3D recording as enabling technology for serious games and educational roleplaying

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1. 3D recording: motivation

In this work, we propose an innovative approach, *3D recording*, to support serious games and educational role-playing. 3D virtual worlds (3D VWs) are often used for generating educational content. Even though this technology allows creating full context of the real-life educational process, it is usually recorded as flat 2D video (such as Machinima in Second Life), which eliminates many advantages of the technology, such as sense of presence (Mckerlich et al. 2011). In addition, there are no systematic approaches for combining synchronous and asynchronous learning modes. We propose that 3D recording is capable of solving these challenges, as it offers an easy way for creating advanced 3D content from synchronous activities, as well as accessing this content in both synchronous and asynchronous modes.

Figure 1. *Meeting yourself in a 3D recording in vAcademia*

2. vAcademia

vAcademia is a 3D VW designed for collaborative learning. The system is currently under beta testing and is free to use (http://vacademia.com/). The most distinctive feature of vAcademia is 3D recording, which allows capturing everything in a given location in the VW in process, including positions of the objects, appearance and movement of the avatars, media contents used, text and voice chat messages. In addition, the platform offers convenient tools for working with the resultant recordings. 3D recording control is very similar to the regular video player (top menu on Fig. 1). It can be fast-forwarded and rewound, paused and played again from any point of time. In such a way, the approach combines rich interactivity of the 3D space and convenience of the video. 3D recording allows getting a new type of learning content and involving students in new types of activities. This type of content is user-generated, since the process of creating and sharing 3D recordings (or a series of such recordings – a *virtcast*) is fully automated and simple (Fig. 1). It allows the students or game players to come back into a recording of past activities with additional participants, experience a class or a gaming session as a live event like in a virtual 'time machine' and even meet themselves 'in the past' (Fig. 1). In addition, while working within a recorded class or gaming session, it is possible to record it again, including new activities, discussions and comments. Thus, there is an opportunity to build up content of recorded classes and layer realities on top of each other. Similar functionalities were realized in few VWs or desktop virtual reality systems (Morozov et al. 2012). However, 3D recording was never developed into a convenient tool and adopted for specific educational use as it was in vAcademia system.

3. Supporting educational role-playing and serious gaming with 3D recording

We propose evaluating the 3D recording feature of vAcademia in two case studies at the University of Hawaii-Manoa (UHM), at Nursing School and College of Education. In particular, nursing students can participate in a role-play where they are presented with a patient lying on an operating table, suffering from a cardiovascular condition. This simulation enables nursing students to practice their skills of working with patients in a safe environment. This replaces the real-life role-play that usually takes place in a classroom. Similarly, it is planned to use vAcademia to create 3D recordings of educational role-playing simulation to assist pre-service teachers in gaining more experience managing student behavior. Teacher avatars and student avatars would role-play situations in which teachers learn to react appropriately to disruptions of every type in order to bring the classroom back to an optimal learning environment.

The recorded 3D role-playing simulation allows a great range of behaviors and responses. The main advantage of this feature is the possibility to re-enter the role-plays and edit them. In particular, the 3D recording of nursing and teacher role-playing simulations will greatly enhance the students' experience because they will be able to review and improve their skills. All the actions and conversations can be analyzed in detail. In addition, the recorded role-playing could be used as a tutorial for future generations of students. These possibilities open for a wide range of potential usage areas, especially in the area of serious games for corporate training, medical and emergency training and even military training, where roleplaying is a central component.

References

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