Games and machinima in adolescents' classrooms

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ABSTRACT
This presentation identifies innovative educational practices when commercial video games, combined with other new or traditional technologies are present in the secondary education classrooms. The major goal of the project was to generate new knowledge about how to design scenarios, using commercial video games as the starting point, which may contribute to the development of new literacies when students work with specific curriculum contents. Our data has been analyzed exploring the machinima productions in order to analyze the relationships between the video productions, the game and, the gamers' perspective about his/her own activity. To examine these strategies several dimensions have been considered in order to compare different approaches to machinima.

Keywords
Machinima, video games, education, ethnography, methodology, analysis

INTRODUCTION
The concept of machinima has been little explored when we consider the possible implications for education. This concept is identified as a source of innovation. A tool for which, new ideas can be generated. This is as it was defined in the introduction in a very recent special issue on the subject in the *Journal of Visual Culture*:

> "The object of our attention is machinima, the making of animated movies in real time through the use of digital game technology and assets. Due to its nature as an unexpected outcome of game technology and as an alternative to frame- based animation, the nearly 15-year history of machinima has been characterized by themes of unanticipated innovation, subversion, modification, and hacking, as well as ideas about new narratives, forms of production, spectatorship, media consumption and fan communities. In other words, machinima offers plenty of opportunities for taking positions about the promise and potential of a new media format" (Lewood, 2011, p. 3-4).

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However, their educational opportunities have just been explored. This presentation identifies innovative educational practices when commercial video games, supported by machinima techniques and combined with other new or traditional technologies, are present in the secondary education classrooms. The major goal of the project was to generate new knowledge about how to design scenarios (using commercial video games as the starting point) that may contribute to the development of new literacies (Gee & Hayes, 2011) when students work with specific curriculum contents.

The particular objectives of this paper are as follows:

1. To examine the strategies that provide support for teachers related to the contents of the curriculum in a biology class when they use **machinima as a way of reconstructing an audiovisual text in order to facilitate awareness of the rules of the game** as part of the learning process.
2. To explain how commercial video games can be combined with other media and information technologies **to develop new literacies in students**, particularly in the development of critical capacity regarding the interpretation of the visual text in multiple contexts.

We are especially interested in how the production of machinima that students perform can contribute to generate skills related to literacy. This paper is organized in several sections. The first briefly describes the basics of working from the concept of a participative culture and digital literacy. The second shows the methodological approach adopted, inspired by ethnography, as well as the context, participants and how the data was collected. Thirdly, by looking at machinima productions prepared by the students, we reflect on different proposals for analysis and justify what we have adopted. In the fourth, we analyze three students' productions, working with *Spore* (Electronic Arts, 2008) to show that there are different interactions between the user, the video game and the multimedia production. Some brief conclusions will help to reflect on machinima techniques as educational tools.

THEORETICAL FRAME

Three theoretical perspectives support these goals. Firstly we are inspired by the idea of a **participatory culture** that shifts the focus of literacy from one of individual expression to that of community involvement. The new literacies almost all involve social skills developed through collaboration and networking. Let us now focus on Henry Jenkins (Jenkins et al., 2006) approach to literacy. What is meaningful for us is the idea that new media changes are related to the new role of consumers. According to him:

> "Convergence represents a cultural shift as consumers are encouraged to seek out new information and make connections among dispersed media content."
>
> "Educators must work together to ensure that young people have access to the skills and experiences needed to become full participants, can articulate their understanding of how media shape perceptions, and have been socialized into the emerging ethical standard that should shape their practices as media markers and participants in online communities". (Jenkins, Clinton, Purushotma, Robison, & Weigel, 2006, p.3)

Secondly, we consider the theory of a **synergy model** related to media education (Neuman, 2009), according to which, in the course of interacting with different media, children use a wide range of physical, perceptual, and cognitive skills. Moreover, when they engage in each activity, they acquire not only domain specific information but strategic knowledge regarding the medium's strengths and limitations. In this context the model considers the distinctive characters of specific media. It suggests that each medium's physical features, its structure and its method of handling material may add a new dimension to children's knowledge and the means that they employ to attain such knowledge. Amplifying this perspective we consider the (Gee, 2008; Gee & Hayes, 2011) approach to literacy. In this context he refers to the *oral mode of the discourse,* that he considers it to be *primary discourse. By contrast,* secondary discourses are developed in association with practice, which is developed through secondary institutions, outside of family and friends. In this context Gee considered that *"literacy is control of a secondary uses of language (i.e. uses of languages in secondary discourses.* At this point he proposes a definition of literacy that we would like to emphasize here.

> "*Powerful literacy* is control of a secondary use of language used in a secondary discourse that can serve as a meta-discourse to critique the primary discourse or other secondary discourses, including dominant discourses" (Gee & Hayes, 2011, p.8)

Finally, we incorporate the idea of **multimodality** (Jewitt, 2006, 2009) that focuses on the idea of meaning making and situated practices when people interact with technologies. Multimodality offers an approach that can be applied to the prominent role of visual and other non-linguistic semiotic resources appearing on the computer screen and elsewhere. Image, color, animated movement, writing, sound-effect, speech and so on are present in the processes of creating meaning. All of these elements are semiotic resources, which can be considered as signs in specific situations and a product of the social process. People bring together a semiotic resource (a signifier) with a meaning (the signified) that they want to express. That is to say, people express meanings through their selection from the semiotic resources that are available to them at a particular moment (Jewitt, 2006). This perspective insists therefore, on the processes that are present in the construction of meaning within a specific communicative context. Its interest in our work relates to how different aspects of media discourses need to be considered when multiple discourses, present in everyday life, may be explored.

METHODOLOGY

The research was conducted from an ethnographic approach during the 2008-2009 school year, in a Spanish public school by a team of 10 researchers from the University with the participation of school teachers and students. *Electronic Arts* supported the initiative using the *Corporate Social Responsibility Project as its basis*. Video games, together with other digital technologies and media, were introduced in the classroom within the framework of specific workshops lasting approximately 8 sessions each of which were incorporated into the usual school schedule (Lacasa & Grupo Imágenes Palabras e Ideas, 2009).

The context and the participants

The school

The project "*Learning with video games*" was developed during the 2008-2009 school year at a Secondary Education Institute situated in a middle class neighborhood located in

the Southern part of the Community of Madrid, in Spain. It was selected based on two key criteria:

- The school's teachers, its management team and the students had made a request to participate in the project and showed great commitment towards it.
- The school tries to continually improve the quality of its teaching and it showed interest in incorporating new media and methodologies in the classroom.

Students

The school has a total of 900 students, approximately. 300 students between 11 and 16 years of age participated in the experience. Most of them were secondary education students, but also Programs of Initial Vocational Training and students with special educational needs participated.

All the groups had a balanced number of boys and girls, since parity is one of the center's distribution criteria. This range of ages, gender and educational levels meant the experience was offered to a very heterogeneous population.

Most of the students participated in innovation projects that helped them to live through this experience as something integrated within the dynamics of the center, and not as something out of the ordinary. Furthermore, the project´s purpose, video games, was part of the daily life of most students, a factor that surely fostered their active involvement.

Teachers

One of the most relevant characteristics of this project was the number of teachers involved, a total of 17, of which 9 were male and 8 were female. This large number of participants meant: a) A wide repercussion within the center, which included this study as part of the institute´s innovation experiences. b) The involvement of 7 didactical departments.

Sessions in the classroom: Stages of the workshops

The work sessions with the students were held over a certain period whose time sequence is worth mentioning. The figure that follows shows the time sequence of a workshop at a double level; on the one hand the group of sessions, and on the other, what usually happens within a specific session. The timeline is therefore important with regards to the workshop as a whole as well as to the individual sessions.

- Over time, students acquire new abilities and there are continuous re-adjustments depending on the interests of all participants.
- We could also say that there is a planning prior to the workshop, but it could end up changing depending on the circumstances. As it can be observed, it is possible to differentiate two stages throughout the workshop that we reveal below.

The figure that follows shows the time sequence of a workshop at a double level, on the one hand the group of sessions, and on the other, what usually happens within a specific session.

Figure 1. Structure of the workshops

First stage

The purpose of this stage is to foster the learning process in students and interaction among participants, all which was aided with the use of commercial video games. By playing and thinking about the game we discover, the cognitive and social strategies that we need to play, the rules of the video game that allow us to take action and, the ones that limit our options. We reflect upon our role as players, the way in which we interact with the game and, how we put it into practice. We will also learn its language and the narrative hidden behind the game we have built.

As observed in the figure below, there are three important moments that follow one another over time, always within a plan that is modified depending on the specific circumstances of each session.

- The teacher and students talk about the purpose of the game and what problems and challenges will have to be resolved while playing.
- We all play together and learn about the video game.
- The session ends with a talk to share what we have done and what we have learned.

The experience during years of participating in many different workshops, always in collaboration with teachers or in non-formal educational situations, has shown the efficiency of this educational methodology which alternates dialogue, play and thinking; all of these within innovative educational scenarios aided by the already consolidated technologies as well as the new ones.

Figure 2. The session's sequence

Second stage.

In this stage, in a creative and critical way and with the help of adults, students became aware of what they had learned and demonstrate this through different multimedia products, which could be seen on the Internet, both on school grounds and outside the school.

Students created these multimedia products to share their experiences at the workshops with others. For this, they used multiple expression media, photo and video cameras, video recorders, mp3 or Internet resources.

To make the productions, they had to respect the following sequence:

- Plan the action.
- Each group had to decide their message, their messages' purpose, and their audience.
- They had to select and combine the resources to convey the message. As a tool for reflecting they also made audiovisual products of their own recordings of the game, machinima processes, or what they have obtained in the real world.

THE CHILDREN MACHINIMA PRODUCTIONS

Machinima, according to Paul Marino, (2004) is the art of creating animated movies in real-time by using a 3D game engine technology. The Gamasutra[1] review of this book explains that machinima has evolved into a filmmaking genre in its own right. We suppose that in using this technique people will be made aware of the rules of the game, its content and the audiovisual discourse of this digital universe. This implies a different form of reflection other than that which occurs when using an oral discourse in the classroom. We will explore some of the products that the children produced working on machinima when they play Spore[2].

It is interesting to consider the principles of analysis we have taken into account to analyze the production of machinima generated by students. Looking at video games as texts, based on the contributions of Barthes (1977), Diane Carr (2009) distinguishes between textual and structural analysis:

> He (Barthes) makes further comparisons later in this same essay, writing that 'textual analysis is founded on reading rather than on the objective structure of the text, the latter being more the province of structural analysis' (p. 131). Again, this suggests that textual analysis relates to practice, while structural analysis addresses the schematic that accommodates these practices. In the context of games analysis, the relevant practice is, of course, play. (Carr, 2009, 3)

Whereas textual analysis is oriented to practice, structural analysis is centered on the principles that organize those practices. The structural analysis explores the relations between units in narrative discourse, and the consequences of these relationships for meaning. We consider any audiovisual text, i.e. a video game or a machinima production, as a unit of analysis that could be split into various classes of function or unit. Moreover, we need to take into account the ways in which these units correlate and combine. According to Barthes (1977) the textual analysis breaks the text into lexia. A lexia might be a word, a cluster of words, or a group of sentences - 'It is what surgeons would call an operating field' (p 3). The most interesting part of this contribution is that it directs us to seek meaning units in the production of machinima. These units of meaning can be related to the gamer's activities:

> "At its core, machinima is part of the same digital procedural media family as video games but it differs from games in the way that control over these processes is weighted. What this control is and how it is exerted can be best described in terms of performance. Others have looked at machinima through the perspective of Performance Studies for players (Cameron & Carroll, 2009) as well as camera operators (Nitsche & Thomas, 2004). Expanding this view further, we can apply concepts of Performance Studies as outlined by (McKenzie, 2001). (Nitsche, 2011, p. 14-15)

But the issue here is when we look at the educational dimension of production and the extent to which students are aware of the rules of the game, its history or its contents. That is, we look at the interpretation that students make of these audiovisual texts (Bennett & Woollacott, 1987).

More recently Harwood (2011) refers to the work of Winget (2009), when he proposes a taxonomy that overlays more traditional methods with anthropological information to enable a better understanding of the artwork and its social and cultural values. This may include biographical features of the game designer, subject attributes, and spatial or temporal presentation of the work in relation to the viewing audience.

MACHINIMA PRODUCTIONS

We will focus now on the machinima productions. All of them were up load to Youtube. Elements as music, images, scripts of the games, and a combination of real and digital words play an important role for transmitting specific meanings.

In order to examine the machinima productions, we considered three main approaches, which were identified some time ago by Sholle & Denski (1995) in order to develop critical literacy strategies. Table 1 summarizes the items that include the three productions[3], considering different types of approaches about what it means to the reconstruction of the game through the process of machinima, the role of context and the way in which students have a certain distance from the contents of the game and its rules.

	Re-reading	**Re-mapping**	**Re-writing**
Definition	You see the relationships between text and context of interpretation.	The content of the play and production are different.	Counter-representations are constructed from the game and your organization
Duration	00:02:29.05	00:03:50.06	00:03:02.05
Voice Off	Yes	No	No
Definition of meaningful units.	It is descriptive units related to the game's events, which are defined by the actions of the creature.	Importance of interpretation by the viewer references to the mechanisms of evolution.	They establish clear relationships and contrasts between real and virtual worlds in order to reconstruct the game.
Perspective in which they are located.	What happens in the game looks like a story	The players are conscious of their actions on the creatures.	The video takes into account the audience and it is oriented to the posts written texts.
Levels of reality in the images.	Images of virtual worlds.	Images of virtual worlds and photographs of classroom situations during the game Contrasts between virtual and real worlds.	Images of the game and actually playing the game and the classroom.
Resources exhibition, oral or written texts.	The creature's actions expressed in gerund and the player in mind.	Express the actions through complex sentences in first person plural.	The images are more important than written texts, they are used to summarize and highlight the messages.
Contexts.	School game, the player's actions and feelings.	The game strategies are projected to real life and its effect on it, but this occurs indirectly.	Real life, in which the game is reconstructed
Role of music.	Marks the transition between scenes.	It is a thrilling accompaniment to the audience.	

Table 1. Different approaches to machinima

Re-reading the media: Spore, more than a game

At that time the machinima project was being used in *reconstructing the content and context of the video game*. It was discussed in the classroom and uploaded to the Internet. Re-reading is used to discover the relationships between the text and the context and also to involve the context of the participant. An example of this strategy can be observed in "Spore, more than a game"

The unit of meaning is achieved through a process of describing what happens in the game, which is present through a voiceover (voice muted). Interestingly, the contrast is between the narrative character of the text, read as a voiceover and the description given by the texts that appear in the video. Both below indicate which corresponds to the titles and voiceover.

(0:00:01.0)	"Spore, more than a game" (title).
(0:00:19.7)	Spore logo (title).
(0:00:32.2)	This is the world of Spore ... (title).
	And this is our creature of spore to start the game ... (title).
(0:01:09.0)	Everyone thinks that video games are used only for fun but it also serves to learn (voiceover).
(0:01:14.8)	One example is Spore. (voiceover).
(0:01:20.5)	It's about a cell that grows slowly (voiceover).
	And this is the land where spore creatures live... (title).

Table 2. Spore, more than a game. Introduction

From the above text the following features can be seen. A first approach to the context in which the game has been presented, this is the beginning and end. These are the phrases that begin and end. Students expressed from the outset that they can learn from video games. The last statement is summarized by the following quotation: "For us it was a spectacular game." The rest of the text is a description of what happens around the creatures that are the protagonists of the game. It is only once that students become aware that what happens to this creature is related to the activities of the player: "And we can also construct territories for the creature's family".

Now we will focus on the audiovisuals resources. In this production all images relate to the screens of the game are fixed and students do not appear at any time. That is, it does not reproduce the classroom experience. Moreover, the music plays a fundamental role giving the character some epic production, choosing Wars, which is evident in the presentation that takes just over a minute. It introduces the world and the creature (0:01:09.0).

Figure 1 includes some pictures that give insight into how the world of Spore is presented while playing the music of Star Wars. Students use the zoom as a means of conveying the idea that in this world something important will happen. When the voiceover begins we realize that the presentation is complete and the music stops.

Figure 3. Spore more than a game. Introduction

Remapping subject position.

A machinima production can be considered in this dimension when *students explore the text of the game and their relationships with the machinima production*. The content of the machinima and the content of the game are clearly differentiated in the production as it appears for example in "¿Sirve de algo la comunidad en Spore? (Does it help the community in spore?)

The first thing that stands out in this text is that continuity is achieved through sentences written in the first person plural, which make up the player's action and its effects on the creature, but this is done so that there is intentionality in each action, for example, "We designed our creature to follow an aggressive strategy" in this case it is the player who has decided what will happen to their child. In the former case it says "(Spore) comes from a cell that grows slowly." We talk about the fact that the subject clearly marks their position before the game because it explicitly states, for it uses the texts included in the displays. The player's actions are expressed through statements that indicate cause and effect on what happens in the game. The causes are related to the strategies pursued in the game and consist in giving aggressive and collaborative strategies to creatures. Students are aware that the game has allowed them to choose between them.

(0:00:01.1)	Does it help the community in Spore?
(0:00:08.1)	With this explanatory video try to find out.
(0:00:11.9)	But first things first.
(0:00:19.1)	How was our game?
(0:00:24.0)	Here is our creature.
(0:00:27.4)	Cellular phase.
(0:00:37.3)	We design our creature to follow an aggressive strategy.
(0:00:51.4)	We give it a defense mechanism.
(0:01:01.0)	And put it in the world.

Table 3. Does it help the community in spore? Introduction

Looking at the video images we see that the titles play a more important role than in the previous video and also highlights the fact that students appear in the photograph.

Moreover, the music also helps to focus attention on the titles that appear on the screen on a black background. All this can be seen in Figure?

Figure 4. Does it help the community in spore? Introduction

Re-writing and the vital strategy of authorship.

Students *invent counter-representations and counter-forms of organization and evaluations of the game* as a mode of presenting the content of the game. For example in one of the machinima productions "Spore, you chose: a game or something more" students established relationships between real and virtual worlds as a way of presenting the mechanisms of evolution.

(0:00:01.4)	Spore you choose a game or something more
(0:00:07.0)	Everything started in the water
(0:00:19.4)	You chose ... Herbivore or carnivore?
(0:00:42.5)	You choose...your number of legs
(0:00:51.8)	4 legs
(0:01:08.9)	Or none?
(0:01:14.5)	Or none?

Table 4. Spore you choose a game or something more. Introduction

In this case the texts and titles have a less important role. The message is transmitted primarily through the images. The video also starts by introducing a story. In addition, in this case, as in the above, the player is aware that their actions transform and generate what is happening on screen. No one speaks in the first person, but the author of the production goes to the audience. For example, 'Very thing started in the water "(0:00:07.0) and much later the following text appears" You chose ... Herbivore or carnivore? "(0:00:19.4). What has happened between them can only be understood by seeing and listening to music, but above all, looking at the pictures, in this case also refers to the challenges of the game and the possibilities and limitations of these open. Choose the term used to mark these possibilities.

But what are really new in this approach, are the counter-representations that the author of the production has built for the game and that are displayed in different ways. First, the author of the production appears to be identified, even through their gestures, with the heroes of the game. We can observe in the figure??. The same image recurs in later

sequences. Second, the game is reconstructed using objects and people of real life, parallels are drawn between the sequences of both worlds. That is, the author reconstructs the game objects and characters from reality. Moreover, in this case the motion picture scenes are more complex. We believe that the fact that the author has had to rebuild the content to another level has led to a deeper reflection that determines the way in which you look at the game.

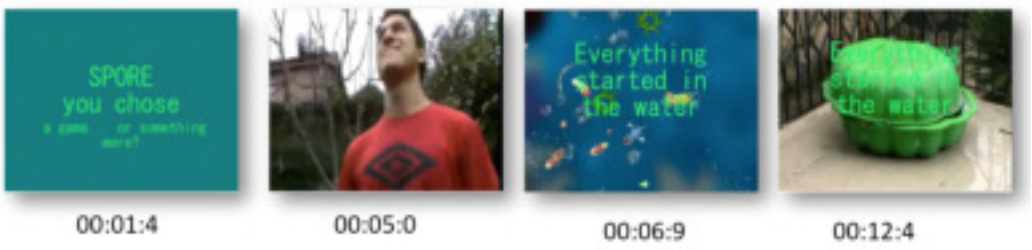

Figure 5. Spore. You choose a game or something more. Introduction

We can see the figure including the introductory images, as we have done in the two previous productions. We note that more information is transmitted in much less time, both through the text and the images. After the title, the author appears, in a natural context, you may wish to mimic the game. Later on there are similar images in which the creature is victorious against the enemies and the author of the production is below making a victory sign. The title which introduces one of the parts, "Everything started in the water" (0:06:9), is written on a background taken from the game that are sequences of moving images. Moreover, in this figure we wanted to show how the game will be reconstructed through real objects. In this case, a shell has been selected.

If we continue now with the sequence, we see again the resources that are used to transmit messages. Out of the shell emerges a real character, and then immediately it is followed by a text, we can assign some abilities; in this case he will be herbivore. The introduction of blood into the arm of a person and the presence of a fruit, the banana, shows that herbivores have to fight against others. This idea of struggle is most evident on the last screen, showing a landscape of the game with two organizations that fight each other, surrounded by an arc of light.

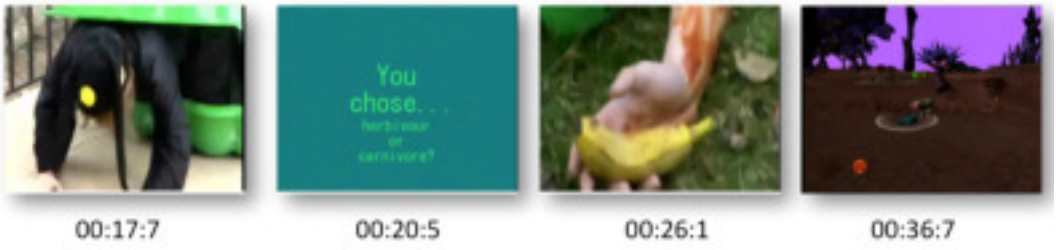

Figure 6. Spore. You choose a game or something more. Virtual and real life

Finally we mention that the music, as in the previous cases, supports the images. Sounds help to enhance what is happening at any given time, the fight between two people with

different abilities. The music is not aimed at creating emotions in the viewer's own epic narrative.

FINAL DISCUSSION

The study results show how commercial video games can be introduced in the classroom, combined with other media, by contributing to the development of new forms of literacy among students and their teacher. The final discussion will focus on:

How students become receivers and producers of messages in the framework of a participatory culture. Traditionally, the school has been relatively isolated from the outside worldwide. Here it is assumed that students have to acquire a culture that is difficult to access elsewhere. Cultural content is relevant to the world of academia, even though it must be useful in everyday life. The task is not simple and the contents are becoming more unique as you progress through schooling. An increasing specialization makes access to them available to only a few people. Taking as a starting point participatory and popular culture helps to breakdown the walls of the classroom. In this way children acquire skills beyond reading and writing which will be useful in life outside school. The use of spontaneous language does not always imply literacy. Literacy is a conscious control of discourse.

How to combine different media, taking into consideration the properties of each one, is what is expressed in the synergy theoretical model for media education. It shows different paths from which to establish relationships between the player and the game content. Machinima productions, as we have seen, are different and imply that different degrees of control of discourse are used, there are different ways of looking at the audience and also there are different player positions regarding the content of the game. Our data shows that three approaches are possible, amongst many others. In the first case, the player faces the game with little awareness that what happens on the screen is a result of their activity. In the second, students are aware of that power, and also are able to transcend the models of a social reality game. For example, the game has caused them to reflect on whether in their daily lives it is better to cooperate or be face to face with others. Finally, the third album shows that it not only transcends the reality but also that the contents of the game can be rebuilt, blending real and virtual worlds.

What are the codes used to express multimodal messages. The creation of machinima productions contributes to raising awareness of the game and their discourses. Possibly the greatest contribution of this paper is related to demonstrating how commercial video games can be used as educational resources in schools, contributing to the development of new forms of literacy. Machinima productions have become an educational tool from which students combine different media discourses and different resources. For example, they mix elements taken from the game screens, moving images, texts, music and other sounds, etc.. The combination of all these elements creates new forms of communication mediated by audiovisual resources. These discourses help to generate control abilities in relation to multiple discourses.

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ENDNOTES

[1] http://www.gamasutra.com/view/feature/2151/book_review_the_art_of_machinima.php.

[2] http://www.uah-gipi.org/multimedia/

[3] A complete version of each of them can be found at the following links
Machinima as an educational tool (1): Re-Reading the game http://vimeo.com/27391098

Machinima as an educational tool (2): Re-Mapping the game http://vimeo.com/27391355
Machinima as an educational tool (3): Re-Writing the game http://vimeo.com/27391722