

Enriching students' virtual learning tasks: multimedia tests in Second Life

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1 Introduction

The development of tools and projects implementing e-learning applications within virtual worlds is already a constant in the educational landscape [1]. The most widely used platform for this purpose is Second Life (SL), the metaverse created in 2003 by Linden Research.

In this context our objective is to enrich traditional learning activity through the capabilities of SL virtual world. Specifically, we propose to improve the user experience when conducting a language questionnaire including unique multimedia capabilities and social tools offered by this software, so the user is motivated to engage in a successful activity.

2 Virtual world factors in motivation and learning

MUVEs (Multi User Virtual Environments) offer a platform where users can communicate with one another in a space that emulates reality. Some of their advantages, over other alternatives, are related to student motivation [2]. The most immediate one is the immersion sensation caused by being engaged in a virtual world where we walk and communicate in a similar way as we do in real life to complete each objective.

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Besides this reality simulation, the use of such interface helps to motivate the student at other levels if the activity design is optimal [3]. Such designs have always been common in other areas like computer gaming, where the focus aims to enhance user sensations when taking part in the virtual world. Therefore, with the arrival of game-based learning environments, we want to use these features and some others we consider to be promoters of motivation and learning, such as the level of challenge offered by the problem, the social interaction it requires (or provokes), or even the three dimensional design of the elements constituting the tool's virtual space and the textures / effects used.

3 Designing a new interaction for the traditional test

An educational application must look in detail at the interaction that will allow communication between the student and the system. In a desktop application, or web portal, it typically takes the form of mouse clicks on menus and available buttons, but in SL (and in any other virtual world in general) you should try to use all the existing resources provided. As an example, we implemented a test tool for SL.

3.1 How it works

Through avatar movement, chat dialogue, or collisions with other entities, we can create a more natural and user friendly interaction [4]. So the test we've created in the virtual world requires avatars to physically move to the item symbolizing the answer they believe is the right choice, this action is also visible to other users, moving away from the traditional concept of the individual and private test.

In addition to the "answer object" that we need to approach, other elements come into the equation, such as a prism in the center showing each question or the current state of the test (setting the participants, saving score...), and a small graphic which displays the total score ranking, as shown in Figure 1.

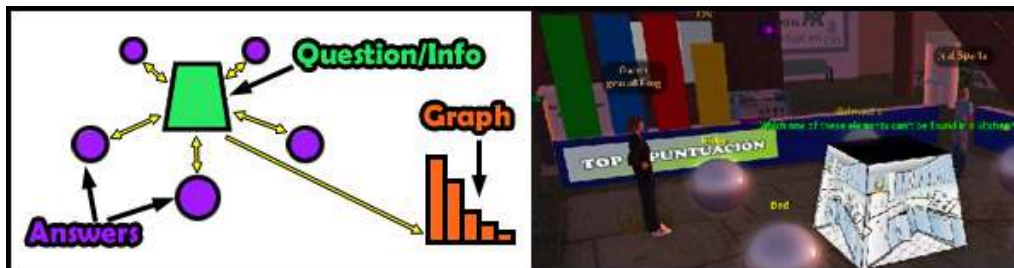


Figure 1 – Design of multimedia elements in a Second Life test

All of these objects are created in the metaverse from prims (atomic objects) which combine to form more complex elements. The script codes are located inside them addressing the necessary operations to finish the test, as well as presenting the data to the user in an optimal way.

3.2 Test sequence

The activity flow consists of a series of phases. It starts by registering the participants doing the test (it can be performed by several avatars simultaneously, assigning different ratings to the answers based both on the accuracy and on the speed of the election), then presenting each question to them leaving a specified time between each one to respond accordingly, and finally showing and storing the results.

The manager of this process is a group of scripts prepared for this purpose and implemented in “Linden Second Language” [5]. The control of the different states is regulated by both approach/click events (to activate the test or choosing the participants) and temporary ones (to control the user registration or a specific question time).

3.3 Communication and external support

Storage and data management must be accessed from an external server. This does not only relieve a good amount of the processing load from SL, but also allows the application to be managed from a web platform and be adapted to other virtual worlds, or run in multiple areas simultaneously by keeping data integrity. This will even let us create alternative versions for other platforms with a totally different interface (such as desktop standalone or web applications).

This information is stored in an external server database, which has a set of PHP scripts constituting an API that enables communication, both showing requested information and inserting new records in the system. The information required in this case would be the questions and their associated parameters (maximum time allowed, answers and score rating), media elements supporting the questions (or even being part of them) and the “points” obtained by each user on each game.

Communication and data transfer are performed from SL scripts when necessary, forming a process completely invisible to the end-user.

4 Conclusions

The development of this project led us to the analysis of the user sensations caused by the virtual environment involved when undertaking an educational activity in SL. As an application scenario we’ve implemented a useful multimedia tool to test language skills in this metaverse, which connects to a remote database and takes advantage of motion-based interaction, in addition to offering a friendly design.

Our intention is to illustrate the application of concepts from the entertainment industry and factors that improve student motivation to virtual world learning developments, complementing student’s experience in an efficient educational system with a rewarding design and interaction [6].

Educational projects are becoming more and more prevalent in SL and other similar metaverses such as OpenSim, therefore it is essential to develop research for enhancing student’s experience across the large variety of educational options available today.

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