SCHOOL GOES ONLINE WITH AVATARS: VIRTUAL WORLD IN A FRENCH SECONDARY SCHOOL

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ABSTRACT

The purpose of the present study was to examine the implications of the learning and teaching students and teachers configuration with Virtual World in middle school. The context is an experimental middle school (students age 11-15) adopting MUVEs as immersive 3D virtual. We conducted participant observation, collecting video-audio records of the teachers and students’ activity, supported by a student focus group and teacher interviews. The analysis identified some implications of the introduction of virtual reality in the school context. Our results highlight the dynamic ways in which the new tools shaped the teaching and learning process.

Keywords: France; Middle School; Virtual Reality; MUVEs

INTRODUCTION

A virtual reality system or Virtual Reality (VR) consists of a set of devices that attempt to make the interaction as much possible like in the real environment. VR proves to be rather special for its interactive quality, for the possibility of seeing, moving, touching and doing. Today the VR has led to a progressive adaptation of the interfaces to the body, reaching the development of advanced systems able to fully involve the perceptual apparatus to determine a complete sensorial immersion of the individual in the context. The purpose of the present study is to examine the configuration of students and teachers’ interactions between the physical and virtual world in the middle schools.

Integration and Adaptation of VR in French Middle School

In France, the Ministry of National Education has worked on computer integration in teaching, with the aim being to encourage innovation. Several steps have been taken by the French education system for the development of technological skills [1, 2]. However, according to OECD Teaching and Learning International Survey (TALIS), only 24% of teachers in France use ICT for students’ projects or class work (the EU average is 34%). Considering this, more
responsibility is given by the teacher training institutes to an adequate level of technological training. It is important to determine the conditions necessary for the use of technology in classroom.

Technology integration is a large topic of discussion in education. It is possible to find different levels of integration and use of technology by teachers [3]. Particularly relevant are the characteristics such as age, gender, race, education level, socioeconomic status, years of education, school structure and technological infrastructure of institutions. The teaching and learning effects of ICT depend also on the way in which educational technology is used and the limits and barriers that teachers encounter during the process of appropriation and use of ICT [1]. Specifically, the challenges of adopting an environments of virtual users are linked to the general introduction of new devices: learning difficulties, fear of failure, boredom, missing motivations. We consider the immersive technology MUVEs as a medium that embed some interesting transforming of the traditional learning space. Therefore, the research question of the paper are:

1. How is VR introduced in a French middle school?
2. How is it adopted and integrated in the learning and teaching process?

METHODOLOGY

Context and Data

This study is embedded in an extended project that takes place in a middle school (age between 11-15) in sud-east of France. This school is part of technological experimentation in line with the Digital Plan for Education launched by the French government in May 2015. The school in 2016 joined the "Connected Schools" digital experimentation, which supports and finance the use of digital tablets in the classroom. Participatory and collaborative processes are developed between teachers, researcher and ITC staff and institutional partners. The project adopted a propriety developed software based on MUVEs technology. The MUVEs is an immersive 3D virtual space where people, entering the space via their avatars, meet and interact with one another and with 3D objects in real time. The MUVEs is adopted by the teachers based on three main immersive pedagogy projects, co-developed with the ITC support and the researcher team. A systematic collecting of data about the three pedagogical scenarios described started in September 2018 [4]. Regular visits were made by the research team in the school. Specifically, we focus on a dataset consisting in five video recording of teaching lessons (of about 45 minutes), one teacher interview (37.41 minutes) and a focus group with students (37.09 minutes). Our main data were the audio-video recordings; the other data sources were used to clarify and enrich our interpretation of the videos.
RESULTS

From the data, we found an overlap of real and virtual body, with a continuous referencing to the real setting and virtual one. For example, in one episode, teacher stressed about behaviour in RV could be discussed online or classroom, in a continuity between the two dimensions. The potentiality of the VR is in allowing the subject to enter into an extra dimension bringing with it a personal story and the knowledge of its own social and cultural area to be shared with others. In a second episode, the students were placed in the small group to work in autonomy. During his own navigation in VR, a boy saw his avatar in a collision with another one, which made the boy laughed loudly. This avatar collision created the hilarity of the boy who believed that the two avatars were overlapped and fused. Indeed, the meeting of the two avatars (apparently fused for a few seconds) is recognized by the students as a moment of hilarity probably due to the acquired "power" of being able to enter another body. Another indicative episode about the negotiation and overlapping of bodies is in the lesson of second language. In this space, the teacher had done a special configuration of the class: the student went to the teacher's desk to use her avatar and talked to a Mather languages avatar (Figure 1). The image of the RV was projected onto the wall of the class with a video projector; in this way, all the students from their desk could follow and listen what their peer discussed in RV with the guest avatar.

Figure 1. Student Learning using the Teacher Avatar

This second dimension that we would like to stress is about the multimodality in action. For example, in another situation, the French teacher gave the indications about how to fill the sheet, going around the room many times to try to reach the attention to all the students (Figure 2). Later, at the end of the session, she proposed the students to find some exotic fruits related to the topic of exploration. She carried some of it in the classroom, inviting students to try to smell, touch and eat it if they like. The rich multimodality expressed and
proposed by the teacher involving her body and avatar, finding a correspondence into the multimodality of the students’ action during the session.

Finally, we explore how student are searching meaning by exploring Virtual World (Figure 3). The student mobilized the resources around him to achieve his goal, demonstrating his commitment in the task and the building of meaning during his action. We analyse them to show how the exploration of the environment is led by the need to give meaning to the activity.

Figure 2. Teacher Use Gestures to Catch Attention

Figure 3. Learning With Virtual World

CONCLUSIONS

In this article, we discuss implications of the students and teachers’ configuration between physical and Virtual World in the context of learning activity in middle school. The students actively engaged with the technology given to them, active in their learning [5, 6]. We consider that the immersion in a simulated and mediated environment creating a powerful experience for learning depends on the design that will be mobilized by the actors. So, the interest of multi-user immersive environments is to develop experiential learning, to teach complex knowledge and sophisticated skill, support learning by providing a rich experience, weakly structured but guided. In conclusion, the participant has lived with VR experiential learning, give them the possibility to interact in a new way with peer and teachers.
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