

deep|think: a Second Life campus for part-time research students at a distance

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Abstract

The paper reports on the design of a Second Life campus for a new innovative post-graduate research programme at the Open University, UK, a world leader in supported distance higher education. The programme, to be launched in October 2009, is a part-time Master of Philosophy (MPhil) to be delivered at a distance, supported by a blend of synchronous and asynchronous internet and web technologies. After a brief description of the project and its context, the paper discusses the pedagogical thinking behind the Second Life campus, and the way the implementation was designed to meet the pedagogy. The paper also reports on the outcome of an early evaluation.

1. Introduction

The Computing Department at the Open University [7] is in the process of developing a new part-time MPhil programme to be delivered at a distance, supported by a blend of synchronous and asynchronous internet and web technologies. We refer to the programme as the *eMPhil*. The eMPhil is innovative in many ways, specifically, in the adoption of emergent technology and their use to support the core processes of the programme, the organisation of students around research themes, and fostering peer group collaboration to complement the traditional supervisor-student relationship.

The paper reports on one aspect of the eMPhil project, that of designing a Second Life campus, called *deep|think*, to support eMPhil students. The paper will focus on pedagogical considerations, rather than the technical and engineering aspects of the development, discussing how our requirements were met through the solution developed. Although the programme will only be launched in October 2009, we have already started a programme of evaluation by involving students currently registered on research degrees with the Computing Department, and their supervisors. Early results are encouraging, although much has yet

to be done. The paper will be of interest to practitioners wanting to support research students using Second Life or similar 3D immersive virtual environments.

2. The project

The eMPhil was required to meet a number of research objectives, set by the Computing Department as part of their overall research strategy, to: enhance and develop the Department's provision to their graduate community; promote the wider use of technology to support research students at a distance, especially part-timers; create cohorts of research students on specific research themes and projects; attract more research students, including those who feel that they cannot commit the time to a PhD; increase the overall amount of research supervision that takes place within the department, particularly involving staff who are not currently supervising research students.

Already the Computing Department has a lively community of residential full-time research (MPhil and PhD) students who, besides having access to their supervisor(s), are given an opportunity to take part in a structured programme of induction and training, facilitated by senior academics and highly experienced doctoral supervisors. The current programme aims at developing all of the required research skills [4], and also functions as a forum for the student community and as a peers' aid and study group, for which sessions are run on a weekly basis throughout most of the academic year. The programme also fits within the overall university approach to research student induction and training and is compliant with national standards [8] the university has subscribed to. Therefore in addition to meeting the Department's stated objectives, the eMPhil was required to provide a comparable induction and training programme for part-timers at a distance, and to create opportunities for them to interact with peers online, work collaboratively, and develop friendships and a sense of belonging.

A study into the feasibility of the undertaking, including the potential market for the product and its main competi-

tors, was conducted at the beginning of 2008. The project started in March of that year, with the project team appointed and some initial planning carried out, coupled with seeking initial approval within the organisation. In June, development started on the technological infrastructure for the programme. The project is still ongoing with the eMPhil due to be rolled out in October 2009. The eMPhil core project team is composed of the authors of this paper. The team drives the whole development and has responsibility for identifying and co-ordinating the activities of other teams, both within and outside the Open University, who make specific contributions to the project.

3. Overview of the technology

The OU has adopted Moodle [2], an Open Source eLearning environment, as a platform for on-line provision, enhancing it and integrating it with other tools (such as Elluminate Live! [1], a synchronous communication and collaboration system, MyStuff, an ePortfolio system, and vod/podcasting tools) to create a Virtual Learning Environment (VLE) suitable for distance learners (please see the OU VLE project at [3] for further details). It is now mature and ready for adoption, so, unsurprisingly, the team looked at this platform as a first candidate for the eMPhil infrastructure. The team, however, also chose to complement it by offering of a Second Life [5] campus. Second Life is a commercial 3D immersive multi-user virtual environment by Linden Labs. It is a successful product with tens of thousands of users, including many global organisations and institutions around the world which use it for business, entertainment and education. For education, 3D immersive virtual environments are becoming popular (see also [11] for a comprehensive survey) due to their embodiment of users as avatars, which enhances the sense of participation and immediacy when compared to more traditional 2D Internet-based technology [15]. Despite being relatively new, they have already shown some potential in supporting styles of learning which are constructivist [17, 12], and social and distributed [13], and these factors motivated the adoption of Second Life for the eMPhil.

The vision for the eMPhil infrastructure was to provide a rich and flexible VLE, which could accommodate a large variety of user needs and attitudes to technology. We wanted to create a virtual space where research students could come together for serious business and fun, both aspects essential to the development of a vibrant research community. This was deemed appropriate for a research programme, which, contrary to a taught course, is by and large driven by students and their supervisors on an individual basis.

4. The deep|think campus

A Second Life campus, called deep|think, was commissioned from a third-party software development company, with a track record in Second Life educational sites for UK academic institutions. Some expertise in the use of Second Life for education also existed within the eMPhil team. This combined expertise led to an initial specification as the baseline for the contract, which was then refined during development. The time scale was rather compressed with 90% of the Second Life development carried out within 6 weeks, followed by a period of user testing and bug fixing, leading up to sign-off.

deep|think is a large Second Life development, made of two Sims¹ which have been modelled into five distinct, but interconnected small islands (see small 3D map in Figure 1), each with a well-defined function: a **welcome area** (bottom right of the map) to welcome visitor and for orientation purposes; a **study area** (bottom left of the map) with meeting spaces, common rooms and exhibition facilities; a **library area** (top left of the map) for access to a variety of resources for study and research (a **recreation space**, the Beach Bar, is provided nearby for relaxation and fun activities, e.g., chatting, playing pool or listening to music and dancing); a **sandbox** (top right of the map), for rezzing² objects and scripting activities; and a **main auditorium** and related smaller theatres (centre of the map) for large events, such as conferences, workshops and lectures.



Figure 1. 3D map of deep|think

Software developers brought their own design flare to the project, and both teams work together to achieve a distinctive look and feel. A recurrent theme in the interface is

¹'Sim' is short for simulator. It is the term commonly used to indicate a Second Life region or the simulator process on the server host machine which supports that region. At the end of July 2008, Second Life included a grid of over 5000 servers, supporting simulator processes for over 22,000 regions.

²'Rezzing' is the term used in Second Life to indicate the materialisation of objects within the 3D world.

lightness and openness, with few OU landmarks carefully positioned throughout the campus. Star Wars [6] provided some inspiration for the main auditorium, and both land, sky and water³ were used imaginatively to create a variety of social and collaborative spaces. We did not attempt to reproduce in Second Life a realistic simulation of its real-life equivalent: there is an ongoing debate on the benefits of realism in immersive virtual worlds [10, 14], and we took the position that while some element of realism could be beneficial, we should make the most of the opportunities offered by the technology for creativity and interactivity. Also, our distance students will have no knowledge of our real-life campus, making any reference to reality unnecessary. Therefore, we opted for a judicious use of familiar metaphors in an otherwise fictional surrounding. In the following, we will discuss key elements of the design and its pedagogical underpinning.

4.1. Welcome and orientation

On arrival, users are teleported⁴ to the welcome area, where they can learn about [deep|think](#), its purpose and content. The 3D map illustrated in Figure 1 is on display in this area, together with text panels providing general information to visitors. Nearby, by following the **path to enlightenment**, visitors can take a garden tour which introduces them to Second Life and various [deep|think](#) features, like the objects illustrated in Figure 2. These are: teleportation maps and points, for fast point-to-point travel around the islands; interactive mailboxes, to send email messages outside the system; and notecard givers, ubiquitous on [deep|think](#), used for induction, training and general user help. Orientation areas like ours are fairly common in Second Life and are particularly useful to novice users.

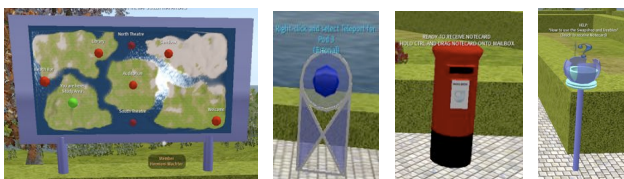


Figure 2. Generic objects on [deep|think](#). From left to right: teleportation map; teleportation point; mailbox; notecard giver.

³Second Life worlds usually take the form of sunny islands.

⁴Teleporting is one of the standard ways of travelling between, or even within, virtual worlds in Second Life.

4.2. Spaces for learning and recreation

A selection of social spaces is available on [deep|think](#), motivated by the need to provide a choice of appropriate environments for key activities by both students and supervisors. Figure 3 shows a selection. Major events, like conferences and workshops, are supported by a large auditorium able to host up to 140 avatars at any one time, with video stream capabilities and slide presentation screens. For smaller groups, a selection of meeting spaces are available, from little pods in the sky to underwater theatres. Some spaces are customisable by users, like our staff and students rooms; others are mainly for socialising, like our Beach Bar.



Figure 3. Spaces on [deep|think](#). From top-left, clockwise: main auditorium; break-out spaces in the sky; students' common room; Beach Bar; sandbox; underwater theatre.

The real added value of a 3D immersive environment is the interaction it affords for its user community. Built-in communication tools in Second Life include text and audio chats, and instance messaging. Also out of the box comes an editing toolkit, which allows users to redesign their avatars, their virtual surroundings (control privileges can be set by the land owners to restrict editing) as well as creating new interactive objects. On [deep|think](#) we provide a 'sandbox' where users have complete freedom to design and create, above the more limited customisation they are allowed in other spaces. Display boards give some initial instructions and the chance to teleport to other Second Life islands where tutorials can be found. Users also receive sample scripts which they can use and adapt in their designs.

Some interactive objects were created specifically for [deep|think](#) (see Figure 4): poster displays can be used by students and staff to advertise their projects, including links to related web pages and other Second Life locations; presentation screens can be used to upload slide shows and videos; notice boards to leave notes for other users to see.

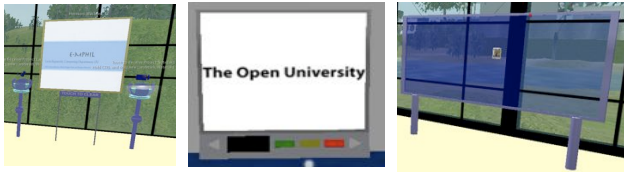


Figure 4. Educational objects on [deep|think](#). From left to right: poster display; presentation screen; interactive notice board.

4.3. The library



Figure 5. Library on [deep|think](#). Top: explore and playback functional areas. Bottom, from left to right: resource browsers and media playback screen; search pod; web linker.

A team of Open University librarians worked closely with the eMPhil team on the design of the [deep|think](#) library area (see also [16]), in order to support user interaction with both library licensed and free content. The design takes the form of an open air garden (see Figure 5). It includes three **explore and playback** zones, each supporting browsing a variety of materials. A selection of objects were created specifically for this purpose, including: resource selectors and playback screens, to provide access to resources purposely created for the eMPhil, including

documents and videos; search pods to use Internet search engines; and web linkers to give direct access to subscription bibliographical databases. The selection of both search engines and subscription databases was suitably tailored to the needs of a post-graduate Computing degree. Note that Second Life, like most other 3D immersive virtual environments [15], hence adding such capabilities was a non-trivial engineering task. A **swap shop** is also included, where avatars receive free gifts, such as clothing and vehicles, and a toolkit with chairs, tables, a timer, a presentation screen, etc., which they can rez in meeting areas or the sandbox at their discretion. Finally, a **meet and greet** area welcomes visitors and introduces them to our library facilities.

4.4. Mary's journey

Newcomers to [deep|think](#) are introduced to the islands through **Mary's journey**, a tutorial journey following the path of student avatar Mary. Mary's journey is defined in terms of a collection of scenarios. Scenarios [9] are very effective communication tools, widely adopted in Computing, particularly in requirements engineering and business modeling. On [deep|think](#) we use scenarios for tutorial purposes, to help our students discover what [deep|think](#) has to offer in a way which is grounded in their study experience. Our scenarios paint a picture of Mary's growing familiarity with [deep|think](#), from finding out information about her supervisors and peer group, to getting together with her peers, to familiarise herself with the resources and facilities in the Library area. Some breadcrumbs of Mary's use of the islands are scattered around for visitors to discover, adding some challenge and an element of fun to the experience.

5. Early evaluation and conclusion

Our long-term three-stage evaluation programme aims to assess the suitability and effectiveness of the technology offered to support the main processes of the programme, and to collect reliable data on workload for both students and supervisors. The first stage, prior to the October 2009 pilot, includes an intensive programme of user evaluation and testing, with feedback loops into further software development and customisation; it involves participant observation in live session, and interviews with volunteer Computing research students and supervisors, as well as eliciting the opinion of advanced and expert users of our technologies. In the second evaluation stage, covering the first year of the pilot, significant activities from student enrolment to probation assessment will be evaluated, feeding into an early project review at the end of year one. In the follow-up stage, activities will continue to be sampled on a regular basis to guarantee coverage of all significant processes, till

the first cohort of students reaches completion of the degree, at which point a programme life review will take place.

Stage one has already started, although only preliminary qualitative data are available at this point in time, which we briefly summarize below. Some of the early feedback we have collected is on Second Life itself as a technology for online research supervision. The initial feedback is promising. For instance, one student noted that the 3D environment makes for a very real experience, due to the feeling of space, the audio, the ability to move around, and the persistency of the environment: “I get a feeling of meeting people face-to-face”, one student remarked. On the other hand, as others have also observed [11], there are barriers to the use of Second Life, including a steep learning curve and demanding system requirements (the recommended spec can be found on the Second Life site at [5]).

Inworld design has, of course, a great influence on the user experience: “even though it was virtual, the idea of meeting in a library seemed fitting to the topics under discussion” and “OU logos make me feel at home” were other remarks from our users. Although in general the **deep|think** design was considered realistic and pleasing, there is room for improvement, particularly to support one-to-one supervision. One supervisor remarked that she was disappointed that on arrival in the welcome area “there is no immediate indication where the breakout or meeting areas are for one-to-one sessions.” In fact, she could not find the breakout rooms in the sky we provide, nor notice some of the objects we distribute via our toolkit, which give supervisors the ability to rez private spaces whenever they need them. It follows that better information and sign-posting for newcomers is required and will have to be provided.

In the upcoming months we will focus our attention on further developing **deep|think** and integrating it with the other components of our VLE. Also, a main effort will be devoted to producing content, and designing and evaluating online activities, as well as putting in place a comprehensive programme of training for students and supervisors new to the technology used in our VLE.

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