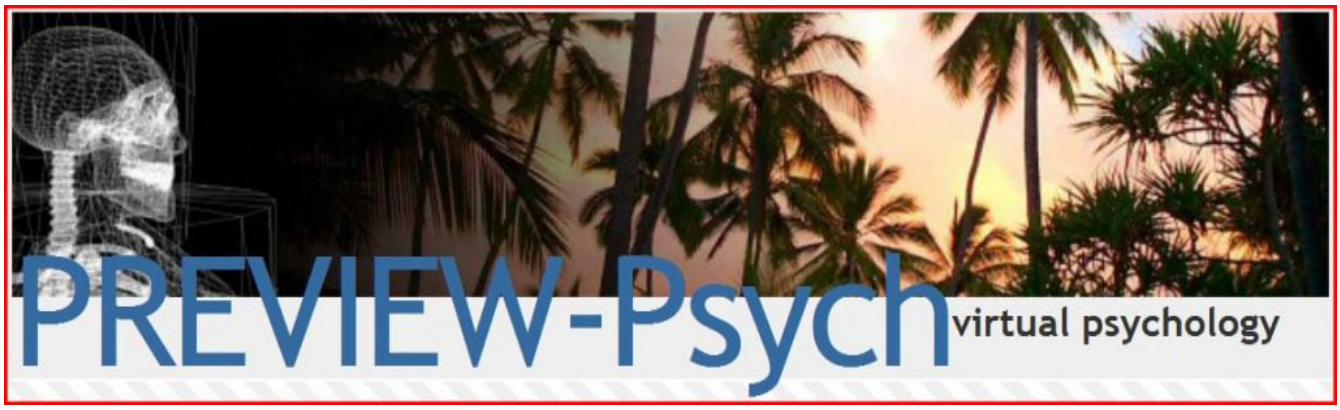

PREVIEW-PSYCH PROJECT

University of Derby, University of Aston and The Higher Education Academy Psychology Network

Best Practices in Virtual Worlds Teaching

A guide to using problem-based learning in Second Life

Best Practice in Virtual Worlds Teaching

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Table of Contents

1 - Introduction

Section 1

This guide is designed for educators as a basic introduction to ease the transition into teaching in 3D multi-user virtual worlds.

In this guide you will receive instruction on teaching and learning in 3D Multi-user Virtual Worlds (MUVEs). The guide is designed to be a practical head start for those that want to teach and use online digital worlds for education. Although the guide is tailored towards teaching Psychology using the 3D virtual world 'Second Life' we hope that it will be of use to all educators wanting to find effective ways of using virtual worlds for education. The techniques presented here are drawn from the PREVIEW-Psych project, which is collaboration between Derby and Aston Universities in association with the Higher Education Academy Psychology Network and JISC. The project investigated the use of problem-based learning for Psychology using virtual worlds and utilised many of the techniques developed in Coventry University's PREVIEW Project.

This guide does not try to offer a history of teaching and learning in virtual worlds, our aim is to help you to overcome some of the hurdles you will inevitably come across when starting out teaching in multi-user virtual worlds such as Second Life. The primary teaching method referred to in this guide is problem-based learning as we have found this to be the most effective way of engaging students in the virtual world. There is however, a variety of different virtual world teaching techniques discussed throughout the guide. It is our hope that we can bring those techniques to those starting to teach Psychology in 3D multi-user virtual worlds. If you have any questions or comments please feel free to contact the project team.

Figure 1 Second Life teaching spaces at Derby University and Aston University

The structure of this guide

We have organised this guide into sections that allow you to skip ahead to wherever you need to. There is also an index if you find yourself needing to locate specific information and a reference section and resources to assist you in finding out more. Included in this guide are sections on Second Life and its role within education. Alongside this, we will take you through how to set up a teaching space in Second Life, factors to consider, skills you will need and the learning implications. We have also included sections on Problem-Based Learning and how to facilitate sessions using this style of teaching within Second Life, drawing from techniques developed with our collaborators and in response to student feedback.

Where possible within this guide we have included references to more in depth resources and authorities on the various methods that will be integrated into good practice in teaching in virtual worlds. Included throughout the guide are pictures from our research and development in teaching in virtual worlds. We have included plenty of 'Top Tips' icons throughout the guide to highlight important points. These are as follows:

Snapshots

When you see this symbol look out for good advice and teaching techniques. During the PREVIEW-Psych project we have piloted many techniques and it is our aim to share time saving advice with you here. We will use this icon when we have had direct experience of an issue that we would like to draw your attention to and we think will save you time and lead to better teaching and learning for your students.

Caution

When you see this symbol be careful not to fall into a common trap. We have tried to illustrate some of the pitfalls of Second Life teaching and recommend solutions where possible. Avoiding these traps can help you save time and effort in developing your virtual world teaching space and running live teaching sessions in Second Life.

Controlling Second Life

When you see this symbol be aware that there are specific technical skills to be learnt before you can expect to use a particular teaching technique. Often the best source of technical support is Linden Lab's 'Second Life Knowledge Base' http://secondlife.com/support/ or their excellent online video tutorials http://secondlife.com/video. It is a good idea to practice using different computer configurations before using your virtual world learning space for live teaching.

Learning Curve

When you see this symbol be aware that these skills can take time to master. It is usually worth practicing the technique before using it in a live teaching session. Likewise, try not to become disheartened if at first you do not succeed. Persistence is often needed to master the skills of managing the virtual teaching space you set up. Second Life teaching requires acquiring multiple skill sets.

2 – What is Problem-Based Learning

Section 2

This section introduces problem-based learning in the context of virtual worlds. It describes what it is and what it is not. More importantly, you will get a feel for the experience of learners that use this method.

Virtual worlds offer the potential to carry out synchronous and asynchronous learning. As a persistent 3D learning environment the content placed 'in world' by educators remains there for students to access in their own time or to use as part of live teaching sessions. Second Life can facilitate learning in many ways. This guide focuses on Problem-based Learning (PBL) as we found this to be a very effective teaching method in the virtual learning space. However, there are limitless options for facilitating learning within Second Life, constrained only by the imagination of the educator and their ability to realise this in the 3D space. As with much teaching that depends on technology it is better to start simply and increase complexity when needed as proficiency grows.

Figure 2 The PREVIEW-Psych problem-based learning space at Derby University 'Island'.

Problem-based learning (PBL) is a way of using planned scenarios, such as case studies, to aid learning in a multi-disciplinary or multi-skill context. It is an active way for students to learn basic problem-solving skills and acquire knowledge through interaction with others, a key skill demanded within every workplace. Students learn within small self-directed groups to define and carry out the specific tasks, either real-life or study-based.

This method shifts the focus of learning from the tutor to the student, with the student in control of his or her own learning under the guidance of the tutor. Problem-based learning takes place within the context of structured tasks aligned with courses or real-world scenarios linked with course material. An ill-structured problem is initially posed, and from this all learning is triggered through student-centred

knowledge-finding and information assimilation – all within a collaborative framework. Students are not simply passive learners; the whole experience is active, engaging students with their learning.

Retaining information is only part of what must be learned at University, students also need to learn how to assimilate information they have no prior knowledge of. Information learned within University is not always applicable within a few years of graduating, so students need to be prepared to learn throughout their lifetime. Students benefit post-University if they can learn how to solve novel problems by thinking creatively and to communicate and collaborate with others. Problem-based learning is an effective way for students to learn these important general skills.

It has long been established that problem-based learning leads to a deeper approach to learning (Newble and Clarke, 1986) and there is ample evidence for the value of active and cooperative learning (Johnson, Johnson and Smith, 1991). Undergraduates require the ability to define problems, gather and evaluate information and develop solutions. An emphasis on team skills and the ability to work with others are highly prized by future employers. The ability to use these skills to address problems in a complex real-world setting is one of the key enduring assets that undergraduates can take with them beyond University.

Core feature of Problem-based Learning in Virtual Worlds

Problem-based learning contains several core features but has a strong emphasis on communication and collaboration between students. In learning how to work with others, it enables them to acquire knowledge for themselves. PBL helps students to integrate knowledge and skills from a range of subjects and modules whilst developing their problem-solving skills.

In addition, these techniques can encourage self-motivation, thinking and analytical skills with the aim of making learning an interactive and enjoyable experience. This can be achieved by encouraging flexible and creative thinking and juggling of multiple sources of information in order to solve novel problems. Ideally, within a PBL scenario students learn all of these, providing them with important transferable skills for the workplace, as well as improving their subject knowledge and therefore their performance while studying.

Figure 3 Artificial Avatars or 'Chatbots' can increased levels of immersion and give realism to problem-based learning scenarios.

Problem-based learning in the context of virtual world learning takes the form of a user-focused approach. Educators are typically involved in preparing materials as immersive tutorials, using interactive virtual scenarios in Second Life. Learners interact with these, usually in small groups of around 5-8 students. In virtual worlds teaching, these scenarios most usually take the form of either avatar-driven scenarios or information-driven scenarios. Some examples follow.

Avatar-driven scenarios entail students interacting with an intelligent avatar or 'Chatbots'. Often this can be direct communication but tutors can also use chatbots to guide the story of a PBL scenario. Typically the chatbots act out the story in front of the students who are faced with making decisions based on these events. An example of an avatar-driven scenario follows: i) The student enters the Second Life learning area (parcel) and asks the chatbots/avatar questions that elicit ordered replies (triggered by key words). ii) This information is used to direct the student to different locations and on different 'fact-finding' missions to obtain the information required to solve the problem. iii) Students need to work together to plan how to find and use this information to solve the current problem.

Figure 4 Chatbots can add depth to problem-based learning scenarios.

Information-driven scenarios are characterised by scenarios in which the learning is led by students exploring their virtual surroundings within Second Life. An example of an information-driven scenario follows: i) Instructions about the problem and Second Life area are placed within easy sight upon student entry to the Second Life area. ii) Students form groups and use the clues located around the area to find out relevant information, from materials uploaded in Second Life or from books/wider internet. iii) This type of scenario requires more division of labour from the students and is a better method for teaching collaboration, management and communication skills. iv) This information is assimilated by the students and they collaborate to use this information and solve the current problem.

Figure 5 Some of the PREVIEW-Psych participants heading towards the virtual PBL area.

3 – How to do Problem-Based Learning in Virtual Worlds

Section 3

This guide is designed for educators as a basic introduction to ease the transition into teaching in 3D multi-user virtual worlds.

It has long been established that problem-based learning leads to a deeper approach to learning (Newble and Clarke, 1986) and there is ample evidence for the value of active and cooperative learning (Johnson, Johnson and Smith, 1991).

The Stages in problem-based learning:

There are several ways of conducting PBL and as long as the core concepts are followed it is a flexible method for learning driven by the tutor, and can be used to directly target particular topics, as well as for more general scenarios of general knowledge acquisition.

- Define the problem clearly
- Explain clearly and in detail exactly what is required of the students
- Explain any core concepts, statements or unknown wording
- Form groups (can be tutor-driven or student-driven)
- Brainstorm and try to analyse the problem
- Ensure there is a time limit and more information than can be gathered for any one individual. This way students will have to co-operate and divide the labour of evidence gathering between them
- Systematically gather evidence
- Re-gather to discuss evidence and develop strategies for gathering remaining information needed
- Within the group develop an answer for the problem posed

Individually students then fill in an assessment form and produce a written piece of work detailing the problem and the subsequent solution.

Case Study 1: The PREVIEW Project

The original PREVIEW project was set up and run at Coventry University. Their aim was to provide PBL scenarios within Second Life in various health-based scenarios, to improve flexible models of collaborative learning to health professions and students alike. Their tutoring method was synchronous rather than asynchronous, although the scenarios are clear and well presented enough for individuals familiar with Second Life to learn asynchronously. There are two types of scenario located in a virtual nursing home 'The Cedars' in Coventry University's Second Life area.

- **IDS** (information-driven) where scenarios were presented with a selection of material containing specific information relating to the scenario.

    - Visitors use this information to evaluate and solve the scenario's central task/query.

- **ADS** (avatar-driven) where the scenario was led by a non-player character, an intelligent avatar or 'chatbot'. These simulated characters can be purchased in-world and more advanced versions can be linked with external servers and services to provide rudimentary and predetermined conversational ability. They can help guide the PBL scenarios.

    - Visitors asked the chatbot questions and receive information in return with which to solve the PBL scenario's central task/query.

ADS allowed for more complexity to be introduced into the scenarios. Here is an example of an ADS structure.

- The tutor chooses the scenario.
- Students examine the virtual environment for information such as notecards and objects.
- The students interact with the Chatbots to find further information so they can begin preparing a strategy for solving the central question posed.
- Students are expected to group together to discuss a strategy.
- In interactive whiteboard is used by the students to write out their results/strategy to solve the central query.
- This solution is then emailed automatically to the tutor.

Figure 6 Problem-based learning at Coventry University's PREVIEW project

Case Study 2: The PREVIEW-Psych Project

In the PREVIEW-Psych project Psychology undergraduates collaborated on interactive problem-based learning scenarios in the virtual world. A replication of a family house features 'intelligent avatars' that replicate the social interactions and symptoms of people with clinical conditions such as Depression, Schizophrenia and Anorexia Nervosa. Students work in teams with a faculty member to find out more about the virtual family as they interact with the evolving 3D scenarios to construct a report from the perspective of a social worker who is visiting the house.

Feedback from student experiences indicates that these new technique of teaching and activity-based learning methods offer a sense of presence and interactivity that leads to deeper understanding of Psychological content. Student statements taken from feedback on the PREVIEW-Psych project:

- "We worked as a team...this seemed much more valuable than just writing an essay of having a discussion."

- "It gave me a chance to interact with case studies in a virtual mock-up of real life."

- "...the content was easy to access and the tasks very enjoyable."

- "I was thinking more about the real life Psychology because the avatars represented real people with real psychological problems."

The overall aim of the project was to validate, transfer and dissemination materials developed from the PREVIEW project to the wider academic community. The system of immersive collaborative tutorials provided an engaging and future-focused way of providing technology-enhanced learning initiated by a real-world problem. The PREVIEW-Psych project created a fictional family within Second Life to look at how well this technology coped with the PBL mechanism for learning. A complex of virtual buildings was created, including a house, office area and information area. Materials provided within the complex were: audio files, note cards, posters, web links, interactive notice board, post-box (for posting answers to tutors) and a receptionist avatar to provide instructions.

Psychology undergraduates worked in groups to find and use appropriate resources towards a solution to the problem. The module content and learning outcomes were incorporated into the scenarios to encourage group discussion and higher order thinking. In this way, learning was active, integrated, cumulative, and connected.

The students' task was to work in small groups to find out what is wrong with the family in the virtual house on this location. Their task was to find the characters in the house and work out from the materials provided the following things:

- How the family fits together.

- What is wrong with each family member?

- Information about these disorders (From objects in the house).

- What treatment might be recommended.

- What the long-term prognoses are for each family member.

- The model of psychology that best fits when explaining each set of issues.

- How the model works.

- What is the starting point is for treatment is.

Students entered the house and grounds twice as a group during each scenario. Each scenario was loaded separately and took about 20 minutes. Before each trip students had to decide what their approach would be and ensure that everyone knows what to do. The learning objectives of the project were to gain knowledge of clinical disorders and to gain skills of critical analysis relating to mental health.

Students reported feeling more engaged with the module content and having ownership of their learning. Group dynamics complimented the way that each of the members of the groups preferred to learn. Some took a more reflective analytical role whilst some preferred to lead the group.

Figure 7 Problem-based learning at the PREVIEW-Psych Student Information Hub.

Quick Start for Academics and Technicians

If you are an academic or technician and are interested in finding out more about using problem-based learning for teaching Psychology in Second Life there are a number of ways that you can find out more.

1. If you want to find out more about using Second Life for teaching without downloading and installing the program to your computer please visit the PREVIEW-Psych website for more information. www.PREVIEW-Psych.org

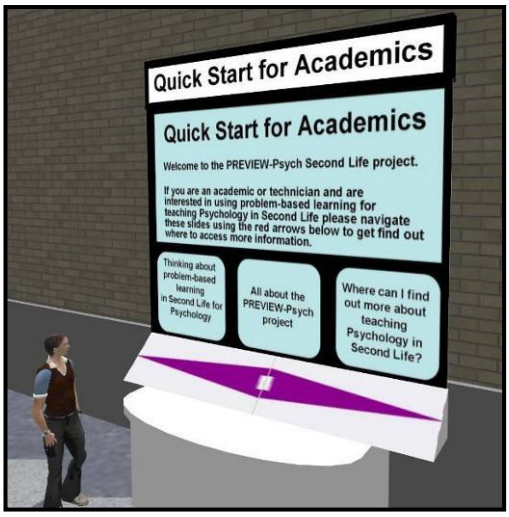


Figure 8 The Quick Start vendor in Second Life provides further information and resources for academics.

2. If you already have a Second Life avatar account and have installed Second Life you can go straight to the project site by clicking this link and following instructions.

3. If you want to create a free Second Life avatar register here: https://join.secondlife.com The process takes about five minutes.

4. When you are at the PREVIEW-Psych project in Second Life please access further resources in the information area or visit or Quick Start for academics display.

5. You can 'teleport' direct to the project and virtual buildings to try out some of the problem-based learning scenarios for yourself by clicking in the below link when you have an avatar account name and password from a computer that has Second Life installed on it. http://tinyurl.com/6qx2uj

6. Instructions for the problem-based scenarios are situated in the information office on the project area. If you have any questions or would like a tour of the facilities please contact a member of the team.

4 – The Role of the Tutor in Virtual Worlds Education

Section 4

This section describes the role of the tutor or facilitator in 3D multi-user virtual worlds.

The tutor is simply a facilitator for learning. Provided instructions are sufficient then the idea of PBL is that students learn for themselves and use their own initiative to find out information they require to solve the problem provided. Other forms of learning require different techniques and skills and these can be effective when blended with problem-based teaching methods.

As a facilitator, tutors can and should ask students questions to stimulate new directions of thinking, along with explain any areas of confusion within the instructions. More information can be found on Problem-based learning teaching techniques and pedagogical theory in Savin-Baden's excellent book (2007).

It is very easy within the role of tutor to 'over-help' students. Within PBL sessions tutors should resist from imposing their own knowledge and ideas on the group or individuals. The purpose of PBL is to encourage self-directed learning and as such, once it is set up, there is very little for the tutor to do until assessments are produced. Once the scenarios are running the facilitators should avoid interfering with the students learning.

Different types of teacher role

In problem-based learning (specific teaching), the key aspect of problem-based learning is allowing the students to direct their own learning process through the exploration, integration and assimilation of information they acquire themselves. Students identify the knowledge and skills required to solve the problem and identify the learning issues and goals. Students then assess their own competency to facilitate this and engage in self-directed learning, returning to the group periodically to assess progress and identify new goals and issues. This process continues until the problem is resolved and explained.

There are two methods for helping students during this process: asynchronous learning and synchronous learning. Students should be encouraged in both instances to facilitate the learning for themselves, and attempt to resolve any group issues themselves in the first instance, the tutor should maintain the role of mediator and address issues only when them become problematic for the group as a whole.

Asynchronous e-learning is facilitated at a distance , through email, discussion boards, blogs and other online devices. This enables students and tutors to be online at different times. This method of learning ensures that students spend more time reflecting on their communications, refining and specifying more directly the issues and ideas. Hrastinki (2008) found that more than 90 percent of asynchronous communications were content-related, compared with around 60 percent of synchronous communications. The cognitive model of media choice by Robert & Dennis (2005) theorises that asynchronous learning increases the ability to process information as the receiver has

more time to comprehend a message due to the fact that immediate response being unnecessary. Asynchronous learning is best used when reflection is required and when time constraints mean learning must take place over times when not all participants are available.

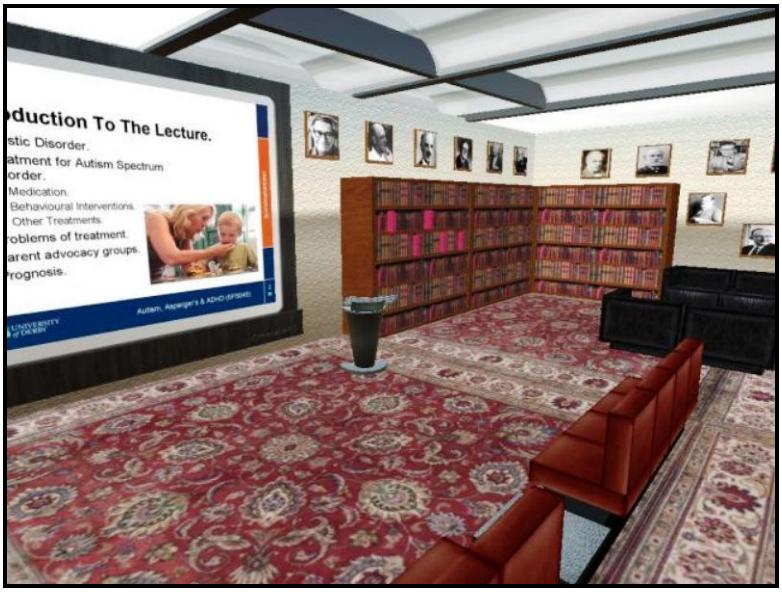


Figure 9 Students can access learning materials at their convenience using virtual library spaces.

Synchronous e-learning is different. The tutor and learner inhabit the same learning space at the same time. Learning is facilitated through use of media and chat facilities. This is a more dynamic and social method of learning, enabling students to feel like participants in the learning process rather than isolated individuals.

The cognitive model of media choice by Robert and Dennis (2005) predicts that synchronous learning increases motivation. This may well be because learners are participating in an on-going exercise where reactions are required to further the process of task completion. A downside to this motivated process is that there is an over-focus on quantity rather than quality of communication, as learners want to respond quickly so as not to disrupt the flow of conversation. Synchronous learning is best used when complex issues need discussion and in the planning of tasks. Within Second Life it is possible to use asynchronous learning and avoid the pitfalls of isolated learning as students work in groups synchronously and the tutor can move between synchronous and asynchronous learning as best suits the students.

Juggling Roles

In the classroom and In Second Life, tutors must be able to multi-task and split their time between the real-world classroom setting and the virtual world of Second Life. In the classroom, tutors must make sure that students are focusing on the task in hand rather than surfing the web. Tutors must also limit conversations unrelated to topics and keep the general noise down – as excessive noise from some groups may hinder progress in other groups. A possibility is to use headsets to limit real-world interaction and promote immersion within Second Life.

Tutors must also be able either to field technical questions and problems themselves or refer on to a technical member of staff who is available to help in students' sessions. There may be instances where

technical aspects of Second Life may need demonstrating to students so they can complete the tasks, at which point it is helpful if tutors are sufficiently technologically adept to do this as they are best placed to explain within the context of the tasks. Within Second Life tutors must be visible enough to be able to field questions and make sure students stay on task, but also stay alert to any questions which require attention in the real-world classroom. When juggling these roles tutors need to make sure that their status is set to "busy" so that students within Second Life know to wait.

Directing the learning

It is very easy to over-help students within a structured learning environment, but tutors must refrain from this within both PBL and within Second Life as a whole. The key is to facilitate rather than dictate the direction of learning. Tutors need to allow students to explore the world and the scenarios provided. Instructions provided need to be clear enough for students to be able to do this.

However, the tutor must be available to field any questions that arise. With the best intentions and clearest instructions in the world there will always be some students who do not understand what to do. However, it is easy for the process of answering questions to translate into detailed additional instructions and pointers, in particular when groups of students require help. Tutors must be careful not to lead group discussions as these are a critical part of the learning process for the students within both PBL and Second Life scenarios.

Tutors need to keep students on task as well – there are always some who find it more interesting to explore their environment rather than do the task in hand, to the detriment of the rest of the group. Tutors can monitor this relatively easily within Second Life and individually tackle students regarding this so that other group members do not suffer.

Setting up the virtual world

The main point here is to provide very clear instructions. Clarity is the key with Second Life, if your instructions are clear and explicit enough then student are able to go in and use the scenarios and complete the tasks at any time of day with or without your assistance. This applies to the technical aspects of a task as well as the intricacies of the task. Technical aspects also need to be clearly detailed within the Second Life area for the tasks. Students will need explicit instructions as to how to create notecards and email them to tutors. Examples of all of these can be found in the PREVIEW-Psych area of Second Life. Materials need to be well laid out and clearly signposted maps of the area and layout are advisable.

There must be a point and purpose for all materials integrated into the task and Second Life. There is little point adding superfluous materials as these can distract students from the task in hand. Equally there should not be excessive information about the content of the task, students should be encourage to find information for themselves and information presented in the task area should never be sufficient to solve the problem or complete the task set.

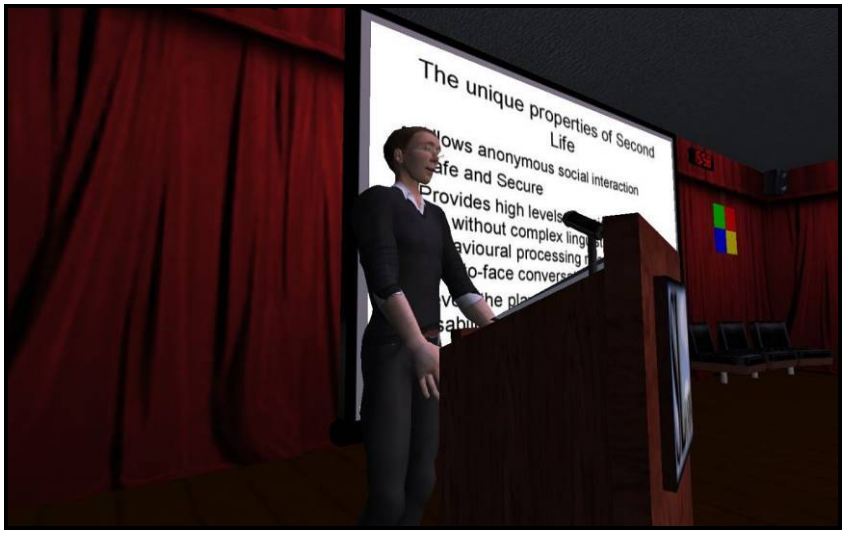


Figure 10 Traditional teaching via a virtual lecture using presentation screen, text and voice.

Technical support

For the technical aspects of Second Life, setting up and fielding student questions, there are two options for tutors to take. Firstly, tutors can learn the technical side themselves, and secondly tutors can enlist the help of a friendly member of technical support staff to help them with this side of the process. If tutors are sufficiently technologically competent then option one is the better approach, as it is easier the help students solve problems and complete tasks if you have access to all the information they need to do so. Tutors can rely on themselves to solve problems as they arise, rather than waiting for someone else to solve them.

However, option two can be a very rewarding alternative as the technical aspects are relatively simple for any member of technical support staff and it leaves the tutor free to monitor and direct the subject-specific learning. Academic staff should be careful though that they do not spend a disproportionate amount of their time correcting problems or developing content in Second Life. If an educational build is planned sufficient time will be needed for development and testing from technical staff. Likewise, academic staff interested in using virtual worlds should be aware that there is a considerable investment of time needed to reach the require skill level to effectively manage an educational virtual worlds site via synchronous and in the early stages of asynchronous teaching.

Virtual Classroom management

Groups also form an important part of the organisational management of the teaching space. It is part of the role of the tutor to monitor group dynamics within any PBL scenario, and can be one of the more demanding elements of time management during tasks. This process is both easier and more difficult within Second Life. This is easier in many ways within Second Life as you can use the mini-map in the top right hand corner to monitor how many 'green dots', i.e. students, are in any place at any one time. You can also, if students are added to the tutor's 'Contacts List', see if students are online or not.

The difficulties lie with keeping track of where students are and making sure they stay in the same location. An easy way to monitor this is to ensure that all students are on the 'Contacts List' of the tutor, that way the tutor can 'teleport' them back to where they are supposed to be. For persistent offenders one option may be to remove them from the group.

Access to the educational environment within the virtual world is a paramount consideration. Tutors cab choose to keep an area of virtual land, and therefore tasks, open to the whole Second Life community; or keep the area private just for the students involved. This access can be restricted either permanently or temporarily. The preferred method is to protect the teaching area from everyone except those on designated group. The virtual land parcel settings can be easily changed to 'Group Access only' via land settings menu by adding avatar names in advance to a group (e.g. Psychology Seminar Group 1). Alternatively, tutors can leave an area open access but ban individual avatars by right clicking on them and selecting 'Ban' if they are causing disruption. However, it is considered courteous to warn individuals with the IM (messaging) function before taking such action. This can be done by right clicking the avatar and selecting IM then typing a personal message.

Figure 11 Multiple avatars in the same space can present and challenge to effective teaching.

Communication happens in three main ways within Second Life: voice, general text, and private chat. Headsets can provide a very effective solution to the problem of in-world communication amongst a bust classroom or computer lab. They are also the preferable method of communication when students are not in the same location as it is possible to get a more immersive experience of Second Life if more natural methods of communication are available.

If students and tutors are using headsets then tutors must ensure that students are aware that they should not all talk at once. This should be evident to students, but if they have been on a 'fact finding mission' relating to the task they may come back and dive straight in with telling other students what they have found. This will disrupt conversations and interfere with the whole process. Additionally some individuals may not have computers of equal specification, and the refresh rate may cause confusion if more than one person is talking at once.

Without Headsets the options available are the normal text-chat facilities familiar to all those who use messenger systems and social networking sites. These do not provide such an immersive experience as does the addition of voice into the virtual world, but it still provides a more than adequate method of communication, and one that does not require accurate spelling for comprehension!

Students do need to take into account speeds to typing though, as some people type more quickly than others, and this needs to be taken into account within the group. However, words rapidly become abbreviated among the students during conversations – for example, 'teleport' becomes 'tele'.

This point really only applies where tutors are running a synchronous Second Life session within a computer room. Generally the noise levels during active participation classes can be a little on the loud side, which can cause problems for others when some students are trying to work in small groups quietly and others are shouting across the room.

One solution to this is to make sure groups of students are physically sitting near each other and the usual advice about heightened noise levels is provided. If the tutor does not normally give noise warnings, it is advisable to do so in this situation as there are excessive methods of communication available, which heightened noise levels hinder considerably.

General considerations

Tutors need to monitor how much conversation is occurring through private chat mechanisms. This is, unfortunately, a very simple method for groups to splinter. If too much is occurring in private chat then other members of the group will be at a disadvantage through no fault of their own.

'Lag' can be incapacitating to teaching and learning. This is caused by many different reasons but the end result is that moving and communications are spoilt. Often the reason is local and caused an under specification computer or network connection. However, this can also be caused by the server computers that manage the information traffic or by too many people in the same area on Second Life. The result is that everything slows down, most noticeable frame rates and movement across the virtual world. It can turn an enthralling learning session or demonstration into a painfully slow experience. It is in everyone's interest to avoid lag.

Space in Second Life is divided in several different ways. The 'grid' represents all of Second Life, which is comprised of the 'mainland' and private 'Sims' (Simulators) otherwise known as Islands. The mainland is virtual land sold by Linden Lab to individuals; the private islands are often joined into expanses of land and rented out or developed for specific purposes. Most educational land comprises private Sims that have been specifically developed for the purpose of teaching.

5 – Why Use Second Life within Education?

Section

5

This section introduces you to the 3D multi-user virtual world Second Life.

Second Life is an immersive, online-simulated environment, with 3-D graphics that allow users to interact in a manner mimicking real-life interactions. Second Life has a user base of many hundreds of thousands of registered avatars. Avatars within the virtual world are being used for many different purposes including, gaming, social networking, marketing and commerce and real-world businesses. However, one of the ways in which they hold the most potential is in the field of technology-enhanced learning in education.

Traditional 2-dimensional Virtual Learning Environments (VLEs) on the other hand are less immersive and more functional. They are just as effective at delivering many types of media to students, but where Second Life has the advantage is that it provides a heightened sense of community to students when they are away from University premises. Traditional VLEs have less opportunity for learn-learner interactions, which add to a students' sense of community and belonging, something Second Life has as its forte, adding to the sense of involvement with the course and engagement with the material being learned.

Figure 12 Part of the Derby University Teaching area within Second Life.

Second Life is an immersive, online-simulated environment, with 3-D graphics that allows users to interact in a manner mimicking real-life interactions. These immersive virtual environments are being used in many applications: gaming, social networking, marketing and commerce. However, one of the ways in which they hold the most potential is in the field of technology-enhanced learning in education. Immersive and collaborative communities of practice, such as are possible in these structured virtual environments, can engage students in innovative and creative ways. Student-centred immersive virtual environments hold the potential to unlock creative problem solving and offer a deeper level of collaborative learning. Highly motivated students produce richer and higher quality work than those who are not (Pajares & Johnson, 1994).

This method of learning engages students of all levels and teaches them to be creative with their learning and to think 'outside the box'. It is a method that keeps students working far longer on educational tasks than they would normally, time appearing to go faster because it was an enjoyable experience (Sanchez, 2007).

Second Life can offer a much richer learning environment than traditional Virtual Learning Environments. The real-time interaction experienced by students is facilitated by a range of communication options (voice chat, and instant messaging for both groups and individuals) providing a far more immersive collaboration experience than traditional online learning.

Multi-user online virtual worlds, such as Second Life, can provide an accessible and rapidly deployed platform for immersive learning, support groups and virtual research. However, the challenge to these innovative spaces is in realizing their potential without being bogged down in the technology. Educationalists, therapists and an increasing number of researchers are using pseudo-3D 'avatars' and groups to connect virtually with others. Just as the 2D web has broken down barriers to the availability of information, 3D virtual worlds are allowing interactions between people irrespective of location, status or disability. Support groups, educational developments and virtual laboratories for research are utilising the immersive graphically realistic nature of virtual worlds and emerging properties to good effect.

3D multi-user virtual environments can provide a highly immersive and socially interactive way of enhancing university teaching. Most major universities have ventured into immersive 3D virtual worlds. However, existing teaching and pedagogies may not be sufficient to inform good practice in these settings. Specific skills need to be acquired by teaching professionals to run effective learning and teaching 'in-world'. The University of Derby evaluated the use of Second Life for teaching and learning in Higher Education by developing virtual teaching methods and an extensive virtual world teaching space.

When traditional text-based content is blended with innovative student-focused methods, the result seems to be a shift from isolated study and tutor-led instruction to student-led highly interactive group learning. Methods of teaching need to be established that place the student at the centre of the learning by involving them in the experience itself. Virtual worlds are ideal for this and findings suggest they can offer high levels of student engagement and satisfaction although whether the academic benefits of such classes are equivalent to face-to-face or existing e-learning methods is not yet fully established. Teaching in virtual worlds within Higher Education is challenging, requires planning and continual development, needs a flexible attitude towards learning, and possibly requires relinquishing control to the learner at the risk of alienating some students. The potential benefits are increased immersion and engagement with learning activities. Given the existing use of virtual immersive worlds and the impact of the internet on teaching along with the likely expansion, increasingly educationalists have to rethink student – tutor contact in these innovative learning spaces.

Why a Virtual World?

Using virtual worlds effectively can provide virtual teaching environments in which students can access a 3D multi-user educational environment in real time and interact with staff and other students or educational interactive material that has been specifically created for them. This teaching can take place in real time, in the form of virtual lecture, or asynchronously, in the form of programmed objects and activities across several modalities, audio files , streaming video, pictures, text, live interactions with artificial humans or 'chatbots', quizzes, problem-based learning, student seminars, lecture material, interactive surveys, games, quests, assessments and blended learning with existing web-based resources etc.

The virtual world also acts as a very good forum for students to come together, despite physical location, to reflect on educational material at their own pace. Students control an avatar, in the form of

a 3D representation of themselves that can independently move and interact with the entire virtual world Second Life. In an educational context, this means we can provide students with a custom designed and safe environment for them to learn and we can control that environment in a variety of ways to suit our teaching methods and needs.

The manner of information provision in Second Life is less 2-dimensional, and more in tune with real world experiences of students, from real-life scenarios to the computer games which are prevalent in society today. It also provides a safe environment for students to learn and hone their skills with real-world situations and scenarios, enabling mistakes to be made without consequence. This is particularly valuable within work environments involving invasive interactions with others, for example the medical profession. Combining this with PBL can lead to a more thorough education, which is more applicable to the real-world scenarios they will face when they leave University.

Figure 13 Learning in 3D Immersive virtual worlds can add a new level of engagement for students.

There are many additive benefits of working in virtual worlds. Second Life should not be thought of as an alternative to traditional teaching and current VLEs, rather it has additive benefits that can enhance learning across the teaching method spectrum. This means student have more choice about how they wish to learn, Second Life needs to be as good as VLEs, not better than them, for it to be successful as a vehicle for learning.

Asynchronous Learning

Asynchronous learning allows staff and student to interact at a distance and at any time of day. Staff can facilitate learning through email, discussion boards, blogs and other methods. In this manner students learn independence in their learning and staff members do not have a constant stream of students all asking the same question – generic answers or materials can be posted within Second Life so that students can access this without the need for the tutor to reiterate themselves ad infinitum.

Second Life enables students to learn at any point of the day, when best suits them. For some this will be during the day, for others it will be when their shift finishes at their workplace or when their children are in bed. Students can arrange to meet within Second Life and work together when it is inconvenient for them to travel, for example late at night or when they are ill.

The Fun Factor

A major benefit of Second Life is that it presents more like a computer game simulation than as a learning tool. There are many students who prefer to play computer games than study, and this provides the 'fun factor' from interactive computer games while still being a vehicle to facilitate course-specific learning. As those of you already familiar with Second Life will already be aware, time spent working in Second Life does not feel like a chore, if anything it does not feel like working at all – you

generate and modify objects, teleport, fly, explore different virtual areas and search for 'clues' of information.

The overall feel is that of a computer game – but with the addition of direct learning benefits for the students. Ask any computer-literate student to relay the details of the level they have got to on their favourite computer game, for example 'Halo' or 'The Sims', and they will have no problem giving you explicit and detailed information about that level and how they got there. Ask them to relay the details of the latest lecture and they will be able, at best, to give you the gist, but it is unlikely they will be able to provide you with detailed analyses and interpretation of the content, never mind previous lectures.

If you can integrate this enthusiasm for learning via a particular method into the course structure the result can only be increased learning among the student population`. Even those less technologically able find the process fun and rewarding, while enhancing their computer skills at the same time.

Safe Environment for Learning

Second Life is a safe place for students to explore a virtual world containing many of the characteristics of the real-world, without the threats. Specifically within Psychology this means being able to explore more controversial scenarios that they would not normally have access to. For example schizophrenic hallucinatory experiences are being explored by Yellowlees et al (2006) within Second Life, (University of California). They have found that these virtual hallucinations helped students learn and understand more about the experience of hallucinations.

Another, related site within Second Life is the VNEC (virtual neurological education centre), set up by Lee Hetherington in Devon, UK (Kamel-Boulos et al, 2007). It is set up to demonstrate common symptoms of neurological disorders. The user in Second Life experiences these symptoms, effectively limiting their avatar's movement, sensory experience, and coordination. In this manner users are more aware of neurological disorders and can look for information, training and support within the VNEC.

These experiences are not possible within real-life scenarios, and so the virtual world can be used to teach people about typically in-accessible experiences and information.

Highly Customisable

You can make your space within Second Life look any way you want. All varieties of customisation are evident within Second Life and it is your choice on how to set up your particular area. Some Universities (for example Hertfordshire) have built mock-campuses, whereas some have a more relaxed layout (for example Derby). Student so far have reported preferring the more relaxed layout, avatar Milton Broome's bookstore on 'Education Island' was particularly popular. The key is to be imaginative and make the learning experience as fun and dynamic as possible. This may require a little more time initially, but long term it is defiantly worth it.

Cost Advantage

Working in Second Life is very cheap. The Linden dollar (L$) is how items are purchased within Second Life, you will need to buy some dollars before uploading material. However, the exchange rate is very good (£1 to L$390 as at July 2009), and investing around £50 (or €59) will see you set up with enough Linden dollars (L$19,505) to buy and furnish a virtual teaching space. Most of the resources you will need to teach in Second Life are available to buy in world and there are many dedicated sites that will sell resources for the equivalent of a few pence.

Intelligent Avatars (Chatbots)

More recently innovative technology has entered Second Life in the form of non-player characters, or chatbots. These artificial avatars can act as permanently on duty virtual secretaries or staff at an educational or research site in Second Life. They can offer a simple yet effective way to communicate and give out information to students when live teaching staff are not present. In some cases they are most effectively used when linked with a server-side artificial intelligence program that can 'learn' from the interactions with people via their chat and actions in the virtual world. The use of this technology is becoming more frequent and utilising these can bring a teaching space to life.

Recording and Archiving

Text is the primary way that avatars communicate in Second Life. This is easy to record as the Second Life interface has its own 'local chat' archiving method and recording this to your computer's clipboard is the same as within popular word processors. Control + C to copy and Control + V to paste selected text.

Voice can also be recorded straight from your own computer by using the 'Sound Recorder' program in Windows or any other recording program. The Second Life voice audio stream is outputted as any other sound file on your computer and can easily be converted or edited using freeware programs or archived to the web.

'Screen Grabs' are a way of recording images of the teaching space and can be used as an aid to the teaching sessions in their on right. These are available directly from the File menu within Second Life and are very easy to upload as 'textures' to use in presentations or to pass to students in teaching materials via the inventory. One popular method had been to send out students on fact finding missions and to archive their ventures with a series of captured images which they can then upload to a slideshow presentation for the benefit of the group.

Network of Educators

There is an international network of educators working within Second Life and there are many Second Life islands, websites and social networking groups dedicated to this. There are several advantages to this:

- Multiple angles of learning and explanation;
- Increased range of ideas an applications;
- International level of support and collaboration for both students and staff.

Figure 14 Inside and outside the virtual teaching space.

Interactivity

Second Life is an interactive and immersive experience, one that students and staff can enjoy and interact in. In this respect it has a major advantage over traditional VLEs, individuals can interact in real time without having to wait for questions to be read and responses posted. Individuals can see who is online at any one time and directly talk to them, either through voice or text methods, to find the information they are looking for.

When compared to a traditional text-based virtual learning environment 3D multi-user virtual worlds show a range of advantages. For example, whereas text-based VLEs often use text chat or message exchange systems such as Forums, in Second Life students can actually meet up for gatherings that resemble real life meetings. The voice function is particularly effective when large numbers of students are in a small area and engage in multiple crosstalk discussions about a module topic or problem-based learning scenario they may have taken part in. It is in the social domain that 3D environments are most effective, providing high levels of immersion and interactivity with module content.

6 – The Skills Required for Teaching in Virtual Worlds

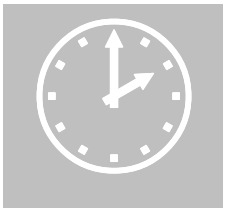
Section

6

This section deals with some of the most important skills required for teaching in the virtual world.

For the technologically competent, Second Life is a very easy learning process and the educational value of this resource is almost immediately available. For those who are less technologically adept, Second Life has numerous locations where the basic navigational skills can be learned in the individuals own time.

All academics thinking of using Second Life for teaching should provide instructions for their students on how to find and use facilities by setting up an associated web page and posting links (SLurls: available from the Map) to in-world sites. The process is very straightforward, and, although it may not be intuitive to many at the start, it does not take long before students and staff alike are competent in moving around Second Life.



Time is a factor so there needs to be an allowance made for this for those wishing to consider integrating Second Life into course structure. As always plenty of preparation time is required if you are considering developing your own custom teaching environment. The skills required to teach effectively require time to master and the technology can be daunting at first. We recommend that if you are thinking of starting teaching in virtual worlds that you first attend a few virtual lectures or seminars to get a feel for different ways of presenting information and interacting with students.

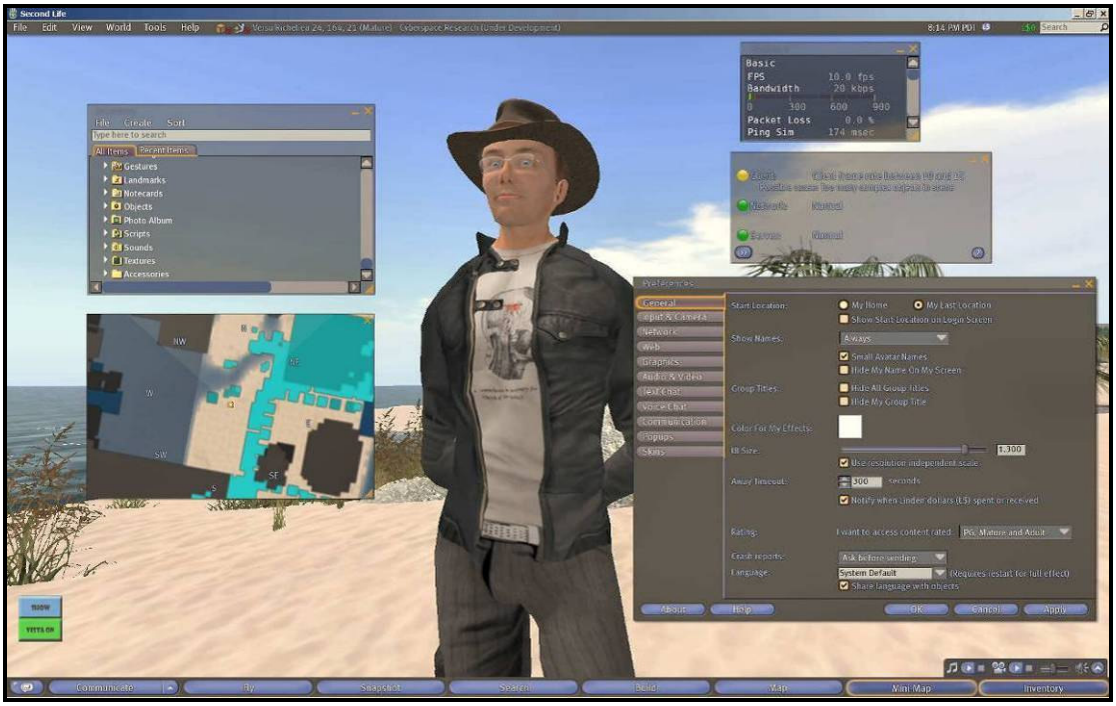


Figure 15 The Second Life Graphic User Interface (showing the Inventory, Mini Map, and Preferences windows).

Competencies required for Second Life

Individuals thinking of using Second Life within education must have some basic competencies in technology before attempting to get started. There are different levels to which aspects of Second Life can be utilised, and those with skills that are more elementary are still able to integrate and utilise enough aspects of Second Life to make educational uses viable. The more advanced technological aspects of Second Life should only be attempted when a more advanced level of technical expertise has been reached. Table 1 summarises the skills viable at each level of technical capabilities.

It is important that all individuals, no matter what their technological capabilities, engage in the induction facilities before attempting to fully integrate within Second Life. These areas are designed to cover the vast majority of core skills needed within Second Life, many of which are unique to Second Life. Individuals who spend time on computer games will be able to slot straight in to using Second Life at a relatively advanced level. Those individuals who are skilled in computer use will find Second Life relatively straightforward once the basic skills are learned. Students who have lower levels of technological competence will need to spend longer in the induction areas within Second Life to enable them to immerse themselves fully within Second Life and obtain the benefits of any material located with Second Life.

One of the advantages of Second Life is the secondary benefit of all-round computer-skill improvement which occurs simply be engaging with the virtual world itself. Those leaving Second Life after having coped with the demands contained therein will find that their technological competence has improved.

Table 1 Technological aspects of Second Life possible at difference levels of technical expertise.

	Technological Competence Level		
	Elementary	**Basic**	**Advanced**
Organisation	• Creating an Account • Logging into Second Life • Editing Appearance of Avatars	• Buying and setting up buildings and teaching structures • Uploading materials (images, media files)	• Inventory management • Creating buildings/structures • Chatbots / Intelligent Avatars
Control	• Walking and Sitting down • Teleporting • Search Function	• Knowledge of key layout of keyboard • Knowledge of basic Menus • Managing multiple open windows	• Knowledge of advanced menus • Land and Island Management • Tweaking the Preferences settings
Communication	• Text chat • Watching videos / Listening to audio files	• IM chat messaging • Voice chat • Profile Page	• Providing streaming videos and audio files • Managing Groups • Group IMs

Inductions

Good inductions in to the virtual world are essential if effective learning is to take place. The basic skills to be mastered include the following: Understanding the Second Life display, Communication (Text and Voice chat), Notecards, Navigation, Maps, Keyboard controls, Teleporting, SLURLs, Search functions, Folders and Inventory, Profiles, Contacts list, Advanced menus, Appearance, Groups (how to join).

There are many good induction areas within Second Life, including many 'Orientation Islands' throughout Second Life. A search via the Second Life interface will yield many induction sites that are available to orient students and staff in vital skills such as, navigation, communication and inventory control. These skills are best learned in the virtual world and practice is essential to becoming sufficiently proficient to acquire more advanced skills required for managing larger groups of learners or facilitating small group work seminars. Links to excellent induction sites from St Georges' and Coventry University can be found in the Resources section.

Distance learning skills

Distance learners face greater technological barriers and deal with asynchronous learning for the majority of their course, real-time interactions being a small proportion of their learning experience. Their work schedules are, by necessity, flexible, and not always in line with either other students or lecturers. This leaves them with a lower sense of community than those students studying in the traditional manner.

There are two types of interaction required for successful learning of material: individual and social. Individual interaction is the learner's interaction with the material directly, while social interaction is the interaction between two or more people about the learned material. Both types of learning are crucial for effective and sustained retention of the material (Bates, 1997).

Navarro and Shoemaker (2000) found that students learning through online media, provided on a CD-ROM and the VLE, did as well as, or even better than, those using traditional learning formats (even when technical and other factors were taken into account). However, they still felt that a major drawback of the online learning method lacked learner-learner interactions. Second Life can address this issue directly, as it provides better feedback than traditional asynchronous course materials, while it's more immersive nature promotes interactions and a sense of community amongst learners, regardless of their location or schedule.

Our views and beliefs are expanded by interactions with other individuals who have differing perspectives and opinions, humans validate and change their beliefs and ideas through direct interactions with others. Second Life can provide, at least better than any traditional VLE, this immersive interactive platform where students can feel engaged with the material and their student community.

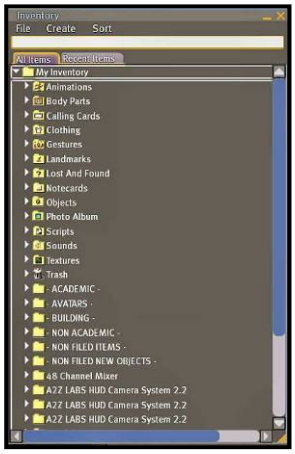


Figure 16 The Inventory.

Graphic User Interface

At first the graphic user interface (windows) of Second Life can seem daunting. The following section briefly describes the important controls and windows you should become familiar with.

The Inventory is the heart of the Second Life experience. It's where all of your virtual objects, notes, clothes and teaching gadgets are kept. It's like a virtual briefcase that you can organise. Most of the teaching tools that you will acquire will be free or a few linden dollars and they can be found here.

The Map and the Mini Map are essential to navigate through Second Life. You can easily 'teleport' to a destination by double left clicking on the map. dots indicate avatars in close proximity to yourself on the map. The mini map can be permanently visible and use as a sort of visual radar to allow you to have an idea of where each of your student groups are, It is possible to zoom in and our by using the scroll wheel on your mouse.

Figure 17 The 'Map' and 'Mini Map' help navigate across regions (Avatars are represented by dots on the map).

The Preferences tab is needed to fine tune the Second Life experience. The 'Preferences' window and tabs are key to controlling the Second Life experience. These settings can have a dramatic effect on the whole experience. Attention s drawn to the 'Graphics' tab here. The slider can be moved from minimum graphics settings for those with older computers to Ultra for top-end gaming computers. When selected the advanced function allows users to select a custom 'draw distance' at which objects will be visible in world. Reducing the draw distance can dramatically improve the smoothness of Second Life by increasing the speed at which individual frames are rendered. Try reducing draw distance if Second Life becomes too slow.

Figure 18 The Preferences tab that allows fine-tuning of various settings.

The Search function is very useful when you need to find out information about a specific topic, person or group within Second Life. You can also find out about upcoming educational events. There are a number of Psychology groups within Second Life that regularly hold debates, presentations and discussion events.

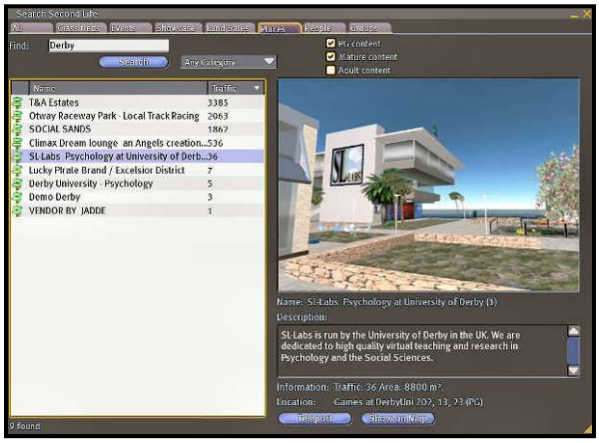


Figure 19 The Search tab can locate places, people, special interest groups and events across Second Life.

7 – How to make Problem-Based Learning Work in Second Life

Section 7

This section gives you tips for using problem-based learning teaching techniques in a virtual world setting.

It has long been established that problem-based learning leads to a deeper approach to learning (Newble and Clarke, 1986) and there is ample evidence for the value of active and cooperative learning (Johnson, Johnson and Smith, 1991).

Figure 20 The PREVIEW-Psych chatbot characters (Daughter, Mum, Dad and Grandmother).

Interactive Teaching

The possibilities for education within Second Life are limitless and one must be careful not to use this resource for the sake of it. Any teaching resources provided within Second Life must be embedded within traditional learning methods and fill a direct need within the course. Simply using Second Life for the sake of it will require time and effort from students and staff that is unwarranted and provides no additional benefit. There must be a direct applicable benefit to the material contained within Second Life, so purpose-driven use is advised rather than speculative-use.

Teaching in Second Life at higher education level can be challenging, and requires planning and continual development to keep materials up to date and functioning as intended. Staff planning on using Second Life as a teaching resource must have a flexible approach to learning, traditional methods of teaching do not work well within Second Life. Student and staff expectations can differ widely so it is very important to manage the expectations of your groups from outset. In particular the need to relinquish control to the student as the learner in charge of their can be challenging. Second Life works very well as an asynchronous learning method (see chapter on 'The Role of the Tutor), whereby the student directs their own learning to achieve the goals set by the tutor.

Staff need to be enthusiastic above all else, and fully understand that Second Life is an online community with a huge potential for education, not a game in the manner of 'Halo' or 'The Sims'.

There needs to be an action-oriented approach to teaching methods, those who constantly strive to increase and improve their teaching skills will do well within Second Life.

Tutors need to ensure that students do not rely on digital courses for information. Many students rely far too heavily on the internet for their material, and this is a negative side to the increase in usage of the web over the last decade. Traditional book-learning is far superior in many aspects of learning, however, virtual worlds learning can provide a useful and beneficial addition to the learning experience, providing a rich environment for cooperative learning activities.

It is important for material within Second Life to refer to traditional sources of information as well as technological advanced sources. In this aspect Second Life can be advantageous over traditional VLE's – providing real-life cues which then need to be researched in the traditional manner. There is no difference between Second Life and VLE's over which material to provide or direct students to, but the manner of delivery is very different.

IT Support

Staff do not have to feel pressured into learning the technical aspects of Second Life, they may find that the computing staff within their universities are already familiar with Second Life and will be willing to help set up and maintain their projects within Second Life. This benefits both staff and technician, the staff member will naturally pick up a few more IT skills and gain an additional individual for the students to look to for help, and the technician will widen their knowledge base in the subject the students will be studying, making them better able to help and advise in the future.

Tools to set up within Second Life

Giving a presentation can be made easier by purchasing simple objects designed to do this. PowerPoint slides can be uploaded as jpegs for L$10 (Linden Dollars). Just remember the good principles of giving a presentation in the real world apply just as much to the virtual world. Don't overload the slides and make sure all information is clearly accessible. See PREVIEW-Psych area for example slides uploaded onto boards in the central area.

Whiteboards are useful ways to help groups of students work out their ideas and plans for solving the problems set. When combing virtual world teaching in a computer lab space it is helpful to pause the session and ask students to attend to the central Whiteboard for short periods. Combining class-based practice and virtual worlds teaching is a good way to maintain the enthusiasm and momentum of a class.

Notecards are easy to generate and can be attached to any object you own within the area. Students simply have to click on the object to receive a notecard. Moreover, you can put as much or as little information within these as you like. These can be created by the following commands in Second Life: Method: Inventory > Create > New note. They can be viewed from double clicking each card from within the Inventory.

The Letter Box is an intuitive and easy method of having students return their results to you. A virtual post box with instructions about how to deposit a notecard is a very simple method of getting students to return work to the tutor. These can be deposited by the following commands in Second Life: Inventory > Notecards > find note required > left click and drag to post box.

Instructions and directions around the space you have set. Any instructions which you upload must be obvious when students arrive in the Second Life area. Students will need to either have arrows/signposts directing them to full instructions, or full instructions intuitively easy to see on their

arrival in the area. Directions are typically in the form of arrows on buildings or signposts placed clearly at various locations. Instructions need to be clear and concise. Students must be able to understand the layout and task when tutors are not around to direct them or answer questions. These can be displayed on 'notice boards' or on a scrolling whiteboard that are easily purchased for a few Linden dollars in world.

Training Students

Regardless of the technical expertise of some individual students there will have to be a series of training sessions for all students before they are able to work autonomously within Second Life. This should be staffed by both tutors and technical assistants, so that students can ask both technical and subject-related questions.

One useful tip is to run a series of sessions where students have the opportunity to come and try out the teaching spaces that you have created. They can also visit educational sites in world and generally get a feel for how to use Second Life. There are many educational sites in world that are set up to allow visitors to access educational content. Training sessions can integrate induction sessions with virtual quests, trips to academic institutions or can be structured as formal in-class seminar training.

Stages Required and Questions to Consider

Learning Outcomes should be considered for your module or course from outset and several question should be addressed. What do you want students to learn? What information and experiences should the students take away with them? Some questions to ask might be: How can these be mapped on to the virtual world? What kinds of resources and technical expertise will you need to fulfil the ideas you have? If you need technical help, can you obtain it? Possibilities and Capabilities (What can we do?) Considering the Learners, will the students find this material engaging? How will this help the learners with their studies? Which method of learning is more appropriate for your students and your scenarios? Asynchronous and Synchronous scenarios.

- Tasks
    - What are you going to get the students to do?
    - Must be an interactive learning experience, not passive.

Characters can involve: Chatbots, Non-player characters, intelligent avatars.

- The environment

The 3D virtual world can contain a wealth of 'intelligent' objects in the shape of everyday items that can be programmed or 'scripted' to respond when avatars interact with them. These can take the form of, for example, magazines, pictures, TV screens.

Procedure and instructions to learners must be clear and concise is the most important message that can be given here. The clearer and more concise the instructions you can give, the smoother all scenarios and Second Life activities will go, and the easier it will be for asynchronous learning to take place.

- Setup
    - Make sure your objectives for the learning experience are clear, everything you include in Second Life must have a purpose and be suitable for the medium being used.
    - Make sure you have clear desired outcomes and design all material around them.

- Everything in Second Life must be well assembled and clear, this may take some time to sort out, but the end result will be a clear scenario with clear objectives containing relevant and accessible material the students can access at any time of day.

- It is useful to have a place (Helpdesk style) to ask questions or get technical assistance, as well as a facility to obtain feedback.

- Clarity

  - Use straightforward language in your instructions, technical terms can be used for the material to be learned, but may confuse the issue when initial instructions are being given. The more effectively you can clarify and simplify the instructions, the better the students will be able to understand the task, and the less questions and complaints you will be asked at a later date!

  - The layout and directions must be intuitively clear, and all directions within the area must be coherent and easy to follow.

  - Students need to be able to find their way around and complete the task when you are not available to help them. In other words, the best PBL scenarios within Second Life involve asynchronous learning

Development

Piloting is a very important stage when running PBL in Second Life. It is vital that all chatbots, materials and instructions do what they purport to do. It may be necessary to test a teaching scenario with some colleagues or willing students before formally incorporating methods into a teaching module.

Student inductions will need to be given at some stage to get them to a minimum skill level and then introduced to the scenarios. There must be no assumptions made about levels of computer ability and technical expertise. Enough time should be set aside for students to go through in-world inductions and familiarization with Second Life and the scenarios. When students are using the scenarios for the first time it is important to be on hand to help with any issues that arise, be they technical or task-related.

Blending with Real Life

Integrating with the module is the best way to embed the students learning within the course. They may find out a lot more than you ask them too, but this is no bad thing! Integration within a specific course gives the whole exercise a point and purpose which students appreciate, meaning they will make a conscious effort to complete tasks. Students will work harder too if they see it as integral to their courses. If there is a practical element to your course which is difficult to study within real life, for example some psychology experiments cannot be conducted within a lecture setting, Second Life is a good method for introducing students to these methods and concepts

The 3D virtual world is not for everyone and it is common to offer an alternative within a more traditional 2D alternative in a virtual learning environment or via web pages. These can also be accessed by learners from within the virtual world so can act as both an alternative format and an aid for those using Second Life. In this manner all levels of technical ability are catered for, and students with lower confidence in their technological skills can be either introduced to Second Life slowly or avoid it altogether without consequence to their studies.

8 – Developing the Teaching Space

Section

8

This section describes some of the things to consider when first starting to construct an educational site in the virtual world.

There are various aspects to consider when first setting up an educational site within a virtual world. The pedagogical value needs to be considered, alongside the educational needs and outcomes of the students. It is important to consider what skills you want students to learn, and whether this can be facilitated effectively within a virtual world before venturing into the realms of creating environments for learning to take place. This section will take you through some of the considerations and practicalities of setting up within a virtual world, specifically Second Life.

Learning in Virtual Worlds

Non-sequential learning is a more real-world method of learning, akin to asynchronous learning. There are no nice neat topics with sections of handily presented data as in traditional textbooks. The students have to hunt for information themselves, and integrate it correctly before it makes sense. This method of learning is a more thorough method of learning, as it promotes motivation, self-directed learning as well as critical thinking and better problem-solving skills.

Experiential learning is how learning occurs in the real-world, outside of formal learning establishments. This is a method of learning whereby individuals encounter information in a non-sequential manner through their own interactions with the environment, but not always encountering all the information they require. This method of learning leads individuals to hunt for information themselves to compliment and explain their experiences. Increasing the same skills as non-sequential learning, motivation, self-directed learning, critical thinking and problem-solving ability. Alongside these skills, individuals also learn how to temper their responses to experiences and learn not to rush to hasty conclusions before in possession of all the facts.

Including interactivity is one of the best ways of learning within Second Life. Students interact with each other and with staff more often and on an equal footing than is traditionally the case within higher education. Interaction is how the world outside Universities operates and moves forwards, so this is an important skill to learn. In particular the care with which students have to phrase sentences. Within a real-life educational setting they may not need to be as clear with how they phrase their inputs as they can rely on non-verbal cues. Within Second Life there are none of the usual non-verbal cues which individuals rely on to put across their point, so verbal content, by necessity, must be better thought out and less ambiguous.

Figure 21 The Information area where students receive instruction and discuss and reflect on the problem scenarios in small groups. The post box in the background is where the students deposit there end of session reports.

Students need and want to be able to interact with other members of Second Life, so learning areas should not be too restrictive. It is possible to block external members of Second Life, but students appreciate the ability to interact with the rest of the online community (Sanchez, 2007). It is a useful forum for meeting new people across the globe and learning to cross the language barriers – again, learning to communicate clearly and less ambiguously.

Purpose and Methods

There has to be point and purpose to all materials and structures included and uploaded. Students tend to react and be motivated when they understand the reason for a teaching technique. Educators using virtual worlds should ensure that students know the purpose of any particular activity before they are expected to engage in it. This is especially important in virtual worlds teaching and learning where students can feel isolated from the rest of their group or from the tutor.

A good learning environment will cater for all abilities. It is important to make sure that any information or learning scenarios are suitable for a wide-range of abilities. This is especially important in conceptual based subject like Psychology where students may struggle to acquire theoretical understanding at first. Often blended learning methods are necessary to complement and support the virtual world sessions. Likewise the virtual world teaching can be utilised to compliment rather than replace existing teaching methods. Students appreciate multiple ways of accessing information on teaching modules and this can cater for differing ability levels and learning styles.

The teaching space can be designed to encourage group work and collaboration of time is taken to think about the student experience. Rather than setting up passive text-based information it is preferable to create audio files or immersive quizzes and 'quests' where students are forced to rely on each other to complete the learning experience. With a little creativity and thought the virtual world becomes a great place to immerse learners in the experience of the accessing content rather than passively reading text related to module lectures.

The 'Slabs' approach was a method developed in teaching Psychology undergraduates at University of Derby. It should be considered an alternative to the problem-based learning methods presented here but can also be used in a blended learning context with other methods. After trying out different recreations of real world teaching spaces began to ask what the necessary requirements of an effective teaching space were. In trying out different set-ups with students it was found that a stripped back approach worked the best in a virtual world setting.

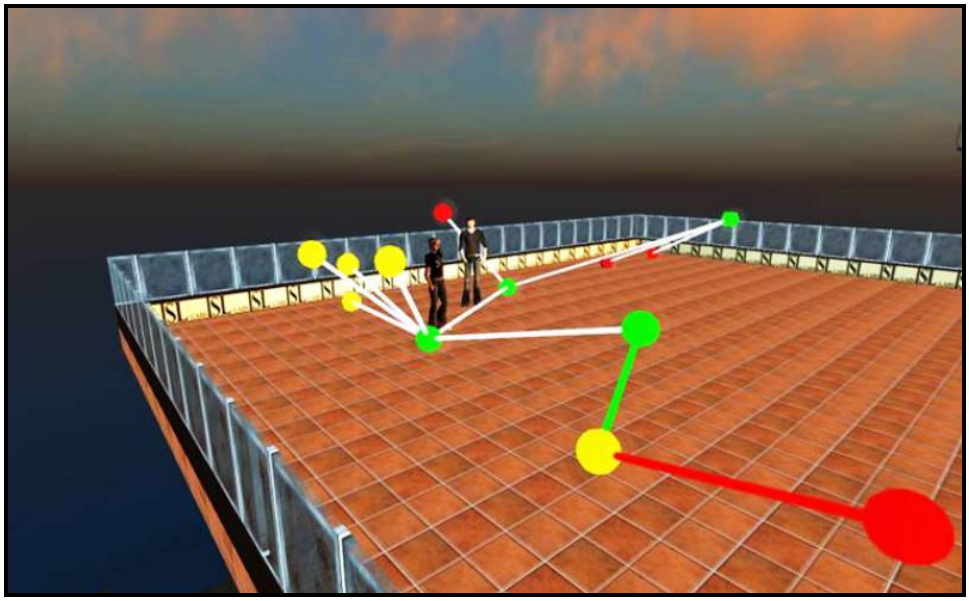


Figure 22 The stripped-back 'Slabs' approach was used to remove in-world distractions. Here a 3D 'spidergram' schematic of a Psychology lab report is being constructed by two undergraduates' avatars. Each line connects sections of the report and contains audio and text information.

A highly reduced amount of objects and textures led to the focus remaining on the learning content in relation to the learner and the tutor. This was practiced on a 'slab' of virtual land suspended many metres above the virtual campus. In that space students could engage with one task at a time and remain focussed on the task at hand. This approach is almost the exact opposite of Problem-based learning in that instead of immersing the learner in the scenario they are torn from the context and presented with the minimum amount of information as possible for effective learning. When one task is finished they move on to the next having understood the task in isolation.

An example of this approach was used on the slab with the aid of a virtual Spidergram planner. As seen in the illustration, students are able to conceptualise in 3D the structure of a Psychology lab report by manipulating objects in the virtual space. Each node of the 3D spidergram contains information in the form of text and audio and the student can edit and rearrange in real time the spidergram sections that represent the separate sections of a report, for example, introduction , abstract, method, results, discussion. The relation between the sections is represented by the connecting lines and each section can be manipulated to construct a 3D representation of the report.

The ability to reproduce visually the concept of the lab report leads to a better awareness of the structure and relation of each part of the report. Students are able to reflect on their efforts in groups and this leads to much higher levels of immersion with the educational content. Students found this way of pulling the structure of their writing apart and manipulating this in 3D space very revealing and reported having to think more about their academic writing and the structure of their essays and reports.

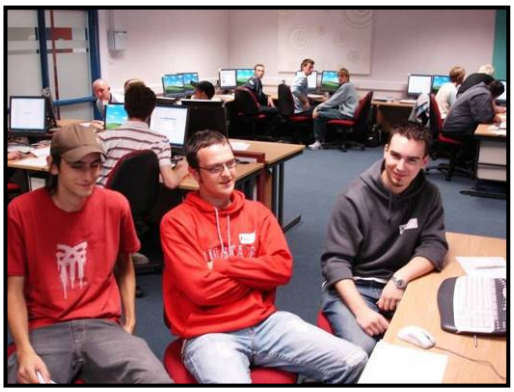


Figure 23 Students enjoy the 'game-based' nature of 3D virtual worlds for teaching and learning.

There are many other uses of virtual worlds for teaching and learning and the potential is very much limited by the creativity of the educators using it as a tool for immersive learning spaces. The technique can also be used with the design of experiments, academic theories, and other content engaged with over the course of an undergraduate teaching module.

Practicalities

After a while in Second Life every educator has a need to acquire specific objects for teaching. The tools of the trade are available across the Second Life Grid and a quick search using the Second Life 'Search Function' will yield hundreds of places to acquire teaching tools. Caution is needed in choosing the right tool for the right job however. Some educational tools are outdated and non-functional as Linden Lab, the creators of Second Life, are continually updating the software rendering many tools obsolete or requiring continual updates. Ensure that the creator or seller of any tool you buy also offers updates that will iron-out problems using them as software updates are issued.

The skills that need to be mastered in Second Life for effective teaching are best practiced within the virtual world. A good mentor is invaluable and there are many networks of educators that offer free instruction. You should at a minimum be sure to master navigation, communication and land and object management. This may sound daunting if you are starting out but the core skills of Second Life can actually be master in about ten hours of practice and guided induction. Time care is needed to manage land and region settings so before moving on to advanced skills it may be best to seek the advice of an experienced Second Life tutor or to join an induction class.

9 – Resources for Teaching in Virtual Worlds

Section

9

This section provides resources that you may find helpful for getting started in teaching and learning when using 3D multi-user virtual worlds.

In this guide you'll have noticed various references to articles and books on PBL and Second Life, as well as learning methods. These are provided below, but are merely a sample of the wider literature available. There is a wealth of information about this topic, and a quick search on the web yields new resources relatively quickly, both articles and books. You will find, as you explore Second Life that you encounter many resources within Second Life itself, as well as various help areas and technical help centres. Along with this there are many websites dedicated to various aspects of setting up within Second Life, for example areas to obtain free scripts. A quick trip into 'YouTube' territory will provide a host of tutorials about most aspects of Second Life, from setting up to its educational uses.

SLurls (Second Life landmarks)

- PREVIEW-Psych project. http://slurl.com/secondlife/Derby%20University/160/103/22
- Coventry University Serious Games Institute. http://slurl.com/secondlife/coventry%20university/140/147/137
- University of Derby Psychology Island. http://slurl.com/secondlife/Games%20at%20DerbyUni/180/100/22
- St George's University. http://slurl.com/secondlife/St%20Georges%20University/163/102/24

Open Access Second Life Groups

- Preview-Psych
- Psychological Research

Blogs, Wikis & Websites

- Second Life main web site. URL: http://www.secondlife.com
- Frequently Asked Questions about Second Life. URL: http://secondlife.com/whatis/faq.php
- Second Life support. URL: http://secondlife.com/support/
- PREVIEW Project. URL: http://www.elu.sgul.ac.uk/preview/blog/
- PREVIEW-Psych Project. URL: http://previewpsych.org/
- Second Life Blog. URL: http://www.sl-educationblog.org
- Virtual Psychology. URL: http://www.MiltonBroome.com
- The Media Grid. . URL: http://theeducationgrid.org/

- Edutech. URL: http://edutechwiki.unige.ch/en/Second_Life
- Linden Lab. URL: http://wiki.secondlife.com/wiki/Main_Page
- Second Life in Education. URL: http://sleducation.wikispaces.com/
- Second Life quickstart manual. URL: http://static-secondlife-com.s3.amazonaws.com/downloads/Second_Life_Quickstart.pdf

Useful Publications

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Social Networking Groups

- Second Life
- Second Life for Educators
- Second Life UK
- Second Life in Education - Student Help Centre

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Index