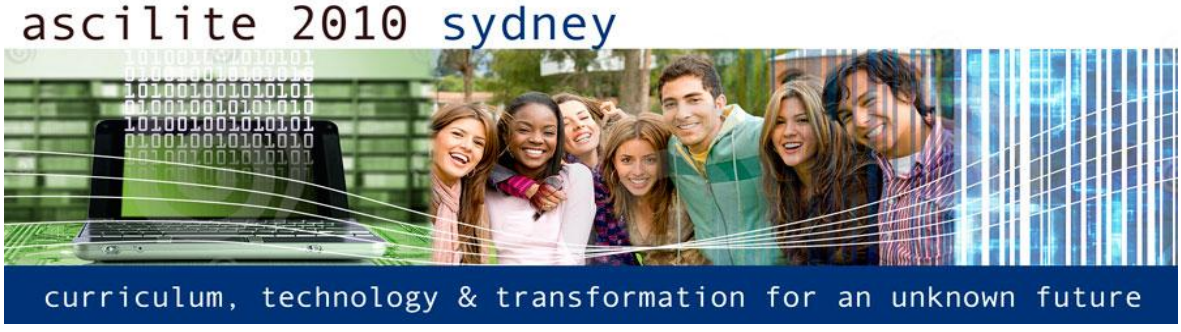

Assessing students in Second Life – some options

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This paper examines various options for assessing students within a virtual world such as Second Life. Although many learning activities are being set for students in virtual worlds and considerable effort is being made to construct elaborate 3D worlds for students to explore, less effort has been expended in developing tools that can assist in the assessment of student learning within the 3D environment. Examples of assessment tasks set using the Sloodle Set, QuizHUD and scripted prims (3D objects) will be discussed.

Keywords: e-assessment, Second Life, Sloodle

Introduction

Second Life (http://www.secondlife.com) is a well known example of a 3D, online virtual world that has become quite popular in the education sector. Second Life is a variation of a multiuser online role-play in which participants take on a persona in the form of an avatar (their in-world digital representation) in order to explore the 3D environment or to complete tasks that have been created by someone else. Students in online or media courses are sometimes required to construct (or rez – the term used to describe building a complex object in Second Life from its individual geometric shapes) objects in Second Life as part of their activity, but this is a minor use of Second Life in higher education (Dalgarno & Lee, 2010). Sara de Freitas (2008) has recently published a useful summary of the use of virtual worlds for serious games in education. Virtual worlds can potentially facilitate authentic learning and assessment activities, but most discipline-based teachers will soon realise that professional expertise is required in order to create the high quality digital environments that are seen in many of the examples currently being shown by those using Second Life in higher education.

One of the current deficiencies in virtual worlds, especially if they are to be used for higher education learning activities, is the lack of tools for assessing students whilst they are in-world. Having spaces for learning that do not include spaces for assessment perpetuates the common trend of separating learning and assessment as time-separated activities. Many teachers will assign learning activities within Second Life and then assess their students outside of the 3D environment, using traditional methods such as essays or quizzes, or other online tools such as wikis, blogs, discussion boards or e-portfolios (Hew & Cheung, 2010). These assessment formats are all appropriate when they are aligned with the learning outcomes for a course, but are often used to assess virtual world activities because there are few methods to conveniently assess students in-world (Ketelhut, *et al*,. 2010). There are similarities between the criteria used by game designers to engage players in complex digital games and what is required to keep students engaged in a virtual world like Second Life. Games are designed to encourage players to be totally immersed in progressing through game levels; the player does not realise that they are completing assessment tasks and receiving and assimilating feedback that is influencing their strategies in order to complete the game. If

Second Life learning activities could be coupled with assessment tasks that did not interrupt the flow of activity in the virtual world, students could be set formative and summative tasks within the virtual environment (Shute, *et al.*, 2009).

This short paper examines some of the current attempts to provide assessment tools for teachers to use within Second Life and shows some examples of how students can be offered in-world activities that combine both learning activities and assessment tasks.

Sloodle

The Sloodle project (Simulation Linked Object Oriented Dynamic Learning Environment) was designed to provide a set of learning and assessment tools for teachers to use within Second Life and to integrate these tools with an open source learning management system such as Moodle (Kemp, *et al*, 2009). The Sloodle software is open source and consists of a series of objects that can be used by teachers to design assessment tasks. The Sloodle set includes:

- the Quiz chair that is linked to simple selected response questions in the Moodle quiz tool;
- the web-intercom, linking the chat room in Moodle with the chat facility in Second Life so that an archive of the chats is retained in the Moodle database;
- the Presenter that allows a slideshow to be delivered in Second Life from files in a Moodle course. The slide show can contain images, video, sound or web pages. This tool has been recently superseded by new options in Second Life using the new viewer, thus enabling multimedia files to be presented on any texture in Second Life;
- the Distributor, a Second Life vending machine that teachers can load with content or information for students to access; the items are contained in the Moodle course;
- the Choice tool that allows students to vote and the results are available in both Second Life and the associated Moodle course; this tool uses the Moodle choice options;
- the Postcard Blogger which allows students to take screenshots of their activity in Second Life, annotate with text and upload this to their Moodle blog; and
- the Awards system enables students to see how they are progressing with tasks in Second Life and it is linked to the Moodle grade book.

We have constructed an island in Second Life called Transforming Assessment (http://slurl.com/secondlife/transforming%20assessment/254/254/23/) this island contains numerous examples of in-world assessment tasks using a variety of techniques, including a selection of items from the Sloodle set. An example use of the Sloodle Quiz Chair is shown in Figure 1. Here we have combined the Sloodle Presenter with the Quiz Chair so that students can access information during their assessment task. The questions appear in the blue rectangle in the top right; this particular example displays a multiple-choice question. The student can click the appropriate response, this is recorded in the Moodle quiz tool and grade book, the student then receives feedback for their response in the lower left as part of screen using from the Second Life chat tool. Other question types include numeric responses and extended text responses, both items use the chat feature in Second Life to record student responses. The questions and feedback all reside in a Moodle course and the student's avatar is registered within this course. We have also included external web page links to the Sloodle Quiz Chair so that students can combine in-world and Internet-based activities in a seamless manner. These examples show how flow might be maintained within a virtual world activity that combines learning and assessment as a continuous activity.

The integration of the assessment tasks and associated feedback in Second Life with existing Moodle tools makes the construction of assessment tasks within virtual worlds more accessible to teachers as they do not have to learn how to script or rez items in Second Life. The students' responses are archived within the Moodle grade book, again offering a practical solution to documenting and marking responses. Although these assessment tools are still in the early stages of development and offer only limited question types, they are very useful tools for current use and are highlighting how we might make use of virtual worlds for the full range of educational activities that are required in real courses.

Figure 1: Example of Sloodle Quiz Chair in Second Life

QuizHUD (heads up display)

Another example of an integrated assessment tool within Second Life is QuizHUD (http://quizhud.avid-insight.co.uk) which has been developed by Bloomfield & Livingstone (2009). This tool allows students to touch items in Second Life, or components of complex items, in response to quiz questions and to answer regular multiple choice questions. This type of tool makes use of one of the key affordances of a 3D virtual world, the ability of students to investigate complex objects from various perspectives. The advantage of QuizHUD, is that teachers do not have to learn complex scripting, they can create quiz questions in a format similar to their learning management system questions. Numerous students can interact individually with the same QuizHUD activity, even when multiple avatars are interacting within Second Life. QuizHUD is not connected to items in Moodle or a learning management system, so at this stage the format is suitable for formative quizzes. Students attach the QuizHUD to their avatar while they interact with objects in Second Life and touch objects, or components of objects, to respond to quiz items. Information can also be attached to the HUD and feedback can be provided to students after their response.

An example of a QuizHUD item is shown in Figure 2; the HUD attached to the avatar appears as a series of pages containing instructions, information, the quiz questions and feedback. The avatar in this case is exploring 3D constructions of chemical molecules and is identifying individual atoms or bonds. In this case we have combined the Orac molecule rezzer (Lang & Bradley, 2009) that allows 3D representations of molecules with the Quiz HUD assessment tool. It is important to be able to label and identify individual components within a complex prim (a prim refers to objects in Second Life, such as the molecules in the example in Figure 2), thus teachers may need some support in rezzing (constructing) appropriate items.

Figure 2: Example of QuizHUD in Second Life

Scripted prims

Scripting languages within virtual worlds such as Second Life allow developers to create highly interactive activities, but the main issue for teachers wishing to construct learning and assessment activities for their students is the complex skills that are required in order to master this scripting. Most teachers would not have the time to allocate to the construction of complex assessment tasks and feedback for their students. We have commenced an exploration of the use of scripted prims for formative assessment activities; these scenarios make use of simple branching so that the student's avatar can interact with a prim using the chat feature in Second Life.

A simple example of a scripted prim is shown in Figure 3; here the avatar approaches the Guide and it responds by asking a simple question that leads the avatar to make a selection from a simple menu of key words. Depending on which keyword the avatar types in, the prim will branch and respond with either information or another question. The choices that the student makes through their avatar can be archived in Second Life for use in assessments. We have also examined the use of chat bots (http://www.pandorabots.com/botmaster/en/home) and the Artificial Intelligence Markup Language that allows a set of defined responses to be stored within an XML file for the chat bot prim in Second Life. This type of approach shows significant promise for learning and assessment activities in virtual worlds if the interface for scripting the scenarios could be made more amenable to teachers with limited technical skills.

Figure 3: Example of scripted prim in Second Life

Conclusions

Although Sloodle and QuizHUD are good examples of the integration of assessment tools within virtual worlds, the skills required by teachers to be able to construct in-world assessment tasks of the type required for higher education are considerable and likely beyond the current abilities of many discipline teachers. However, promising starts have been made, as illustrated in this paper. Further work on refining current tools that integrate virtual world tasks with items in learning management systems will assist in the adoption of design principles that facilitate authentic learning and assessment. The development of simple interfaces that allow discipline teachers to readily construct branched scenarios for students within virtual worlds will allow more complex assessment tasks to be set and will allow a more productive alignment of learning and assessment.

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