focus this project on, it will be developed on physical and cognitive skills. The horizon of this project is to describe how cognitive and physical skills are developed throughout the use of video games by a group of teenagers (case study group), with the purpose of determining the role of video games as tools for enhancing the processing of information, and how this enhancing can be applied in education. Once the situation is explained, the research question will be, how are cognitive and physical skills developed in a sample of three students through video games?

To begin this research exercise, it is necessary to define what cognitive and physical skills are. Michelon (2006) says that cognitive skills are the core skills your brain uses to think, read, learn, remember, reason, and pay attention. Working together, they take incoming information and move it into the bank of knowledge you use every day at school, at work, and in life.

In addition, Gilles (2015) argues that Cognitive skill development in children involves the progressive building of learning skills, such as attention, memory and thinking. These crucial skills enable children to process sensory information and eventually learn to evaluate, analyze, remember, make comparisons and understand cause and effect.

Correspondingly; regarding to Physical skill Pam (2013), defends that all the humans actions have to be coordinated in the brain so that they can be executed, which is the description of what a physical skill is. Working simultaneously, the perception,

attention, memory, motor skills, language, visual and spatial processing and executive function the physical skill takes places, showing up with the strength, resistance, speed and flexibility.

Considering this, the main objective of this research is to describe different cognitive and physical skills that have been developed in three students through playing video games. This description allowed us to determine the role of video games as tools for enhancing the processing of information, and how this enhancing can be applied in education. To achieve this objective, we have established three specific objectives: First, to contextualize the group's achievements in terms of physical and cognitive skills. Second, to characterize different ways to implement video games as a group's motivation to blossom the mentioned skills. Finally, to explain how the implementation of video games enhances physical and cognitive skills.

In this framework of ideas, the history of education can be brought up. The education's world was anchored to a world where information was not found, teenagers get bored with the education system, they are just waiting to get home and have some fun. Nowadays, information is in our hands, but even most schools do not notice and as a consequence of that we can observe bored children in the classroom while they have fun with the TV and internet, and at the same time parents and some school teachers claim that this is a waste of time.

Advantages are very relevant for those people who ignore the video game benefits. Bound to physical and cognitive skills, Frasca (2015) mentions how video games teach better than a school, and why does he affirm that? Foremost, he has conducted some inquiries and he has shown through an experiment how students are

motivated with only transcriptions of their linguistics text to the social network, resulting in an advance in reading comprehension and writing skills, which are one of the mainly perceptions based on cognition.

Have people noticed that children learn the most difficult things by playing? Frasca (2015) defends that children learn how to speak, how to control their body and how to socialize through games, and is it noticeable which skills are developed while this process is taking advantage. Instead of continuing that apocalyptic method, we might need to see what we are doing wrongly.

As a final matter, there are some inputs that according to Prensky (2001) video games engage:

Games are a form of fun. That gives us enjoyment and pleasure. Games are a form of play. That gives us intense and passionate involvement. Games have rules. That gives us a structure. Games have goals. That gives us motivation. Games are interactive. That gives us going. Games have outcomes and feedbacks. That gives us learning. Games are adaptive. That gives us flow. Games have win states. That gives us ego gratification. Games have conflicts/competition/challenge/opposition. That gives us adrenaline Games have problem solving. That sparks our creativity. Games have interaction. That gives us social groups. Games have presentations and social story. That gives us emotion. (p. 67).

After reading the meaningful video games advantages, there are some important inquires that some authors have researched commensurate with the skills development,

specifically cognitive and physical.One of the main exponents who has explored this topic has been Prensky, and his studies are currently meaningful to learn. In “Digital Native and Digital Immigrants” Prensky (2001) states: “today’s students think and process information fundamentally differently from their predecessors” (p.1). This means that predecessors can be in these campuses that are in charge of giving students the access to the knowledge. So, in others words predecessors are the facilitators in the classroom, and unfortunately many facilitators tend to have old teaching practices due to the way they have acquired their knowledge, what make student get bored about their learning process. Prensky (2001) affirms “Digital Immigrant teachers assume that learners are the same as they have always been, and that the same methods that worked for the teachers when they were students will work for their students now.”(p.3).

Gee (2005) claims that today’s average college students have spent less than 5,000 hours of their lives reading, but over 10,000 hours playing video games (not to mention 20,000 hours watching TV). Computer games, email, the Internet, cell phones and instant messaging are integral parts of their lives. So, according to the previously Gee’s concepts, what globalization brings us is a set of new discoveries that contain new technological advances; obviously children are not apart to this. Actually, they consume more technological products than any adult, in a certain way they handle them better. In that way, why schools are still engaged in giving content through apocalyptic methods when it is now that students require content according to their needs. Their need is to learn, children always want to learn and the best way is to use what they like. That is why Prensky (2003) claims that the reason why kids spend a lot of time on the devices is because of learning. They are learning new things.

Almost all predecessors think that video games, computers, cartoons are a waste of time. Prensky (2001) states “Digital Immigrants don’t believe their students can learn successfully while watching TV or listening to music, because they (the Immigrants) can’t. Of course not – they didn’t practice this skill constantly for all of their formative years. Digital Immigrants think learning can’t (or shouldn’t) be fun” (p.3). If we look around and see the students’ attitude in front of the school and students’ attitude toward video games or computer we will see a huge difference. In “Don’t Bother Me Mom-I’m Learning”, Prensky (2003) explains that children are always asking about new games, about a new computer that is in the market and as adults we just think when they are going to stop asking for that instead of re-think that they learn through it, consequently, in this stage is when adults, especially parents, need to redirect what kids want and give them a guide to follow about how they are able to learn through all of this new gadgets, as a result they start a metacognition process on their favorite activities. “Kids ought to be playing these games and you ought to be encouraging them (within limits, of course) to play! Why? Because they are learning! Not only that, but almost all their learning is positive.” (Prensky, 2003, p. 2).

In addition, Gee (2005) another video games’ interpreter that has worked with literacy, has conducted some inquires about why video games are not a waste of time while at the same time he tries to make clear that conception that people have about playing video games is learning a new literacy. Gee (2005) affirms that “video games actually externalize the way in which the human mind works and thinks in a better fashion than any other technology we have”.(p.6) Indeed, video games have some

factors such as simulations that make feel the reality and understand it. It makes sense of things, but also to help you prepare for action in the world.

Looking deeper on which is the cognitive development growth, Gee (2005) talks about specific points where is the cognitive process taking place:

Consider simulations in science, say a digital simulation of an electromagnetic field, a solar system, or an ecological system. Sometimes scientists use such simulations to test hypotheses. But very often they use them to examine systems that are so complex that it is hard to make specific predictions about outcomes ahead of time (take weather for example). In this case, they design these simulations ("virtual worlds"), "run them" (i.e., let many variables interact across time), and see what happens.(p.1).

On the other hand, Ferdig (2008) talks about some mechanics, dynamics and strategies that were designed with the intention to strengthen the student's ability to solve problems in a real context, according with his conception a video game gives emotional responses when the gamers are playing; the desire of creating, designing and producing starts growing on them, Thus, while playing they get experience in order to address the needs that are required to read and write what reflects the inherently interactive process of game learning.

CHAPTER I: METHODOLOGY

This research is focused on the case study approach, based on what Cassell (2004) argued, a case study "consists of a detailed investigation, often with data collected over a period of time, of phenomena, within their context. The aim is to provide an analysis of the context and processes which illuminate the theoretical issues being studied" (p.323). This research strategy has been chosen due to ease to use

different data sources, it gives the research a possibility of being attached to a specific type of resource, it allows wide options of analysis which is good for this kind of study, moreover, Mackey and Gass (2005) say that a case study allows researchers to focus on each participant from the focus group as a particular which is not very common in a group research, in this case the focus group is composed by three participants which increases the possibilities of describing individual process and developments.

Besides the all explained above, case study strategy offers a variety of possibilities to answer the research question, in this case it is a qualitative research method in which researchers are focused on analyzing multiple abilities that gamers can develop through playing time. As Starman (2013) confirmed "qualitative research is characterized by an interpretative paradigm, which emphasizes subjective experiences and the meanings they have for an individual, therefore, the subjective views of a researcher on a particular situation play a vital part in the study results." (p.30). That is the reason why qualitative research contains properly opinions given by researchers and participants from the focus group caused by the analysis of the different situations around a specific phenomenon. Furthermore, Cressell (2014) considered qualitative approach from the constructivist worldview as a quite open opportunity to seek and listen to what each participant say about their backgrounds and actual interpretations of the situation under review; connecting researchers´ experiences, cultural and historical backgrounds with their analysis of what they get from the participants, from then on investigators start including themselves into the study in order to interpret the results better. This study planned on collecting experiences from the gamers in the group studied, so, based on what it has been already explained applying interviews may give the possible answer for the first specific objective which is to contextualize the different

skills that they have developed through playing video games. This first interview may also include various questions directed to help us understand how these gamers learn from playing video games.

These first part of the interviews (see appendix A) are composed by 10 questions, two yes/no questions and eight open ones, all of them related to their experiences playing video games; interviews where they are able to explain why videogames have been a motivator and a key tool for them in the process of developing physical and cognitive skills, they also provide their experiences while playing; Mackey and Gass (2005) confirmed undoubtedly "Interviews can allow researchers to investigate phenomena that are not directly observable, such as learners' self-reported perceptions or attitudes" (p. 225). Four main questions were asked in the interview, all of them related to the skills that they have developed; finally, observation, it is the last technique to provide a description of how videogames have become an important tool at the time of developing physical and cognitive skills. Most of the time observation is related to a method in which researchers immerse themselves into the context under investigation, interacting, observing, describing and taking part of different moments during the process; so that researchers collect contrasting or similar results through these strategies. (as cited in Mackey and Gass, 2005). So this supports the idea of being emerged in the context through observing the group carefully while they do what they love to. In addition, they are also asked about the current educational system and how it has not been enough for all the challenges that young people have nowadays, these teenagers gave their opinions about how playing video games is a helpful resource in education..

In the previous section, there is a brief description of the group, they are three tenth graders at a bilingual school, all of them have studied English for about 9 years so

they are able to play video games in English, just one of them is a certified C1 English speaker; in terms of personality, these two teenagers are shy and they claim that is not easy for them to talk to people easily, so they assume that their favorite topic to start a conversation is talking about games and strategies to earn different things in a virtual reality. They also confirm that all of their close friends are related to videogames, they met each other through talking about games; based on these affirmations it is pertinent to say that videogames is their lifestyle; it has been a possibility to go beyond their own social limits.

They have been playing the same video game since 2015, but before they used to play different ones so that they are gamers since they were very young children, for these three years they have been playing LoL (League of Legends) which is a MOBA (Multiplayer Online Battle Arena) game, basically this game is a competition between two teams in a battle arena, this is about showing their talents and expertise in their different abilities, it proposes different categories for each member of the team, each team and gamer has its own play style and they can use it based on the battles needs.

The game also provides different games a mode; which is the possibility of changing the main objective of the game or playing with an unequal number of players in each team, however all of those changes should be an agreement between the teams, therefore the way the gamers play each battle is a decision made by the two teams. To conclude, this study is not focused on a specific video game but on the abilities they have developed through them, evidently it is necessary to analyze the types of video games and the abilities that they relate to each one, therefore surveys contain some specific questions about the type of video games they prefer and why.

CHAPTER II: RESULTS

SURVEYS

Once the surveys were applied, it was notorious how the group has learned by playing. To begin, the survey was designed with open questions in which students have to discuss and give their own point of view about video games and education system. All of the questions can be found in the appendix A.

With the answer of each question we can now see what the general result was for each one. In the question number one they were asked about why do they like video games? Different perceptions were presented While Diego has fun, Oscar tries to escape from the reality and Javier likes them because they're an engaging activity to spend his free time and because they can teach him a lot of things.

Question number two refers to how long they have been playing video games. Two of them said that they play since they have memory, while the other plays since 6 years old. It was appropriate to know what kinds of video games do they like and why? This corresponds to question number three. In this question they had different points of view that are related to their own interests. In Diego's case he plays strategy games, because they are a challenge to him and he likes challenges. On the other hand Oscar says that every rated with "Teen" or superior, because he is a teen, so he needs games according to his brain age, and finally Javier racing and sports because they can simulate real-life situations to the point of teaching us.

According to the question number four, that was made to know if they think that they learn from video games, they all agreed on the fact that video games without a doubt are important source of creativity that expand the human brain to new

frontiers. Regarding to the previous answer, the idea was to know what they learn from video games, which is question number five. Here there are different ideas that show different ways to acquire knowledge. Diego mentioned that it depends on the kind of video game, sometimes they increase his knowledge and sometimes they just sharp his mind. Oscar just said that he learned how to keep going instead of giving up easily and Javier thinks that he mostly learns general knowledge (or facts), languages and bring him closer to other cultures.

The sixth question wants to show if they feel they have developed some skills playing and which video games have had greater impact in terms of developing skills. While Diego said that playing increase his mental agility, Oscar said that driving is increased and Javier improves his synchronization, coordination and prediction.

Question number seven is about how they relate those teachings to reality. Different opinions were shown in this question. Diego talked about comparing those (teachings) with any problem, and to build up strategies to solve them up. Oscar continues talking about his driving abilities, he learned the basic things, and finally Javier mentioned an example on how to change his relation between reality and the moment when he plays, he said: “For example, racing simulators, like Gran Turismo, have taught me to be more attentive when I’m driving. Guitar Hero taught me to pay closer attention to the rhythm of a song when playing the guitar. Sport video games have helped me to predict certain plays and to react accordingly.”

In question number eight different points of view were seen. According to the question “What do you think about the current educational system?” While Oscar does

not have any complain to the educational system, Diego claimed that is it completely wrong, and Javier says: “I think there’s a large gap between the public and the private sectors in education. Public education has improved these last few years, but there are still political, social and economic circumstances that do not let public education produce good results.”

The ninth question refers to the idea of how important is for them that video games would be taken into consideration as useful teaching materials. Results showed different perceptions, for Diego was an emphatic yes, in the case of Oscar, he was in complete denial, and finally Javier was divided between these two possibilities. However, perceptions were different.

Finally, question number ten mentions if they consider that video games are suitable to everyone. The answer in this survey question was a confident yes with a favorable invitation to everyone to play video games.

In general terms, our questioning of the participants showed how involved they are when recognizing the fact that video games are helpful in developing certain areas of the brain, and also they a form of enhancing various aspects of life, specially the part related to emotions and the control of them. They are completely happy, they enjoy that moment in which they can be disconnected from reality but at the same time, unconsciously they are learning.

It was meaningful the notorious way in which they develop other types of skills such as deciphering codes that concern the game itself that, understands what is called a non-

linguistic text, in which are non-literal messages that are made to develop the process of reading comprehension that is highly related to the cognitive.

INTERVIEWS

Once the surveys interventions were done, and after observing them playing, an oral interview was applied to this group of 3 students, aiming to identify the students' perceptions about the abilities developed by playing. Regarding to question number one, "why do you consider that videogames have contributed to your growth process?" All agree that video games provide happiness and entertainment.

The second question mentions what kind of skills have they been able to improve or acquire from playing video games constantly? Both of them (Oscar and Javier) said driving skills, while Diego claimed that he has improved his mental ability.

Question number four refers to if they would like to be able to share their learning experiences from video games in the classroom. In this one, they all said that it would be a an interesting experience, but with different perceptions such as "Yes, because I believe that video games are an excellent and innovative way of teaching (at least for children), since they can be used for any subject and every child likes video games" by Diego Guerrero, "Sharing this type of knowledge with children can be quite constructive since video games are a very good way to instruct them, but in this way they may investigate a little further and discover games that they should not know about, so in a certain way it is also a good idea but if done with control" by Oscar Figueroa, and finally Javier's perception is "yes because it could contribute to the processes of other gamers" (see appendix B)

In the last question they were asked about the time when they start playing, if they consider that it helped them in their development process or did they just do it for fun. All students agreed on the point that at the beginning they just played to have fun, but now that they feel older, they say that video games provide happiness and that mood helps people to act effectively, which will help humans to develop better.

Last of all, interviews have showed how it is possible to develop many abilities by playing. Each activity that human beings do is connected to coordinate our thoughts in order to do it correctly, consequently it is there where the cognitive and physical abilities take place, they are based on how humans understand the world and how they act in it using the fundamentals abilities that take part of every human action while we are awake, as Michelon said (2006) to do it accurately and effectively.

OBSERVATION

The last technique that has been used to describe how cognitive and physical skills are developed in a sample of three students through video games is observation, where a video is filmed while students are playing and at the same time they are giving some contributions about that they develop while playing and how. This information can be found in appendix 3.

Now, regarding to the video that has been filmed, the paper writers give their point of view about the abilities that as gamers they have developed as well. María Teresa and María Carolina claim that through playing their visual speed have increased, which have been a relevant aspect in their campus due to it have helped them to remember things precisely. There is one of the students gamer (Diego Guerrero) that mentions an important affective part. He says that he has felt pleasure by playing, which contributes to make a

passionate involvement in his life. This point of view is similar to that defended by Frasca (2000), who states that during the experience playing bonds of affection with the characters are created, since these generate triumphs or defeats and although it is something that goes beyond a simple game because they increase the level of confidence in the player. Diego also disagrees with the idea that video games are a distraction for learning, the positive effects that they bring have not been thought, on the contrary, these can be used to facilitate learning and improve the skills of a person. He states that each time playing he opens his mind to new options and strategies and it helps him to exercise his brain.

Oscar and Javier (the ones that do not appear because personal reasons) while the time previous to the video recorder, they asseverate to adapt to the rules make feel them aware to the current society rules, also mention that feedback given by the video game, provide them learning.

According the proper case study group, these were their contributions talking about the developed abilities. And finally, there is one case from apart from the case study that wanted to give his personal point of view if front of video games. He is German Barrios, a video game player from he has memory, he is 27 years old, he is a current civil engineer that has used video games a complete tool to learn and also work. For him, videogames are a tool useful for studying, because in addition to being an engineer he creates stories and each of the video games has a story that is told and so it interacts directly in it.

He defends that he has developed problem solving ability, which is the main step in their work, it is actually what he has to face day by day, so problem solving has gave him the necessary creativity to apply to his necessities at work. Besides, about the emotional part, he said that he makes a connection with the cartoons and it allows interaction with different social groups.

CHAPTER III: DISCUSSION

As it is mentioned in the results, the data shows positive effects in the learning process. Analyzing deeply the students' needs and what they learned, it showed that video games are a fundamental tool to motivate students; it was something that was perceived while they were playing. The way they do is surprising, that is, they are engaged in the process. If the schools would have seen only the motivation that they have when they are playing, they would change a lot of methodological strategies that they have for their educational practices. Also, the affective or emotional part was taken into consideration by the students, they mentioned that by playing they can be "outside" this world where they can achieve easily their goals, they basically generate a special identity in which they are empowered beings, capable of greater things. They encounter no restrictions when it comes to adapting to new scenarios with ever changing rules. They also mentioned that in the digital environment they suffer no discrimination, there is no envy, no hate crimes, and other violent signs as we learned to recognize in life. Even when they have to adapt to the games' rules, they are conscious about that process, the one mentioned by Gee in his book, Learning and Games (2008):

Video games like those I have just mentioned are designed to set up certain goals for players, but often leave players free to achieve these goals in their own ways. The game may also allow players to construct their own goals, but only within the rule-space designed into the game (e.g., you can interact with enemies in different ways in Thief, but robust hand-to-hand combat is not one of them). Level design ensures that players

get lots of practice applying what they have learned earlier both in similar situations (within a level) and in somewhat less similar situations (across levels). (p. 24).

Throughout the investigation, several discussion questions were asked, and we observed that students participated more and gave more accurate answers when the discussion questions covered certain features. Students expressed the freedom that they feel playing, although they have rules, but it is the game itself, which invites them to reach those goals. Now, talking about skills, many of them are developed playing, finally that is the way children learn, by playing, take, for example, Frasca (2001) says in relation to the way human beings learn, he states that the most complicated action in learning something are done by playing, by simulation scenarios, the case of airplane pilots. They learn in simulators that are basically video games that present different variables and pilots must face challenging situations in order to complete a stage, a flight. So, considering that, schools must include those elements that video games have created and use them as elements to enhance the process of education.

No sooner, when some of the students present no complains about the education system, Javier Cataño (a gamer) claims that it will be better if these techniques were applied. They also consider that not only at schools can be used video games; everyone can play because video games are adaptable.

In this field, there is one exponent who tries to let educators know how it is possible to build “informal learning to develop traditional academic learning” Ferdig (2008) claims that in order to know enroll students’ knowledge, educators or predecessor as Prensky says, it is necessary to know also their cultural activities which is going to be a pillar to encourage effective learning. Fredig (2008) states “When it comes to learning,

connecting to prior knowledge is essential." (p.9). It means that education system must be built upon students' strengths and interests.

The same point of view is defended by Scolari, who has shown some positive video games effects. In his book "Homo Videoludens 2.0" Scolari (2013) talks about ludology and video games semiotics. Scolari (2013) affirms that currently "the question is no longer what place occupy the video games in our culture; the question is that our culture, in a very broad sense, has become ludic "(p.22). And well, as it has been observed by the different techniques applied, ludic is what move children's learning, as an example, Scolari (2013) mentions how narrative sense is developed through games. As narrators people experiment that feeling of being the main character in which they may vary the course of the events of their history, and in the games; the gamers experiment in a direct way the immersion in a story that they, through their decisions and actions, contribute to develop, so they become protagonists and agents of every action.

Formerly evidence has been explained so that, the research question must be answered and the approach justified. Going back to the research question, it has been shown that these samples of three students confirm the development of different cognitive and physical skills through playing video games; consequently they confirm that a day has not passed since they started playing video games in which they have not learned new strategies. As they mentioned in the survey, when they started playing games they were not aware of learning content or the possibilities that the game offered, they were just playing for fun; however as time passed by, they realized that somehow

unconsciously they became empowered learners with a set of skills which allow them to perceive reality in new way.

In other matters; as it was provided in the introduction, this project proposal was to promote the use of video games as tools for enhancing the processing of information, and how this enhancing can be applied in the education field. By the meaning of this proposal, the objective has been observed and now is time to show if it was achieved. Above all, the idea was to describe how were cognitive and physical skills developed through video games, so, once the students have shown their high interest playing and we have supported our inquiries in others authors, it is precise to mention that cognitive and physical skills were highly developed by the students.

According to the results students developed visual speed which is extremely connected with physical skill, which refers us to what Michelon mentions that physical skill is the ability to act accurately and effectively. The abilities that were analyzed according to the first objective are based on how humans understand the world and how they act in it using the fundamentals abilities that take part of every human action while we are awake.

Bringing up our first step to achieve this research was necessary to contextualize the group's achievements in terms of physical and cognitive skills. They have reached what is decoding; they have developed the ability to understand non-linguistic texts, and as the surveys and interview showed, they have acquired abilities about how to drive a vehicle through a simulator, in the Gran Turismo case, a video game whose essential axis is the driving and the feeling of reality that the game transmits, the level of immersion achieved with the graphics. This makes the student or the players in general feel like they are driving a real vehicle. He also claimed that his driving skills improved thanks to the possibility of reacting and his visual speed.

The second objective refers to characterize different ways to implement video games as a group's motivation to blossom the mentioned skills. It is known that children learn by playing, and everybody prefers to learn things in funny environments or using dynamics tools. In this field, there are two concepts that to characterize the cognitive and physical skills were taken into account, these are "legacy"; this is regarding to all the concepts that have the traditional curriculum such as: writing, arithmetic, logical thinking and so on; and "future" that is not more than content given in technological aspects. Prensky (2001) says "The first involves a major translation and change of methodology; the second involves all that PLUS new content and thinking" (p.4).

Prensky (2001) mentions in Digital Games Based Learning that through potential learning motivators, such as self-motivation through the content, fears as an important motivator, to get people approbations', greed, power, lust and self-actualization the misconception about video games being a waste of time can be dismissed, and a new door is opened to a different perception in which digital interactive narratives (video games) can be and must be implemented to develop cognitive and physical skills.

And finally the last step to achieve the objectives attributes to how the implementation of video games enhances physical and cognitive skill. Frasca (2012) talks about something that promotes creation, creativity and design, the new future is about creativity, finding multiple solutions to problems, so video games to educational system is not an inclination; it is the path that has the brain to learn effectively and happily. Solving problems with multiple solutions is achieved by children or teenagers with the identification and concentrating on the most important things and filter out the rest.

To sum up, bringing video games to educational system has implications related to new proposals and techniques for teaching and learning processes at schools; these new

strategies give students the possibility of saying what they think and doing what they like to do while they learn what they supposed to learn at the different grades and courses, not only about science, math and other subjects but also related to their daily life, the applicable things for life. As it was said in previous pages, education is stagnant in the same old teaching practices, and students are the victims of this crumbling system. But one video games exponent gives us enlightening information to think about the new future and the current interests that have become necessities. Ferdig (2008) tries to let educators clear how is possible to build their currents teaching practices upon the students' needs, interest and strengths.

REFERENCES

Barbero, J. (2004, December 5). *Los jóvenes siguen queriendo ser ciudadanos, pero de otro planeta.* [Video]. Retrieved from https://www.youtube.com/watch?v=cbnmVdvwSHvEob0

Cassel, C., Symon, G. (2004). *Essential Guide to Qualitative Methods in Organizational Research.* London: Sage.

Dubbels, B. (2009). Video Games, Reading, and Transmedial Comprehension. In R. Ferdig, K. Kinger (cords.), *Handbook of Research on Effective Electronic Gaming in Education* (251-276). New York: Information Science Reference.

Ferdig, M. (2008). The Relevance of Prior Knowledge in Learning and Instructional Design. *American Journal of Phamaceutical Education*, *72*, 1-8. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2630138/

Frasca, G. (2001). *Video Games of the Oppressed: Video Games as a Means for Critical Thinking and Debate* (Master Degree). Georgia Institute of Techonology, United States.

Frasca, G. (2012, June, 30). *Los videojuegos enseñan mejor que la escuela.* [Video]. Retrieved from https://www.youtube.com/watch?v=TbTm1Lkm18o&t=300s

Frasca, G. (2015, September, 24). *Los videos juegos son un canon laser cargado de futuro para la educación.* [Video]. Retrieved from https://www.youtube.com/watch?v=TYhSJp1mzAo

Frasca, G.(2001). Rethinking Agency and Inmersion: Video Games as a Means of Consciousnes-Raising. *Digital Creativity 12*, 167-174. Retrieved from https://www.tandfonline.com/doi/abs/10.1076/digc.12.3.167.3225

Gee, J. (2003). *What Video Games Have to Teach us about Learning and Literacy.* New York: Palgrave MacMillan

Gee, J. (2006). Are Video Games Good for Learning. *Nordic Journal of Literacy*, *1*, 172-183. Retrieved from https://www.idunn.no/dk/2006/03/are_video_games_good_for_learning

Gee, J. (2008). Learning and Games. In K. Salen (Ed.), *The Ecology Games: Connecting Youth, Games, and learning* (21-40). Massachusetts: Creative Common Attribution.

Michelon, P. (2006, December, 16). What are Cognitives Abilities and Skills, and How to Boots Them? [blog]. Retrieved from https://sharpbrains.com/blog/2006/12/18/what-are-cognitive-abilities/

Peppler, K., Kafai, Y. (2007). What Videogame Making Can Teach us about Literacy and Learning: Alternative Pathwaysinto Participatory Culture. *DiGra, 1,* 369-376. Retrieved from https://www.researchgate.net/publication/228986212_What_videogame_making_can_teach_us_about_literacy_and_learning_Alternative_pathways_into_participatory_culture

Prensky, M. (2001). Digital Natives, Digital Inmigrants part 1. *On the Horizon 9*, 1-6. Retrieved from https://www.marcprensky.com/writing/Prensky%20%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf

Prensky, M. (2001). The Digital Game-Based Learning revolution. In M. Reed (Ed.), *Digital Game- Based learning* (9-33)- Minessota: McGrah Hill

Prensky, M. (2001). The Games Generations: How Learners Have Changed. In M. Reed (Ed.), *Digital Game- Based Learning* (35-68). Minessota: McGraw- Hill

Prensky, M. (2003). *Don´t Bother me, Mom- I´m learning.* (1.°ed.). Minnesota: Paragon House.

Scolari, C. (2013). *Homo* Videoludens 2.0: *De Pacman a la Gamification* (2nd ed.). Barcelona: Universidad Mayor de chile, Laboratori de Mitians Interactius.

Starman, A. (2013). The case study as a type of qualitative research. *Journal of Comtemporary Educational Studies 1* 28-43 Retrieved from https://www.researchgate.net/publication/265682891_The_case_study_as_a_type_of_qualitative_research.

Zyda, M. (2005). From Visual Simulation to Virtual Reality to Games. *Digital Library, 38,* 25-32 Retrieved from https://dl.acm.org/citation.cfm?id=1092260

APPENDICES

APPENDIX A

STUDENTS SURVEYS

Diego Guerrero

1. **Why do you like video games?** (¿Por qué te gustan los videos juegos?)

Because I think they are the way to escape from this world to one in which you can do anything you want, besides they are entertaining.

2. **How long have you been playing video games?** (¿Cuánto tiempo has estado jugado video juegos?)

I have been playing video games since I have memory.

3. **What kinds of video games do you like and why?** (¿Qué tipo de videojuegos te gustan y por qué?)

Strategy ones, because they are a challenge to me and I like challenges.

4. **Do you think that you learn from video games?** (¿Crees que aprendes de los videojuegos?)

   a. **Yes (SI)** b. No (NO)

5. **What do you learn?** (¿Qué aprendes?)

It depends on the kind of video game, sometimes I they increase my knowledge and sometimes they just sharp my mind.

6. **Have you developed some skills playing? Which ones?** (¿Has desarrollado alguna habilidad jugando?¿Cuáles?

Yes, I think I mostly improved my mental agility.

7. **How do you relate those teachings to the reality?** (¿Cómo relacionas esas enseñanzas a la realidad?)

I compare them with any problem; I build up strategies to solve them up.

8. **What do you think about the current educational system**? (¿Qué piensas del actual sistema educativo?)

It is wrong, because now days a student's preoccupation is to graduate, they have forgotten that the important thing is to learn.

9. **Is it important for you that in the teaching practices take into account those kinds of tools as video games are? Why?** (¿Es importante para ti que en las prácticas de enseñanzas se tome en cuenta aquellos tipos de herramientas como son los videojuegos?)

It is, because people like video games and teaching with video games would make the students get interested in what they are learning and, because of that, they would actually learn.

10. **In your playing experience, do you consider that video games are adaptable to everyone? Why?** (En tu experiencia jugando, ¿consideras que los videojuegos son adaptables para todo el mundo?)

Yes, because there are all kinds of video games made up for everyone to enjoy, from home activities to alien invasions.

Oscar Figueroa

1. **Why do you like video games?** (¿Por qué te gustan los videojuegos?)

I play video games in order to have a fun time.

2. **How long have you been playing video games?** (¿Cuánto tiempo has estado jugando video juegos?)

I´ve been playing since I was 6

3. **What kinds of video games do you like and why?** (¿Qué tipo de videojuegos te gustan y por qué?)

Every rated with "Teen" or superior, because I´m a teen, so I need games according to my brain age

4. **Do you think that you learn from video games?** (¿Crees que aprendes de los videosjuegos?)
   b. **Yes (SI)** b. No (NO)

5. **What do you learn?** (¿Qué aprendes?)

Don´t give up easily

6. **Have you develop some skill playing? Which ones?** (¿Has desarrollado alguna habilidad jugando?¿Cuáles?

Driving

7. **How do you relate those teachings to the reality?** (¿Cómo relacionas esas enseñanzas a la realidad?)

I´ve learned the basics of driving. Now it´s not that difficult to drive

8. **What do you think about the current educational system**? (¿Qué piensas del actual sistema educativo?)

I don't complain

9. **Is it important for you that in the teaching practices take into account those kinds of tools as video games are? Why?** (¿Es importante para ti que en las prácticas de enseñanzas se tome en cuenta aquellos tipos de herramientas como son los videos juegos?)

It´s not important, but the use videogames would help a lot for the children´s education

10. **In your playing experience, do you consider that video games are adaptable to everyone? Why?** (En tu experiencia jugando, ¿consideras que los video juegos son adaptables para todo el mundo?)

There are videogames for everyone, of course they are adaptable

Javier Cataño

1. **Why do you like video games?** (¿Por qué te gustan el video juegos?)

I like video games because they're an engaging activity to spend my free time and because they can teach me a lot of things

2. **How long have you been playing video games?** (¿Cuánto tiempo has estado jugado video juegos?)

I have been playing video games since I was about six or seven years old.

3. **What kinds of video games do you like and why?** (¿Qué tipo de video juegos te gustan y por qué?)

I like racing and sport games (and a few adventure games, too). I like those kinds of games because they can simulate real-life situations to the point of teaching us (the players) actual, real-life knowledge.

4. **Do you think that you learn from video games?** (¿Crees que aprendes de los videos juegos?)
   a. Yes (SI) b. No (NO)

   YES

5. **What do you learn?** (¿Qué aprendes?)

I think you mostly learn general knowledge (or facts). For example, most history video games are accurate in terms of places and dates. Age of Empires is a good example of that. Racing video games teach you about cars and sport video games teach you about a certain sport and its players.Video games also can also teach the players other languages and bring them closer to other cultures, and they often do so implicitly.

6. **Have you develop some skill playing? Which ones?** (¿Has desarrollado alguna habilidad jugando?¿Cuáles?

Yes, I have, but I wouldn't call them skills exactly. I would say video games have helped me to improve already existing skills such as synchronization, coordination and prediction.

7. **How do you relate those learnings to the reality?** (¿Cómo relacionas esas enseñanzas a la realidad?)

For example, racing simulators, like Gran Turismo, have taught me to be more attentive when I'm driving. Guitar Hero taught me to pay closer attention to the rhythm of a song when playing the guitar. Sport video games have helped me to predict certain plays and to react accordingly.

8. **What do you think about the current educational system**? (¿Qué piensas del actual sistema educativo?)

I think there's a large gap between the public and the private sectors in education. Public education has improved these last few years, but there are still political, social and economic circumstances that don't let public education produce good results.

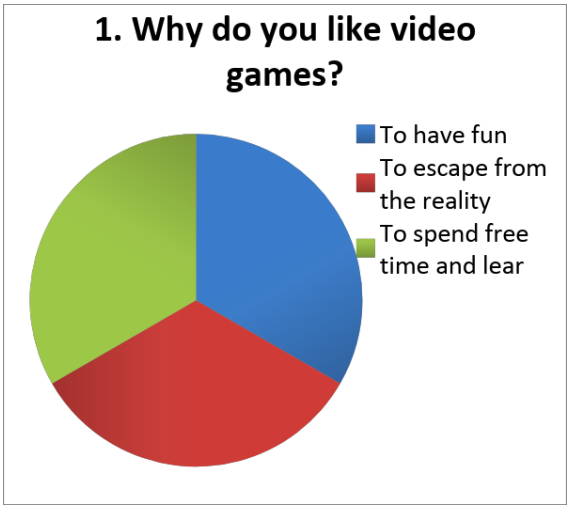
9. **Is it important for you that in the teaching practices take into account those kinds of tools as video games are? Why?** (¿Es importante para ti que en las prácticas de enseñanzas se tome en cuenta aquellos tipos de herramientas como son los videos juegos?)

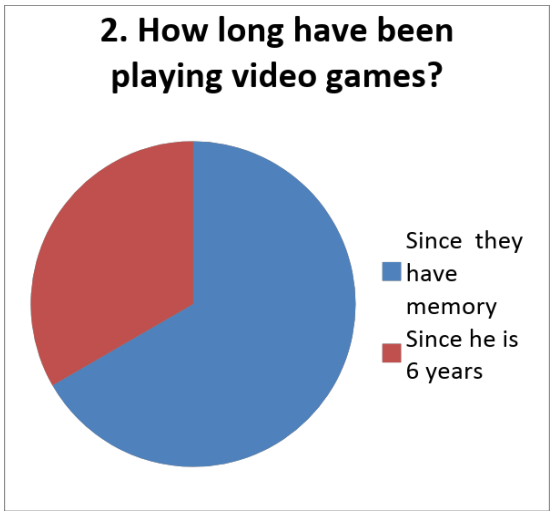
I think they could be a great tool and a fun way to present and review topics in different subjects, as long as it is done with thorough planning. Video games could become just another way of killing teaching time if they're not used correctly. So yes, if they serve a meaningful teaching purpose, then video games are an important tool and should be used in class.

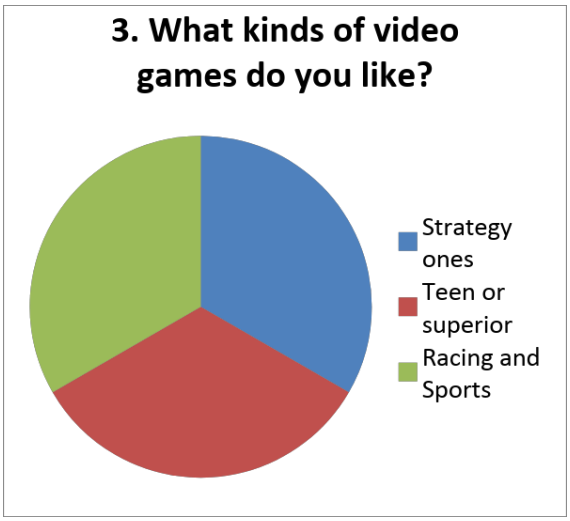
10. **In your playing experience, do you consider that video games are adaptable to everyone? Why?** (En tu experiencia jugando, ¿consideras que los video juegos son adaptables para todo el mundo?)

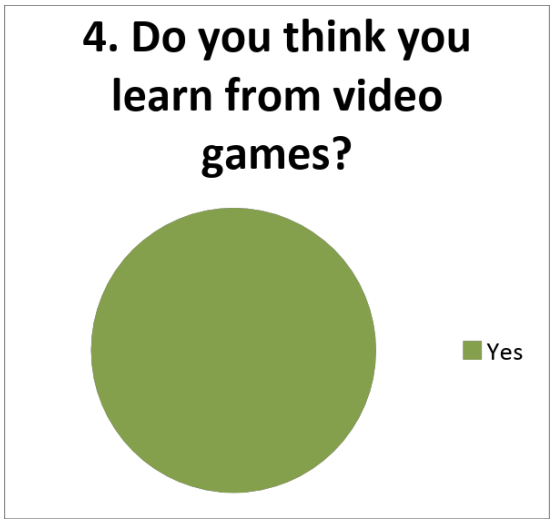
Yes (the choices for all ages are many), but I don't think everybody is willing to give video games a try due to everybody's personal circumstances. I think there's a video game for every type of person, and people should be encouraged to see them as something they could benefit from by more than just killing time. There are definitely worse kinds of entertainment.

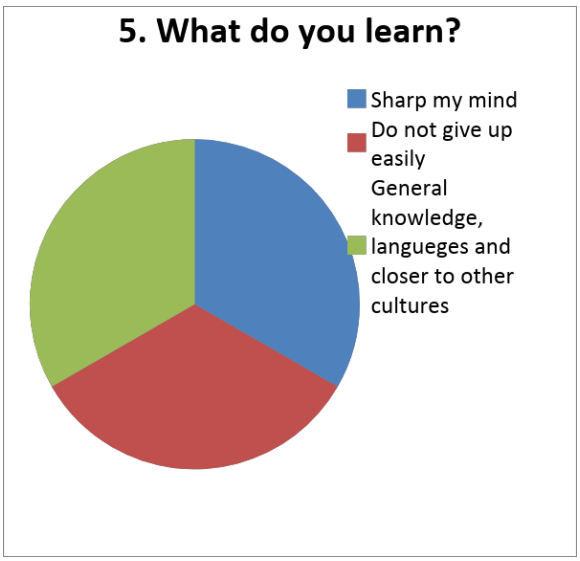
SURVEYS RESULTS


1. Why do you like video games?
To have fun
To escape from the reality
To spend free time and lear

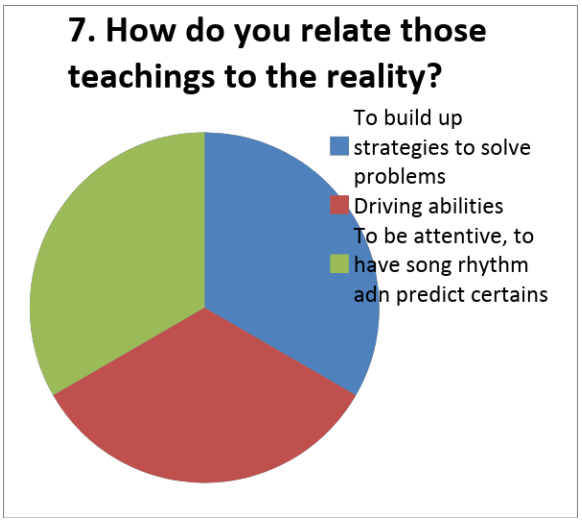

2. How long have been playing video games?
Since they have memory
Since he is 6 years

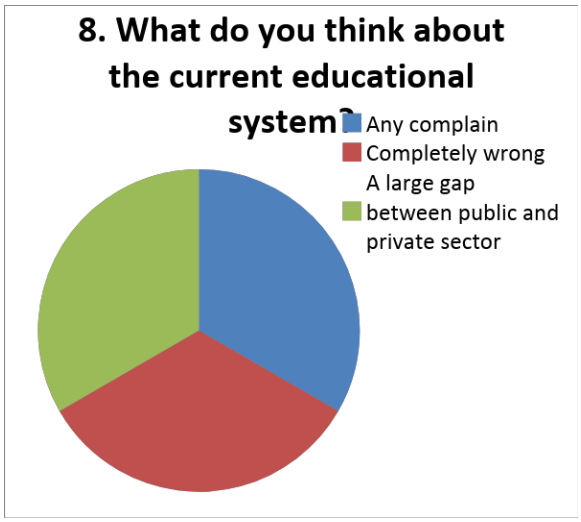

3. What kinds of video games do you like?
Strategy ones
Teen or superior
Racing and Sports

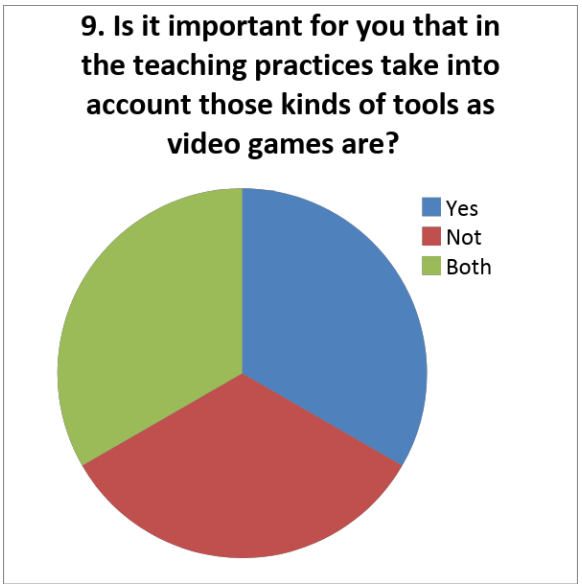

4. Do you think you learn from video games?
Yes

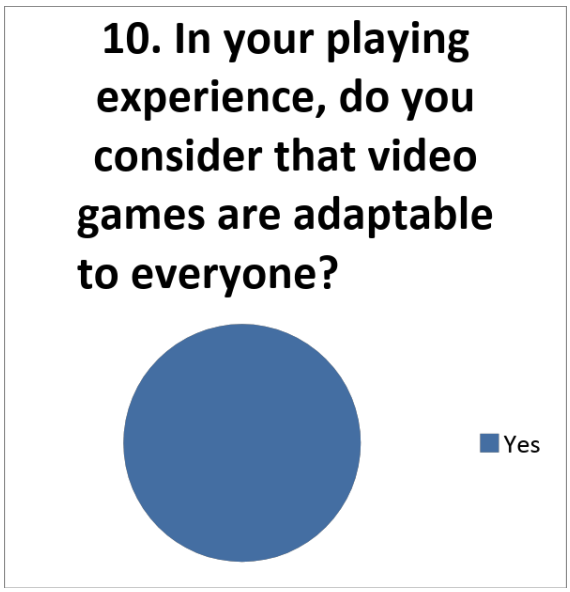

5. What do you learn?
Sharp my mind
Do not give up easily
General knowledge, langueges and closer to other cultures


6. Have you developed some skill playing? Which ones?
Mental agility
Driving
Sincronization









ANNEX B

STUDENTS INTERVIEWS

1. ¿Por qué consideras que los videojuegos han contribuido a tu proceso de crecimiento?

Diego Guerrero audio Diego Guerrero.mp4

Oscar Figueroa Audio-Oscar-Figueroa-_1.mp3

2. ¿Qué tipo de habilidades has podido mejorar o adquirir a partir de jugar videojuegos constantemente?

Diego Guerrero Audio Diego Guerrero (2).mp4

Oscar Figueroa Audio-Oscar-Figueroa-_2_.mp3

3. ¿Te gustaría poder compartir tus experiencias de aprendizaje a partir de los videos juegos en el aula de clases?

Diego Guerrero Audio Diego Guerrero (3).mp4

Oscar Figueroa Audio-Oscar-Figeuroa 3.mp3

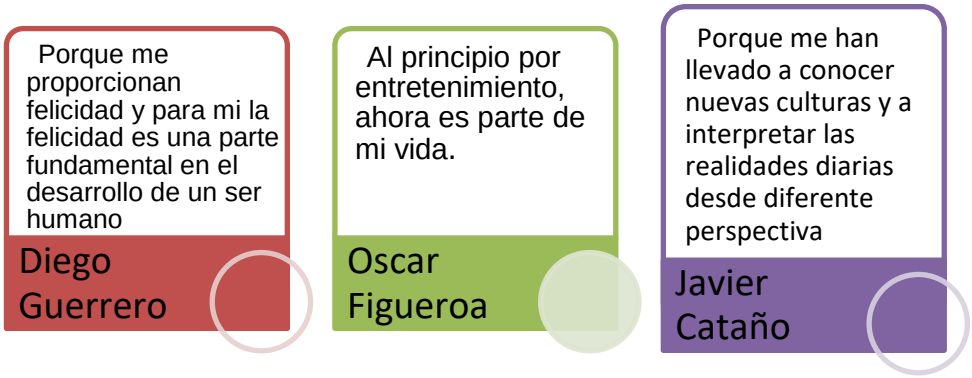
4. ¿Cuándo empezaste a jugar consideraste que eso te ayudaría en tu proceso de desarrollo o únicamente lo hiciste por diversión?

Diego Guerrero Audio Diego Guerrero (4).mp4

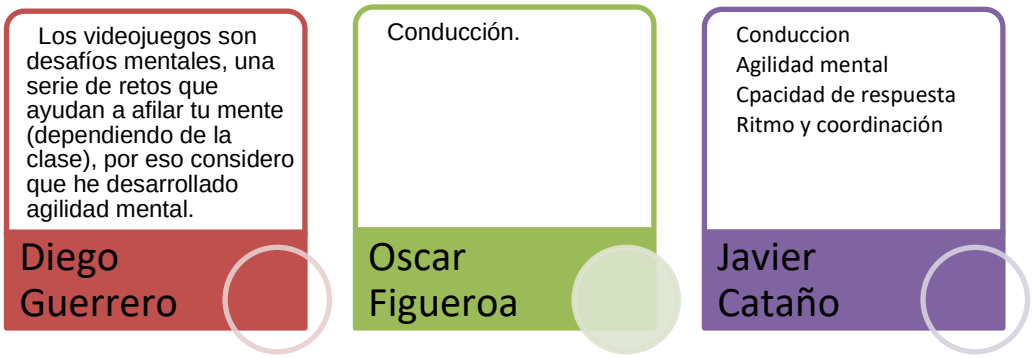
Oscar Figueroa Audio-Oscar-Figueroa 4.mp3

INTERVIEWS RESULTS

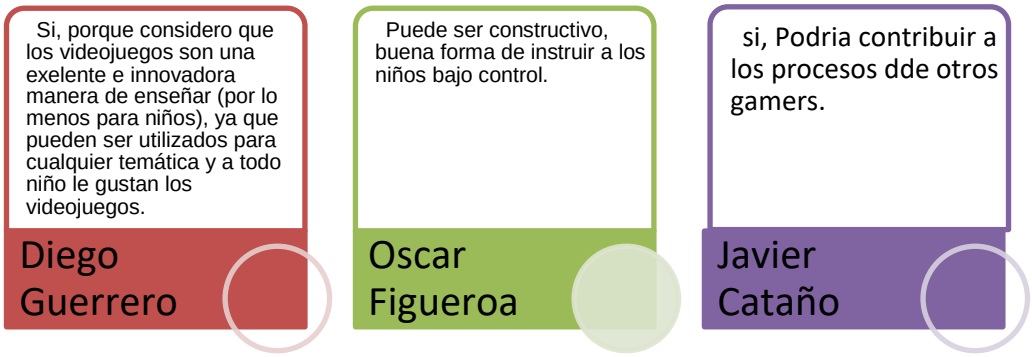
¿Por qué consideras que los videojuegos han contribuido a tu proceso de crecimiento?



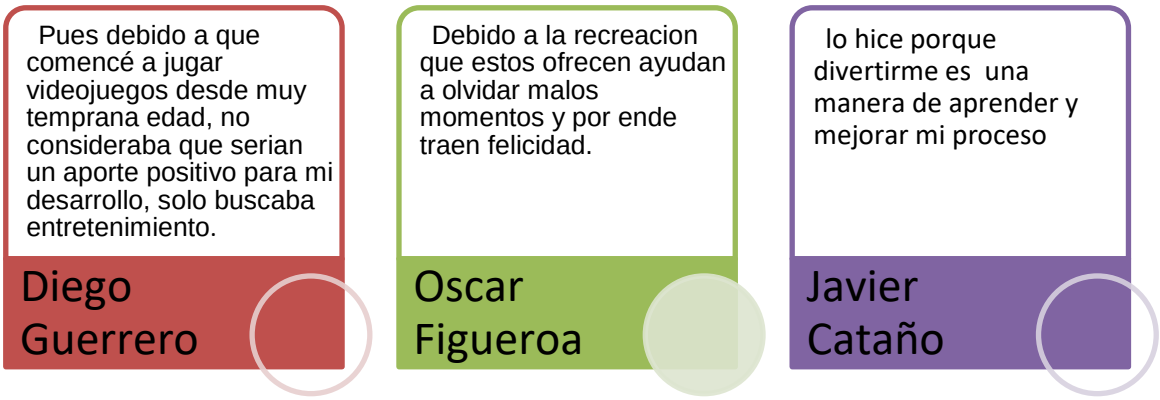
¿Qué tipo de habilidades has podido mejorar o adquirir a partir de jugar videojuegos constantemente?



¿Te gustaría poder compartir tus experiencias de aprendizaje a partir de los videos juegos en el aula de clases?



¿Cuándo empezaste a jugar consideraste que eso te ayudaría en tu proceso de desarrollo o únicamente lo hiciste por diversión?
Ann



ANNEX C
OBSERVATION RESULTS

Observation.mp4