HIGHER EDUCATION IN VIRTUAL WORLDS: 
THE USE OF SECOND LIFE AND OPENSIM FOR 
EDUCATIONAL PRACTICES

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HIGHER EDUCATION IN VIRTUAL WORLDS:  
THE USE OF SECOND LIFE AND OPENSIM FOR EDUCATIONAL PRACTICES

by

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Abstract

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PRACTICES

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This thesis explores the features of Second Life and OpenSim that affect the choice of academics who are planning to use a virtual world in order to meet the learning needs of their students. For the conduct of this study, what was taken into account is a preexisting framework which proposes the evaluation of virtual worlds against four dimensions: their contexts, the immersion encountered within each, their cost, and their persistence. The research aimed to validate, enhance or alter the framework on which it is based, and also highlight the similarities and differences between Second Life and OpenSim worlds, either internally or externally hosted ones, against these four dimensions. For the fulfillment of this objective, academics were interviewed and students were asked to fill in some questionnaires. However, the findings suggested that none of these options is “the best”. On the contrary, the answer to the question “Which is the ideal virtual world for the conduct of educational projects?” is “It depends on each educator’s needs”. Nevertheless, this thesis provides clear guidance to academics who face the decision to use virtual worlds for educational purposes.
Declaration

I declare that this thesis is my own unaided work. It is being submitted for the degree of Master of Science by Research at the University of Bedfordshire.

It has not been submitted before for any degree or examination in any other University.

Name of candidate: Athanasios Christopoulos

Signature: Athanasios Christopoulos

Date: 24th of September, 2012
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This thesis would have never been written without the support, guidance and the ideas of many people who encouraged and inspired me to begin this research and also stood by my side all the way through. In any case, some of them deserve to be mentioned.

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To Athina
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Published Work

The following publications were generated by the research described in this thesis:


# Acronyms & Abbreviations

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<th>Description</th>
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<tr>
<td>3D</td>
<td>3 Dimensions</td>
</tr>
<tr>
<td>Edutainment</td>
<td>Education &amp; Entertainment</td>
</tr>
<tr>
<td>GUI</td>
<td>Graphical User Interface</td>
</tr>
<tr>
<td>LAMS</td>
<td>Learning Activity Management System</td>
</tr>
<tr>
<td>LMS</td>
<td>Learning Management System</td>
</tr>
<tr>
<td>LSL</td>
<td>Linden Scripting Language</td>
</tr>
<tr>
<td>Moodle</td>
<td>Modular Object Oriented Dynamic Learning Environment</td>
</tr>
<tr>
<td>NPC</td>
<td>Non-Player Character</td>
</tr>
<tr>
<td>OpenSim DP</td>
<td>OpenSim world hosted by Dedicated Provider</td>
</tr>
<tr>
<td>OpenSim IH</td>
<td>OpenSim Institutional Host</td>
</tr>
<tr>
<td>RegAPI</td>
<td>Registration Application Programming Interface</td>
</tr>
<tr>
<td>Sim</td>
<td>Simulation or Simulator</td>
</tr>
<tr>
<td>Sloodle</td>
<td>Simulation Linked Object Oriented Dynamic Learning Environment</td>
</tr>
<tr>
<td>V-LeaF</td>
<td>Virtual-Learning platForm</td>
</tr>
<tr>
<td>VoIP</td>
<td>Voice over Internet Protocol</td>
</tr>
<tr>
<td>VW</td>
<td>Virtual World</td>
</tr>
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</table>
1. Introduction

1.1 Background & Motivation

With the use of VWs for educational needs arising, new concerns for their evaluation and further improvement keep emerging. In addition, because of the wide variety of VWs that is now available online, the need to compare their features and thereby their potential to cover the educational needs comes increasingly to the foreground [1, 2, 3]. Chen et al. [1] point out that proper methodologies to cover this need are missing, whilst Muñoz et al. [4], agreeing with that statement, highlight the need for usable methodologies for the evaluation of VWs when they are to be used for educational purposes.

Urged by this concern, Chen et al. [1] after studying SecondLife, Active Worlds and the OLIVE platform, suggested a methodology for the evaluation of VWs which included four parameters: the learner, the context of the VW, the representations of people, objects and actions of the physical world into the VW, and finally the learning pedagogy used in-world. This framework was evaluated by de Freitas et al. [3] through case studies in SecondLife and was also found useful. However, the OpenSim technology was still immature when the framework [1] was introduced, and the case studies took place. Therefore, de Freitas et al. [3] suggest its future study with the focus on its unique characteristics and potentials.

Subsequently, Muñoz et al. [4] proposed a framework consisting of sixteen parameters for the evaluation of VWs and the highlight of their usability. These sixteen parameters were further classified into three categories as follows:

These sixteen parameters were further divided into fifty-three sub-parameters which develop a usability checklist. This framework [4] was evaluated by the same research group through case studies within Club Penguin¹, SecondLife and BeGreen² and found useful, but its fine-grained structure was found inappropriate for the methodology of structured interviews that were conducted for this study.

Based on Porter’s framework [5] and after applying some modifications, Messinger et al. [6] proceeded with its evaluation through case studies and surveys conducted within SecondLife. As modified by Messinger et al. [6], the framework included five dimensions for the evaluation of VWs: 1. Purpose (Content of Interaction), 2. Place (Location of Interaction), 3. Platform (Design of Interaction), 4. Population (Pattern of Interaction) and 5. Profit Model (Return on Interaction). Even though this framework was proven to be useful for the evaluation of VWs when they are to be used in education, humanities and social sciences, it focuses more on the business use of VWs.

Reis et al. [7] used Manniem’s [8] framework in order to evaluate SecondLife, Active Worlds and Open Croquet. That framework focused on the following aspects: 1) realism of the world, 2) user interface, 3) communication, 4) avatar, 5) scalability, 6) security, and 7) pedagogy. Each one of these parameters was further divided into several more sub-parameters developing a complex matrix which was proven to be useful [7].

¹ http://www.clubpenguin.com/
² http://www.prendingerlab.net/globallab/projects/begreen/
Finally, Conrad [9] has developed a very different theoretical framework for the systematic evaluation of VWs. This framework suggests the study of the potentials of VWs from four perspectives which, examined per two, generate pairs of opposites: extrinsic/intrinsic and individual/world perspectives. “Extrinsic” is the perspective of users outside the VW, whilst “intrinsic” is the perspective of avatars in-world. Respectively, the “individual” perspective refers to each user separately, whilst the “world” perspective refers to all users as a whole, as well as their relationship with the VW. By setting four different combinations of them, he suggests the four dimensions against which the study of VWs and the evaluation of their suitability for educational use are considered purposeful. These dimensions are (see table 1):

a. the context (intrinsic/world dimension, i.e. the content of the VW and the interactions occurring within it),
b. the immersion (intrinsic/individual dimension, i.e. the user’s feeling of being part of the context of the world),
c. the cost (extrinsic/individual dimension, i.e. the cost of using a VW in terms of money, time and effort)
d. and the persistence (extrinsic/world dimension, i.e. the duration of the VW in time).

Table 1 - The four dimensions for the evaluation of VWs [9]

<table>
<thead>
<tr>
<th></th>
<th>Intrinsic</th>
<th>Extrinsic</th>
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<tr>
<td>Individual</td>
<td>Immersion</td>
<td>Cost</td>
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<td>World</td>
<td>Context</td>
<td>Persistence</td>
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Based on empirical data and anecdotal speculations, Conrad [9] proceeded to an evaluation against the four dimensions, and he also suggested a comparison of six alternative options:
1) Second Life  
2) OpenSim DPs  
3) OpenSim IHs  
4) OSgrid provider  
5) Sim-on-a-stick  
6) Getting on without a VW

At this point it is worth mentioning that Conrad’s [9] framework is the only one identified that does not overlook the unique characteristics of the OpenSim platforms, and sets the necessary criteria for the evaluation and comparison of VWs as different as SecondLife and OpenSim. Furthermore, contrary to the other presented frameworks which have already been evaluated, the framework presented by Conrad [9] lacks of validation through the use of primary data, since it is based on his own empirical speculations. For this reason, the latter was chosen to be examined, evaluated, enhanced and altered if needed.

1.2 Aims & Objectives

In this thesis, three out of the six options mentioned above are examined, i.e. SecondLife, OpenSim DPs\(^3\), and OpenSim IHs\(^4\), against the four dimensions Conrad [9] suggested.

This study examines the options of VWs offered to educators, given that they have already taken the decision to use VWs for educational purposes. Therefore, the option “getting on without it” is not at all examined considering the purposes of the study. SecondLife was considered appropriate to be studied comparatively against OpenSim worlds, since until recently it was the VW that gathered the widest community [10]. On the other hand, as Korolov [11] states, the number of the OSgrid users (including educational institutions) is declining, but there is an increase in the number of OpenSim DPs and IHs. That fact resulted in not

\(^3\) This category consists mainly of the non-isolated and open VWs hosted by dedicated providers. Nevertheless, some isolated and closed VWs may also be hosted by dedicated providers.

\(^4\) This category consists mainly of the isolated and closed VWs hosted by institutions. Nevertheless, through the hypergridding option it is possible for closed VWs to be connected with others.
choosing the solution of the OSgrid provider for examination. Instead, the growing interest of several institutions in the providers who offer hosting services (OpenSim DPs) [12] was considered as a good reason to include this solution under the examined VWs. Finally, the study of the OpenSim IHs enabled the comparison of closed VWs against the open ones such as SecondLife. Nevertheless, the “sim-on-a-stick” option is indeed the most “closed” VW but its examination would raise the need for the conduct of case studies and that was fairly difficult to be achieved, since there was no educator using this option identified during the preliminary phase of the study. Because of these reasons and to keep the study focused, the OSgrid and sim-on-a-stick options were considered out of scope for this investigation.

The aim of the study is twofold:

firstly, to validate, enhance or alter the framework [9] using primary data from institutions other than the University of Bedfordshire;
and secondly, to provide clear guidance to other educational institutions that are faced with the decision to use VWs in their teaching.

1.3 Research Methodology

For the needs of this study two research methods were used. For the collection of as much and as detailed information as possible, the direct record of the educators’ views through interviews was considered necessary. Additionally, the students’ viewpoints, which would be shown directly through their answers to the questionnaires and indirectly through their educators’ interviews, were also considered essential. Therefore, interviews with numerous academics were conducted and questionnaires were distributed to students of European and worldwide universities. Consequently, the study could be described both as quantitative, since questionnaires were used for the fulfillment of its objectives, and as qualitative, since interviews were conducted for the same purpose.

Both questionnaires and interviews were aimed at the collection of as plenty information as possible on the experiences of both sides (educators’ and students’) within VWs in order to form a more complete view of their in-world educational
processes. It was not considered necessary to focus the research’s interest exclusively on the students’ opinions, since their point of view has already been widely investigated, as the review of the literature showed. On the other hand, the educators’ point of view has not been widely investigated, even though they are an equally important factor in the educational processes. Furthermore, given that this research is addressed mainly to educators who are willing to use SecondLife or OpenSim for educational purposes, the opinion of their colleagues that have already used them and have some experience within them, had to be pointed out.

Since educators were considered to have knowledge on all the parameters this study is looking at, during their interviews they were asked questions regarding all of them. Students were not expected to have a complete picture about the VWs’ persistence and cost of educational use, and thus, through the questionnaires, they were asked only about the context and immersion, about which they had direct experience. Besides, educators are usually aware of their students’ opinion on their educational practices. Educators asking their students’ opinion about a novel educational method they have used after its completion is not a rare case. Indeed, that was noticed through several interviews, during which educators reported that they had asked their students to evaluate their lessons that had been carried out within a VW. Consequently, educators can have a very clear picture of their students’ opinions. On the contrary, students are not able to express their educators’ opinion. Therefore, giving more emphasis on the conduct of as many interviews with educators as possible was considered necessary, but, of course, that did not lead to any disregard of the questionnaires.

These two primary data collection methods that were used in the research are presented in detail below.

1.3.1 The Interviews

The interview conduct period lasted four months (January-May 2012), and 34 educators participated in them. The target group included academics who had either used during the recent past (at least until 2010) or were still using (during the interview conduct period) SecondLife or OpenSim or both in order to carry out educational activities with university students all around the world. The
potential participants were sought in scientific papers regarding the educational use of SecondLife and OpenSim, in the educators’ lists of SecondLife and OpenSim, in “Virtual Worlds Watch” and within SecondLife.

The interviews were conducted either within SecondLife, via VoIP or instant messages, or through Skype, and their length varied. The software used for the recording of the interviews was Audacity® the free, open source, cross-platform software for recording and editing sounds (v. 2.0.0).

1.3.1.1 The Implementation of Grounded theory
Qualitative analysis was considered to be a very suitable approaching method for the subject under investigation. According to Strauss & Corbin [13] the qualitative approaching of an investigational topic is the ideal option when, the things sought are not only the width of the phenomenon, as in quantitative researches, but also the details of that phenomenon, the stakeholders’ viewpoints, motivations and feelings and generally the links among the collected data. The conduct of interviews is one of the methods for collecting qualitative data and was chosen for the needs of this study.

This Grounded Theory approach, as described by Strauss & Corbin [13], was therefore used for the collection and analysis processes of the qualitative data. A key principle of this theory is the formulation of conclusions that are not based on theoretical approaches, but grounded on primary data collected through various research methods, such as the interviews [13]. Exactly this feature, i.e. the grounding of the theory on the data, is what gives the grounded theory its validity and reliability, and this was the first reason why it was opted for the purposes of this research.

The second reason concerns the freedom that researchers are offered to creatively link the collected data [13]. Thereby, all the inherent relationships between data are discovered, even those that are not obvious at first viewing, or those that were not anticipated in the research planning but arise in its course and add new queries and concerns for study and research. Besides, the formulation of new questions
during the course of the research is yet another feature of grounded theory, which is a valuable tool for any qualitative research [13].

Finally, the use of comparisons, which are an equally valuable tool of grounded theory as the continuous posing of queries and questions, [13] were the third reason why the grounded theory was considered to fit the needs of this research. The grounded theory provides the opportunity to compare two or more groups based on multiple aspects and features, aiming at the best possible understanding of their features and the highlighting of the group that excels, not at first glance, but considering all their potential different dimensions [13]. According to grounded theory, there can be some valid comparison between the viewpoints, ideas and perspectives that research participants had reflected in their answers as a consequence of the various conditions under which they were formed [13]. This feature of grounded theory was a valuable tool for this research, as all views raised by educators were studied in relation to the context in which they were developed, and taking into account the factors that led to the contemplation of things as expressed during the interviews. Accordingly, the final comparison of the two VWs that are studied in this research was made considering the various different factors that affect their features.

1.3.2  The Questionnaires

The questionnaires were available in electronic form on the internet (QuestionPro: Online Research Made Easy™) for five months (January-June 2012). The link that would redirect students to the electronic questionnaires was given to educators who participated in the interviews in order to distribute it to their students. Moreover, under the administrators’ permission, it was posted on many universities’ Facebook walls. Finally, it was given to all the members of the SecondLife and OpenSim educators’ and researchers’ lists in order to distribute it to their students. In any case, the students’ participation to the survey was purely voluntary.
1.3.2.1 The sample

The questionnaires were completed by a total of 23 university students worldwide. 14 had used only SecondLife at some point during their academic studies, while 9 of them had used both worlds.

At this point, two major concerns were raised: on one hand, the size of the sample was significantly limited compared to what originally anticipated. Besides, the study was conducted with a worldwide perspective, and the target group consisted of students outside the University of Bedfordshire. However, this is fully justified considering that universities have very strict policies regarding the permission given for the distribution of questionnaires, especially to researchers out of the university. Therefore, the complex and lengthy licensing processes rather inhibited the collection of an adequate number of completed questionnaires.

On the other hand, no student previously having used exclusively OpenSim in the framework of higher education studies participated in the study. Consequently, the collection of data for a whole part of the questionnaire concerning the sole use of OpenSim was proved impossible to carry out.

For the above reasons, the data collected through the use of questionnaires were not considered reliable enough to generate valid and meaningful conclusions for the needs of this study. Nonetheless, a brief presentation of the results will be made in Appendix E.

1.3.2.2 Likert Scale

The structure of the questionnaires was based on Likert’s methodology [14]. The questionnaires included statements and participants were asked to indicate their agreement or disagreement as to their content.

Responses ranged on a five-point scale from “Strongly Agree”, which took the value 5 (five) to “Strongly Disagree”, which took the value 1 (one). The answers’ values were aimed to the better and easier data analysis, since, through mathematical calculations on the values of the participants’ responses, the tendencies of the sample surveyed would be revealed. Besides, this, i.e. the ease
of mathematical and statistical analysis of participants’ responses and the quantification of the results, is one of the main advantages of the Likert Scaling [14].

The scale was chosen to be five-point rather than three-point or seven-point, as this is the most common practice, and those who have answered several times questionnaires with Likert scale are familiar with this scaling. Generally, the Likert scale can be described as participant-friendly, since it is easily understood, does not cause misapprehensions and offers a good range of responses so as not to limit participants’ answers to simple affirmation or denial of the statement, which may not reflect objectively their views [14].

1.4 Structure of the Thesis

The structure of this thesis is beyond the mainstream structure of similar studies, due to the fact that its subject under investigation is fourfold, since it studies the alternative options of VWs against four dimensions which are irrelevant to each other. Thus, the opportunity given through this thesis to thoroughly study each subject first before proceeding to the next one, was considered worthwhile for the reader.

Therefore, the second, third, fourth and fifth part of this thesis, although investigating different subjects, have the same structure. In the first chapter of each part (chapters 2.1, 3.1, 4.1 and 5.1) the framework [1] is presented with respect to the subject that each part is analyzing. What follows is a chapter in which the relevant literature and the previous researches regarding the same subject under investigation are presented in brief (chapters 2.2, 3.2, 4.2 and 5.2). Thereafter and since the readers have formed a comprehensive picture of what has been previously written in reference to the issues under investigation, they are able to proceed, having a global view, to the analysis of the data collected through the conduct of interviews, as these are presented in chapters 2.3, 3.3, 4.3 and 5.3. These parts are completed with a comparison of the results drawn from this research on one hand, with the framework on the other (chapters 2.4, 3.4, 4.4 and
5.4), reaching that way the first of the two aims set in the beginning of this study, i.e. the validation, enhancement or alternation of the framework.

The thesis is completed with the final and concluding sixth part, in which the second aim of the investigation is met. In chapter 6.1, the readers are informed about which VW can cover, in the best possible way, the various needs of institutions that are faced with the decision to use VWs for educational purposes. Finally, also noted in section 6.2 are some questions and concerns that arose from this research, and are proposed as subjects for future investigation and studies, as well. Figure 1 illustrates the structure of this thesis.
Figure 1 - The structure of the thesis
2. Context

2.1 The Contexts of SecondLife & OpenSim according to the framework

Conrad [9] states that when a VW is to be used for educational purposes, the suitability of its context has to be checked in order to meet the standards of the educators and enhance their educational activities. Specifically, he mentions that educators should be aware of the inappropriate context that may exist in the VW and be particularly careful not to ignore it, as this can disrupt the educational activities. Obviously, the use of a VW for educational issues aims to support the learning processes and not to undermine them. However, the outcome of this alternative educational method is considerably influenced by the positive or negative aspects of the context of the world.

Specifying his viewpoints, he notes that in SecondLife the “negative” context is flagged by Linden Lab so as to be separated from the rest of the world context. Therefore, universities make sure that they prohibit their students’ access into areas marked as having “negative” context. Quite on the other hand, however, the positive in-world context is very broad, diverse and highly useful for educational purposes. Specifically, he stresses on the beneficial impact derived from the coexistence with other non-student users, the use of the preexisting content, and also on the various educational tools.

With respect to Conrad’s experience within an OpenSim DP, it seems that in this case the context was neither too positive, nor too negative. He highlights that the online community in these worlds is more limited than the one in SecondLife,
their content is minimal, and so are the students’ interactions with the world and other users.

Finally, the context of the OpenSim IHs is considered to be fully controllable by the educators who use it to deliver their course material.

2.2 Literature Review

In this thesis, the term “context of a VW” defines everything that exists or takes place within the VW, including the virtual land on which the world is being developed, the representations of the elements of the nature, the avatars which represent the users, the users’ artifacts, and the interactions between them. At an initial stage, the environments of SecondLife and OpenSim consist of vacant land [15] and provide their users with similar tools for creating and communicating [16]. The content of each world is purely created by its own users and, therefore, the context is affected directly by their imagination [15, 17]. Given this fact, it is obvious that SecondLife and OpenSim have many similarities concerning their basic characteristics [18], on the one hand, but they have many differences depending on their users’ preferences, on the other.

2.2.1 Avatars & Virtual Identity

Avatars are one of the key features of the context of VWs. Avatars are the users’ virtual selves or, rather, the users’ 3D self-representations in a VW through which they are able to be in it, and interact with it and with each other [19-22].

SecondLife and OpenSim share many common elements as far as the modification and use of avatars are concerned [17, 23]. Using their avatars, the users are able to move around the VW in various ways [24, 25], explore the virtual lands and everything that exists on them, socialize, role-play, and take part in numerous cultural events and even educational activities [17, 26].

The unique combination of the way each avatar looks and acts in-world determines the users’ virtual identity, which sometimes differs from their physical one. Moreover, the virtual identity affects the way users perceive themselves as part of the VW (see section 3.2.1) and, also, the way that others treat them [25].
Apart from users’ avatars, both in SecondLife and OpenSim, NPCs exist. NPCs are avatars which are not controlled by users but are scripted to repeat gestures or speech in order to meet the VWs’ user-specific needs [23].

A common view of several scholars [27-29] is that avatars are a feature of VWs which enhances the effectiveness of the educational activities (see figure 2). Specifically, Kostarikas et al. [28] stress that avatars attract students’ interest and attention to the subject taught, whilst Mc Caffery et al. [29] highlight that avatars enhance the feeling of students that they, actually, participate in educational activities and are members of a student group.

On the other hand, Bredl et al. [30], De Freitas et al. [3], Levesque & Lelievre [25], and Kay Michel et al. [31] agree that avatars have a positive impact on the educational activities conducted in VWs. Nevertheless, they distance themselves from the researchers mentioned previously, as they do not consider the positive impact of VWs on educational processes as a direct result of the use of avatars. They claim that the element of immersion is the linking point between the use of avatars and the effectiveness of the educational activities (see figure 3). This means that the use of avatars contributes to the development of the users’ immersion, which, in turn, leads to better outcomes from the educational activities (see section 3.2.1).

Figure 2 - The viewpoint presented in [27-29] that the use of avatars leads straight to the effectiveness of the educational activities.

Figure 3 - The viewpoint presented in [25, 30-3] that the use of avatars leads to immersion and immersion leads to the effectiveness of the educational activities.
2.2.2 The Worlds

2.2.2.1 The Worlds’ Content

The whole content of SecondLife and OpenSim worlds is created exclusively by their users [32], who are able to modify their virtual space, following the same moves [17]. Ariyadewa et al. [33] claim that the creations within the VWs can be classified into three categories. The first category includes objects which are representations of buildings or items of the physical world, such as houses, museums, galleries, libraries, theatres, university buildings and their equipment, etc. The second category includes objects and simulations of events and processes which either belong, exclusively, to the realm of fantasy and not the physical world or exist in the physical world but cannot be perceived by human sensory organs. These could be, for instance, mythical creatures and magic items, on the one hand, or simulations of phenomena associated with molecules and atoms, on the other. The third category includes “sensory perceptions” thanks to which olfactory and tactile stimuli, which otherwise could not be transmitted via computer and are necessary in cases such as chemistry labs, are visualized through avatar movements.

The various objects created in the environments of SecondLife and OpenSim become interactive through the use of scripts [34]. Nevertheless, in SecondLife, there are restrictions concerning the number and the size of the objects and scripts that may co-exist per unit land area, while in OpenSim such restrictions do not apply [35].

The researchers seem to consider the content of both SecondLife and OpenSim equally useful and appropriate for educational purposes. More precisely, Miller et al. [17] emphasize the importance of students’ easy access to learning materials and the potentials for experiencing interactive educational activities offered equally in both worlds. Similarly, Aydogan et al. [36] indicate the significance of the 3D visualizations of the educational material created within virtual classrooms, which may contribute to a better understanding of the lesson by the students. Callaghan et al. [37] also agrees with the statements above and adds that the environments of both VWs and the tools provided for creation enhance the
students’ collaborative abilities, who work together aiming to create the world’s context and carry out their projects. Konstantinidis et al. [35] partially agree with [37]. They suggest that the 3D representations that may be created in OpenSim have a positive effect on the collaboration among students, creating a sense of belonging in the VW and thus promoting immersion into the developed world (see section 3.2.1). In other words, it is their common claim that collaboration among students is enhanced within the context of VWs, but each of them presents a different aspect as the reason of that enhancement.

Figure 4 illustrates all the effects that, according to researchers’ opinion, the contents of the VWs of SecondLife and OpenSim have on the educational activities conducted within them.

![Figure 4 - The effects of the virtual environments of SecondLife and OpenSim on the educational activities](image)

2.2.2 Security and Privacy Issues

The security issues faced by a virtual university vary and therefore the academic institutions seek to secure the educational processes in the best possible way. The most important issues concern the access rights management on the universities’ virtual properties, the identity of the avatars involved in the educational processes, and the rights of possession, modification, and use of the institution’s objects.

An important factor in ensuring universities’ safe operation within the VWs concerns the protection of their virtual land against intruders. For this reason, the
identification of the avatars that have access to each institution’s property is essential to be pursued. Savin-Baden [22] states that the best way for universities to protect their virtual area from intruders in SecondLife is to buy isolated islands. Perera et al. [38] suggest a different management measure. They insist that both in SecondLife and in OpenSim, the academic institutions are able to manage which avatars will have access to their virtual spaces, allow entry to avatars which are “marked” as their students, and prohibit entry to unwelcome users. This is achieved through the access settings of the sims, or alternatively, through the use of scripted objects, which act as sensors that push unwelcome avatars away from a training area or teleport them to a place predetermined by the developer of the script [16]. In addition to this, Perera et al. [38] mention that Linden Lab offers SecondLife users another service called RegAPI. This application enables universities to form a list of their students’ user names in order to integrate them into their academic community group. This service cannot be used in OpenSim.

Beyond these basic configurations, Rico et al. [39] assert that the use of an educational platform called V-LeaF in conjunction with SecondLife or OpenSim technology offers high security to the educational parcels of the institutions. On top of these, Afonso et al. [40] suggest Sloodle as an effective access management measure, which apart from the many advantages it offers in distance education, it also provides the educators with the opportunity to manage the students who are present in each training area. However, the use of Sloodle combined with the OpenSim technology is still at an experimental stage.

On the other hand, Hu [41] stresses superiority of the OpenSim IH, as far as their security level is concerned. In these servers, the institutions can fully control which avatars may be registered in them, allowing only the members of their community to do so. Meanwhile, these avatars can be transferred to other servers in order to explore them, participate in events, and come into contact with others, using hypergridding [42].

In the training areas of SecondLife and OpenSim there are usually many scripted objects being involved or not in the educational processes. The majority of them have been created and placed at specific positions in the campus regions by
authorized university staff and are useful to educational activities organized by educators. Nevertheless, some scripted objects may be created by other users too, for instance, students. Even if some of these objects are not directly visible, they interfere in the process of the courses [16]. To avoid such phenomena, universities might grant the privilege of creating scripted objects to a small group of users. In cases where a group of students needs to create and use scripted objects in order to meet the educational purposes, it should have the right to make such actions while being in a specific sub-region for a specific period of time. For this purpose, as mentioned in [21], creation rights ought to be granted, temporarily, to specific groups of students in specific sub-regions.

Despite the fact that the majority of the researchers claim that the techniques used to ensure the unimpeded attainment of the courses within SecondLife and OpenSim are in overall the same, Vilela et al. [16] note that, in OpenSim worlds and especially in the OpenSim IH, the operation of “malicious scripts” can be detected and prevented easier than in SecondLife, since OpenSim is an open source software and offers many programming options to developers and, by extension, programmatic and management privacy measures of high quality. All the security and privacy measures likely to be applied in each one of the VWs are shown schematically in figure 5.

Figure 5 - The security and management issues that may occur within the two VWs and the proposed workarounds. The phrases in bold denote the solutions that can be applied only in one of the two VWs. The (?) symbol denotes that Sloodle is partially functional in OpenSim.
2.2.2.3 Plugin Applications

The capabilities offered in the VWs of SecondLife and OpenSim are expanded through the use of various plugin applications. These provide VWs with a range of services for the organization and presentation of information and multimedia applications, the organization and delivery of activities and events, and finally the enhancement of user interactions.

Sloodle arose as a result of the combined operation of Moodle and SecondLife. Sloodle is currently an open source plugin (platform), which provides a set of tools that supports the educational activities carried out within the framework of Virtual Learning projects through various worlds [35, 37]. Sloodle enables educators to present their students with any educational subject in the context of a VW, using the tools provided by Moodle. Meanwhile, educators are able to prevent the invasion of intruders in their training areas and students can participate actively in the educational activities and communicate freely and directly with each other and with their educators [33, 35, 37]. Nevertheless, Cram et al. [18] mention that the function of Sloodle in conjunction with OpenSim has to become more stable.

Cram et al. [18] suggest the LAMS as a more stable and reliable training tool for utilization in conjunction with OpenSim technology. It mainly offers guidance and support to students for planning and integrating their work. The students themselves seem to be satisfied with the combined use of OpenSim and LAMS.

RegAPI is a plugin offered for use only in SecondLife and is not compatible with OpenSim [38]. Through its use, educators are able to form lists with the usernames of the students attending their courses, integrate students into groups, and regulate their access to the training areas and the educational materials, whether these are available in-world or from an external source [43]. Perera et al. [43] also mention that RegAPI is particularly useful in the identity management of students’ avatars.

Another plugin that can be used in conjunction with both SecondLife and OpenSim is V-LeaF. This software enables educators to create objects in
SecondLife and OpenSim which perform specific functions, depending on the needs, and contribute positively to educational activities. Moreover, by using objects built with the aid of V-LeaF, the creation of isolated parcels which can be accessible to groups of students only is possible [39]. As emphasized in [39] V-LeaF helps educators overcome the obstacles they face in the use of VWs for educational purposes.

Finally, realXtend is a plugin (platform) compatible with SecondLife and OpenSim, which allows users of both VWs to create more realistic avatars and virtual objects and to communicate verbally [19]. A comparative overview of the features of the plugin applications already mentioned is presented in the table 2 below.

<table>
<thead>
<tr>
<th>Sloodle</th>
<th>LAMS</th>
<th>RegAPI</th>
<th>V-LeaF</th>
<th>realXtend</th>
</tr>
</thead>
<tbody>
<tr>
<td>• works well in Second Life</td>
<td>• satisfactory results when used in conjunction with OpenSim</td>
<td>• Compatible with Second Life</td>
<td>• Compatible with Second Life and OpenSim</td>
<td>• Compatible with Second Life</td>
</tr>
</tbody>
</table>

Table 2 - The plugin applications’ characteristics

2.2.3 Interactions
SecondLife and OpenSim are typical examples of VWs and certainly offer great opportunities for interactions among their users and between the users and the worlds’ content [25, 44, 45]. Annetta et al. [46] stress that the main feature and the most important advantage of the interactions that take place within VWs like SecondLife –and OpenSim by extension– is the fact that they are “synchronous".
The interactions, as they note, take place in real time and any user’s actions cause immediate reactions from the environment or other users.

As it is emphasized by Vrellis et al. [47] and it was deduced from the literature research conducted for this thesis, very few studies have been carried out in relation to the interactions between the users and the context of the VWs. The researchers’ interest focuses mainly on the interactions among the users and less on the interactions between the users and the worlds. This can be attributed to the fact that VWs are considered to be fertile ground for the development of interactions mainly among their users. Nevertheless, both the interactions among the users of VWs and the interactions between the users and the context of the worlds significantly affect the educational processes performed in them.

A major part of the interactions that take place within SecondLife and OpenSim concerns the creation of objects and the configuration of the worlds’ context; this subject, however, has already been presented. Of course all the objects built by users are intended to cover their in-world needs, either aesthetic or practical. Hence, the users of these VWs create scripted objects, which react to the avatars’ actions and the specific stimuli they receive from their environment [43].

A separate category of interactions that may occur within the VWs are those which develop between the users and NPCs. The NPCs receive and transmit information to users, help avatars accomplish various functions, and interact with objects depending on the users’ requirements [48].

The interactions among users within SecondLife and OpenSim extend across a broad framework of activities and may include meetings, discussions, cooperation, organizing events [36]; exchanging objects, files, and multimedia applications [34, 49]; trade, business, group educational activities, and operation of real life organizations [50]; organizing and carrying out meetings and seminars [51].

Djorgovski et al. [51] stress the importance of making these interactions possible for people who are located far apart from each other in the physical world, but are
able to get in touch with each other easily in the context of a VW. A key role to that has the fact that users interact with each other and the world by utilizing their avatar, which gives them the sensation of being close together (see section 3.2.1). Taking that point one step further, Levesque & Lelievre [25] draw attention to the value of the sense of presence in a common space, due to the use of avatars, which is advantageous to the communication, the collaboration, and the exchange of cultural information among people separated by great distances in the physical world. However, at the same time, avatars help users keep a distance from what happens in the VW and feel that their avatars are the ones that talk and act and not them. This fact encourages them to communicate with fewer inhibitions.

The users’ interactions within VWs are an issue that has occupied researchers and many of them have stressed their importance to the virtual educational activities. Perera et al. [43] call attention to the fact that the given opportunities for manipulating virtual objects and interacting with the virtual environment and other users make the educational projects that take place in-world pleasant and interesting for the students. Djorgovski et al. [51] add that the students’ involvement in the activities and events of their virtual classrooms as well as their interaction with the environment make the educational activities effective. According to [17] these specific characteristics contribute to the strengthening of the collaborative and exploratory learning activities and ensure student participation in them. Kostarikas et al. [28] assert that the network of interactions that occurs in SecondLife and OpenSim has a positive effect on attracting and keeping students’ interest in the subject taught.

Through a survey conducted by Vrellis et al. [47] it was shown that the manipulation of virtual objects in the context of a VW is less disruptive and more preferred by students than the use of other e-learning tools. Also, according to the same survey, students consider their participation in the activities that run in SecondLife as very efficient for learning, very satisfactory, enjoyable and interesting. These findings are in agreement with the statements in [43, 51, 28]. Students also felt that the environment enhances the interactions among the members of a student group, thereby enabling the effective implementation of
collaborative learning activities. At this point, the findings in [47] seem to be in accordance with the statement in [17].

The only drawback in using SecondLife for educational purposes, as specified in [47], concerns the inability of using the non-verbal communication channels (gestures and facial expressions), that users use in the physical world in order to express themselves and could be an important part of the communication among them. Exactly the same conclusion was drawn by Childs [52] in his research within SecondLife. He is also convinced that the use of text chat may be very time consuming, disruptive, and inefficient, a fact that complicates the in-world educational activities and, combined with the absence of non-verbal communication, further complicates communication within the students’ group. Hence, Vrellis et al. [47] do not fail to express their conviction that the educational processes within VWs will never be able to replace the traditional teaching methods but will always serve as a complement and as a useful tool in providing additional educational opportunities.

Figure 6 - The positive and negative effects of the in-world interactions on the educational activities
Similar research concerning the use of OpenSim for educational purposes was not detected. Nevertheless, since these two VWs accommodate similar interactions, it can be assumed that the researchers’ observations concerning the interactions within SecondLife apply to OpenSim, as well, to a great extent (see figure 6).

### 2.2.4 Summary

In terms of context both VWs have almost equally positive features. The educational activities in SecondLife and OpenSim are pleasant, interesting, attractive, satisfactory, and effective. The following elements are held responsible for the appearance of these positive qualities: a) the use of avatars, b) the possibility for direct treatment of virtual objects, c) the plausible 3D representations of objects and processes performed before the students’ eyes, d) the opportunity given to students to be involved in all the educational activities and e) the whole complex of interactions developing within the VWs.

The context of both VWs has a highly positive impact on the development of the students’ in-world immersion, which is supported by: a) the use of avatars, b) the 3D representation of the environment and the objects and c) the network of interactions occurring within the worlds.

The virtual environment of both SecondLife and OpenSim constitutes very fertile ground for the fruitful realization of collaborative and exploratory learning activities. This is reinforced by the following factors: a) the students’ interaction with the environment, b) the interactions among students for the achievement of common goals in-world, c) the creation of objects which is achieved through the contribution of all the members of a student group and d) the use of pre-existing in-world 3D representations for the achievement of the aims of the students’ projects.

The plugin applications used in conjunction with SecondLife and OpenSim are valuable educational tools. Sloodle, RegAPI, V-LeaF and realXtend are compatible with SecondLife, while LAMS, V-Leaf, and realXtend are compatible with OpenSim. Finally, Sloodle is compatible with OpenSim but only in part.
Overall, SecondLife and OpenSim make use of similar security measures which are designed to ensure the proper flow of the educational activities. The difference lies in that: a) RegAPI, which offers some additional security measures to educational groups, is only compatible with SecondLife, b) in OpenSim, because of its open-source nature, further programmatic measures and independent programmes can be used to ensure security and privacy and c) the OpenSim IHs are closed and thereby protected from intruders and malicious content.

Beyond the discussed weaknesses and taking into account all the positive attributes of using SecondLife and OpenSim for educational purposes, it becomes clear that these two VWs provide valuable assistance to teachers and students who opt to use them for their educational activities but will never manage to replace the traditional teaching methods.

Even though the studies conducted in the field of OpenSim use for educational purposes are very few, it can easily be said that SecondLife and OpenSim are almost equally suitable for educational use as far as their contexts are concerned. This conclusion is fortified by the fact that these VWs share many common features. Meanwhile, the multitude of surveys conducted in SecondLife (see for instance [28, 46, 47, and 52]) has proven that the context of this virtual environment is not only suitable for educational use, but also offers a set of tools which may be valuable in the hands of educators. The majority of these tools can be implemented in OpenSim, since OpenSim is thought to be a duplicate of SecondLife, only it has some additional features which exclusively apply to it. Thus, the positive educational effects that may occur within SecondLife due to its context may occur in OpenSim as well.

### 2.3 Data Analysis

Since the framework [9] makes particular reference to the positive and negative context of each VW, both the advantages and the disadvantages of the context of SecondLife and OpenSim were considered important to be examined. Simultaneously, even though it is not a primary objective of this research, a summary of the educational activities that may take place within these VWs, will
be presented, with the aim of briefly informing educators about them and also providing stimuli for future research and reflection.

2.3.1 Critical Evaluation of the Contexts

Figure 7 - The positive and negative features of the context of each VW

The positive elements of the SecondLife and OpenSim contexts were emphasised by the educators who were interviewed, whilst corresponding emphasis was also placed on their drawbacks seen from an educational viewpoint. Although certain positive and negative features are unique to each one of these contexts, several others are common to both of them. Besides, the similarity of the OpenSim
context to the SecondLife context, combined with the fact that it is open-source software, was highlighted as a very fundamental feature of OpenSim\(^5\). An overview of both the common and the exclusive advantages and disadvantages of SecondLife and OpenSim is presented in figure 7.

Several educators stressed that the use of VWs, in general, is an innovation in education\(^6\). As a consequence, the in-world learning activities attract students’ interest, engage them in the educational processes and therefore produce better learning results (see section 3.3.3). Furthermore, the contexts of both VWs were marked as user-friendly\(^7\), playful\(^8\), dynamic\(^9\) and plausible\(^10\).

As participants stated, all these SecondLife and OpenSim features are especially beneficial to the preparation and successful implementation of various educational activities that will be both attractive and effective for most of the students\(^11\). Students’ freedom to take advantage of these features, interact with the context of the worlds, participate actively in the development of the virtual content with their creations and explore others’ creations, contributes towards the same goal. In both cases, the amount of the experience they receive from their participation in various activities increases (see section 3.3.3).

The accessibility of SecondLife, which results in the coexistence of a wide online community which contributes to the in-world creation of a global context valuable for numerous educational activities, was noted as a significant advantage of it\(^12\). These features combined with the anonymity that is typical of SecondLife enhance the immersiveness of this world, as indicated by some participants\(^13\). Educators who use SecondLife can be benefited from its global context and

\(^5\) see for instance interviews: 3, 8, 11, 12, 25, 26, 29, 30, 31, 33
\(^6\) see for instance interviews: 10, 28, 16, 17, 18
\(^7\) see for instance interviews: 1, 12, 25, 31, 33
\(^8\) see for instance interviews: 2, 5, 6, 9, 10, 11, 15, 19, 20, 22, 27, 28, 29, 32, 33
\(^9\) see for instance interviews: 1, 9, 18, 26, 29
\(^10\) see for instance interviews: 3, 6, 9, 10, 11, 17, 19, 20, 21, 22, 25
\(^11\) see for instance interviews: 1, 4, 5, 6, 9, 10, 11, 12, 13, 16, 17, 18, 19, 22, 25, 28, 30, 31
\(^12\) see for instance interviews: 2, 5, 6, 7, 9, 10, 15, 21, 23, 25, 28, 32
\(^13\) see for instance interviews: 1, 2, 10, 19, 28
reduce the time and effort required for building and scripting, simply by using the existing in-world infrastructures\textsuperscript{14} or visiting its marketplace\textsuperscript{15} (see section 4.3.1).

OpenSim worlds have narrow online communities\textsuperscript{16} due to the fact that they are hosted on many independent servers. This implies that the content of OpenSim – IH or DP– is very limited, compared to that of SecondLife, or completely nonexistent. Therefore, educators who use OpenSim reported that the creation of the necessary content for their educational activities is a time and effort consuming process (see section 4.3.1) and requires the possession of building and scripting skills as well\textsuperscript{17}. Nevertheless, OpenSim users can visit other OpenSim worlds using the hypergrid architecture in order to explore other places and communicate with others\textsuperscript{18}.

On top of that, the OpenSim IHs are independent\textsuperscript{19}, closed and protected from intruders, and their access control lies exclusively in the educators’ hands\textsuperscript{20}. In contrast, universities in SecondLife are confronted with several security and privacy issues which result from its accessibility. As mentioned above, the community of SecondLife is wide and in some cases some of its users, either on purpose or accidentally, may cause problems in the smooth flow of the in-world educational activities\textsuperscript{21}.

It is also worth mentioning that the educators who use OpenSim emphasised that they have absolute control of their world and a high degree of independence, especially in the case of OpenSim IHs. They attributed these features of OpenSim first to its open-source nature, which allows them to develop worlds perfectly suited to their educational needs\textsuperscript{22}, second to the ability it offers them to keep backups of their world, something which preserves the content of their worlds.
invariant and available for reuse\textsuperscript{23}, and finally to the fact that OpenSim worlds have no global online community. The last feature allows educators to be fully aware of the users who access their world, whether this is institutionally hosted, where the university holds the in-world access rights management, or externally hosted, where the university can choose a provider which hosts an acceptable to the university community.

On the other hand, educators using SecondLife depend directly on Linden Lab\textsuperscript{24}. They have to comply with its policies and restrictions\textsuperscript{25}, accept its online community, and be prepared that they are likely to face problems arising from their coexistence with other users. Additionally, they should seek support from Linden Lab when they encounter issues related to their region and, on top of that, several educators underlined the lack of support by Linden Lab in a rather disapproving tone\textsuperscript{26}.

Several educators made particular reference to the use of the plugin tools which are compatible with SecondLife. Some of them referred to the collaborative and the distance learning tools\textsuperscript{27}, which they use in the context of SecondLife in order to support and enhance their educational activities. As shown in section 2.2.2.3, these tools are fully or partially compatible with the OpenSim technology as well. However, this was mentioned by none of the interviewees using OpenSim.

Not only do these two VWs have many positive features in common but they also have many drawbacks (see figure 7). The use of any VW for educational purposes presupposes that one or more sessions are devoted to the students’ familiarization with the context, the tools and the navigation system of the VW, a process usually called “orientation”. Educators’ attitude towards the orientation process will be discussed in section 3.3.1. At this point, though, it could be shortly noted that orientation was deemed necessary by the educators but, at the same time, time-consuming which is thought to be a significant drawback of any educational

\textsuperscript{23} see for instance interviews: 3, 8, 10, 11, 12, 15, 18, 22, 25, 26, 29, 30, 31
\textsuperscript{24} see for instance interviews: 1, 4, 16, 18, 20, 21, 25, 27
\textsuperscript{25} see for instance interviews: 3, 4, 12, 29, 31
\textsuperscript{26} see for instance interviews: 5, 6, 30
\textsuperscript{27} see for instance interviews: 1, 6, 8, 17, 18, 19, 23, 25, 28, 29
practice. Students’ orientation and the use of VWs in general, are hindered by the fact that SecondLife and OpenSim are not intuitive enough to allow new users to “feel” their contexts, the internal communication is sometimes problematic, due to poor VoIP quality and face-to-face communication is not an option. Additionally, several participants appeared dissatisfied with the GUI of both worlds, because it makes them even less intuitive. Moreover, the incompatibility of the Office architecture with the ones of SecondLife and OpenSim was mentioned in several interviews as a significant concern.

Due to the technical issues identified in both VWs, the quality of the implementation process and the results of the learning activities are degraded. Educators raised concerns about the considerably high technical requirements of both worlds, since the use of sufficient computer systems with high minimum standards is demanded for the proper rendering of the VWs. In cases where these requirements are not met, users face several rendering issues, such as latencies, deficient and problematic display of the in-world content and the like.

### 2.3.2 The Effects Applying on the Educational Activities

At this point, the presentation of the positive and negative effects that the contexts of the VWs under study have on the educational activities was considered purposeful (see figure 8).

![Figure 8 - The positive and negative effects of the educational use of SecondLife and OpenSim](image)

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28 see for instance interviews: 2, 5, 6, 7, 9, 14, 15, 17, 18, 20, 22, 31
29 see for instance interviews: 18, 27, 30, 32
30 see for instance interviews: 18, 25, 29, 31, 34
31 see for instance interviews: 1, 3, 16, 29, 31, 33, 34
32 see for instance interviews: 25, 31
33 see for instance interviews: 7, 17, 23, 25, 29, 30, 32, 33
The interviewees, taking into consideration the positive and negative features of the context of each VW, concluded that both of them are worth being used for educational purposes. Carrying out learning activities within SecondLife and OpenSim has multiple positive effects on students’ education. First and foremost, educators are given the opportunity to pursue the so-called “edutainment”superscript34 which fosters higher levels of student engagement with the educational activities. Furthermore, the plausibility, the interactivity, and the dynamic nature of the contexts of these worlds combined with the high level of freedom provided to users allow the realization of projects which are too costly, or too dangerous, or even impossible to be carried out in the physical worldsuperscript35. Besides, the flexibility of the contexts of SecondLife and OpenSim permits complete control of the laws of physicssuperscript36. Moreover, several educators consider the opportunity given to their students to build and script and then observe the functionality of their creations as very constructivesuperscript37. This is a very useful feature of SecondLife and OpenSim, especially for students involved with Information Technology, Virtual Reality, 3D Animation and similar disciplines.

Apart from the highly regarded advantages of the use of SecondLife and OpenSim in education, the academics did not disregard the drawbacks that possibly arise from the use of the two VWs under study. Participants considered it necessary to remark that the preparation and implementation of in-world educational activities is a fairly complicated process, especially when the relevant educator is a novice at such educational practices. Specifically, the design and setup of these activities is a rather tough and time-consuming task since it presupposes that educators have well-developed building and scripting skills superset38 and awareness of the potentials of the context of each world and the objectives of the activities to be carried outsuperscript39. Additionally, the rich context of VWs, with the various stimuli, the vividness of the representations, and its playful nature, often distracts students’ attention during educational sessions, whilst the high level of the in-world experienced

superscript34 see for instance interviews: 3, 7, 8, 11, 18, 20, 27, 29, 31
superscript35 see for instance interviews: 2, 6, 9, 10, 11, 12, 13, 19, 25, 29, 30, 31, 32
superscript36 see for instance interviews: 18, 19, 24
superscript37 see for instance interviews: 3, 5, 12, 20, 29, 30, 31, 33
superscript38 see for instance interviews: 2, 14, 18, 25, 32
superscript39 see for instance interviews: 5, 10
freedom quite frequently results in discipline problems\textsuperscript{40}. Finally, it was reported that some students struggle to understand the way their avatars are navigated and the in-world tools are used, even after the orientation session, and it is this difficulty that can also distract them from their activities\textsuperscript{41}. These students consider VWs as non-intuitive spaces, thus the in-world educational activities in which they participate do not have the desired results.

\subsection*{2.3.3 The Educational Activities}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig9}
\caption{Educational Activities in SecondLife}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig10}
\caption{Educational activities in OpenSim}
\end{figure}

\textsuperscript{40} see for instance interviews: 2, 10, 11, 17, 19
\textsuperscript{41} see for instance interviews: 2, 6, 7, 21, 22, 27
Figure 9 and 10 summarise the various types of the educational activities that take place within SecondLife and OpenSim, as they were reported by the interviewees. Although the resemblance between the two figures is remarkable, thereby revealing that a wide range of educational activities can take place equally well in both worlds, there are certain variations which derive from the differences in the contexts of the two worlds in question.

Participants claimed that they use VWs in the framework of the blended learning approach\textsuperscript{42}, that the activities they design and carry out contain the element of content creation\textsuperscript{43}, and that these activities are very often simulations\textsuperscript{44}. Activities associated with problem-based learning\textsuperscript{45} and role-playing\textsuperscript{46} are also usually conducted within both worlds. The educators emphasised that all the activities related to these modes of learning have much better quality, structure, and results when carried out in the context of a VW whether this is SecondLife or OpenSim\textsuperscript{47}. Moreover, in some cases VWs are used to host presentations\textsuperscript{48} and lectures\textsuperscript{49}.

A significant differentiation between the two worlds is that SecondLife is frequently used for the conduct of exploratory learning activities\textsuperscript{50}, such as treasure hunt, whereas similar activities are not performed equally often in OpenSim. This can be attributed to the content of SecondLife which is much wider and richer compared to the OpenSim worlds. Furthermore, SecondLife is used to cover distance learning needs\textsuperscript{51} more often than OpenSim worlds\textsuperscript{52} which are not as accessible as SecondLife.

Referring to the suitability of SecondLife and OpenSim for the realization of various educational activities, participants noted emphatically that VWs are not

\textsuperscript{42} see for instance interviews: 1, 4, 6, 10, 13, 15, 16, 21, 24, 26, 28, 29, 30, 31, 32
\textsuperscript{43} see for instance interviews: 3, 5, 12, 29, 30, 31, 32, 33
\textsuperscript{44} see for instance interviews: 3, 6, 7, 9, 10, 11, 12, 21, 28, 30
\textsuperscript{45} see for instance interviews: 1, 8, 18, 21, 30, 31
\textsuperscript{46} see for instance interviews: 1, 3, 5, 6, 7, 9, 10, 20, 29, 34
\textsuperscript{47} see for instance interviews: 6, 9, 11, 19, 28, 29, 32
\textsuperscript{48} see for instance interviews: 3, 5, 13, 18, 25, 29, 31
\textsuperscript{49} see for instance interviews: 4, 6, 7, 13, 17, 18, 19, 22, 24, 27, 28, 29, 32
\textsuperscript{50} see for instance interviews: 1, 7, 8, 17, 19, 20, 24, 25, 28, 32
\textsuperscript{51} see for instance interviews: 1, 7, 8, 17, 19, 20, 24, 25, 28, 32
\textsuperscript{52} see for instance interviews: 3, 12, 31, 33
fertile ground for lectures and presentations, as these can take place more successfully in a physical classroom. Given that in the physical classroom, as opposed to the virtual one, there is face-to-face communication, which results in multiple beneficial effects on the conduct of lectures and presentations, the participants’ viewpoint is justified\(^\text{53}\). Nevertheless, VWs are used for lectures in cases where students are to be introduced to the use of the VW or to a new educational topic\(^\text{54}\) or in cases of distance learning\(^\text{55}\). Respectively, when the 3D element is necessary to be employed, then there is a good reason for holding presentations in a VW\(^\text{56}\).

Finally, deciding on the physical classroom is most purposeful in cases where the educational objectives extend beyond the simple practice of skills and require students’ higher level thinking\(^\text{57}\). Also, when the educational project to be carried out is very brief and fast-paced, the use of the physical classroom is preferable, since the preparation and implementation of activities within VWs requires quite a lot of time in order for them to be successful\(^\text{58}\) (see section 3.3.3).

### 2.4 Validation of the Framework

The data analysis revealed that the participants agree with Conrad \([9]\) and underline that VWs have positive and negative context which affects accordingly the activities carried out in-world. Conrad’s and the participants’ views of the positive context are common, since it is generally considered valuable for the in-world learning activities. However, even though all the participants were aware of the negative context that SecondLife can also have, none of them noted that students must be protected from that. The research outcomes differ from the framework in that the educators are more concerned about the possibility of intruders invading their training areas rather than students having access to what Conrad refers to as “negative context”.

\(^{53}\) see for instance interviews: 2, 3, 4, 6, 7, 10, 11, 22, 25, 28, 30, 33

\(^{54}\) see for instance interviews: 3, 5, 6, 11, 17, 25, 28, 29, 32

\(^{55}\) see for instance interviews: 17, 25, 28, 32

\(^{56}\) see for instance interviews: 3, 5, 10, 11, 12, 31, 32

\(^{57}\) see for instance interview: 8

\(^{58}\) see for instance interviews: 9, 22, 34
The participants who had used OpenSim DPs seemed really satisfied with their context. Agreeing with Conrad, they emphasised that even though the online community of these servers is narrow, they had several opportunities to come into contact with other users and the content of their regions and thus develop a wide network of interactions.

Finally, the interviewees seemed to think highly of their opportunity to have total control over the context of their OpenSim IHs because this way they are able to create in-world exactly the content they need for the implementation of activities that meet their objectives. This validates Conrad’s viewpoint on OpenSim IHs. Through the data analysis, however, it was shown that the lack of a global context and a wide online community may negatively impact the educational projects carried out in the context of the OpenSim IHs.

2.5 Conclusion

SecondLife and OpenSim have many positive and negative features in common as far as their contexts are concerned, but at the same time, one differs from the other, each having its own separate positive and negative characteristics. However, the negative elements of these worlds are not powerful enough to discourage academics from exploiting them in education. It became apparent that both SecondLife and OpenSim can cover various needs that are difficult to be covered or may not be covered effectively through the use of the educational tools of the physical world. As a result, educators consider each one of them suitable for different types of educational activities.

Specifically, due to their common positive features, educators prefer to use these worlds in order to carry out activities based on the blended learning approach for content creation, problem solving, role-paying, collaboration, and simulations. In contrast, educators consider the use of VWs less suitable for lectures and presentations, due mainly to the lack of face-to-face communication. The privilege of worldwide users enjoying easy access to SecondLife was highlighted as its greatest advantage. Its accessibility results in it being able to host a wide online community which contributes significantly to the creation of its global
context, as stated by multiple participants. Consequently, a very wide network of interactions, in which both its numerous users and its broadened context participate, is possible to develop within SecondLife. Thus, distance and exploratory learning activities, as well as teleconferences and distance meetings can be successfully implemented within SecondLife more often than in an OpenSim world. However, it is this accessibility that accounts for one of the major weaknesses of this world: its security and privacy issues. Therefore, keeping users, in general, and student groups, in particular, safe from any “negative” context is considered imperative.

Unlike SecondLife, the online community of OpenSim worlds is usually narrower. This has a negative and a positive side. The negative aspect is twofold: the content and the network of interactions within the OpenSim worlds the participants had used were not as wide and complex as the ones in SecondLife. The positive side is connected with the opportunity given to educational institutions to have satisfactory control of the context of their worlds, especially in the case of OpenSim IHs. Thus, OpenSim is considered much more protected against malicious content.

The results above may feel somewhat surprising as any OpenSim can be configured to be accessible to worldwide user access (as indeed the OSGrid is). Still this was not perceived to be the case by the participants.
3. Immersion

3.1 Immersion in SecondLife & OpenSim according to the framework

Conrad [9], based on his empirical observations, suggested that the highest levels of immersion are reached within SecondLife and attributed this fact to the plausibility of the world and the wide network of interactions that has developed within it. By contrast, the level of immersion occurring within the OpenSim DPs is limited at lower levels, than those that occur in SecondLife. Finally, regarding the OpenSim IHs, he points out that the levels of immersion that the students-residents are able to develop within them depend largely on the way universities select to use their virtual space. He notes that students’ immersion can easily be achieved in the university’s VW, as the activities within it will become part of their daily life.

3.2 Literature Review

3.2.1 Immersion Overview

According to Onyesolu [44], under certain circumstances VWs have the potential to become immersive and engaging. Bredl et al. [30] agree with [44] and note that, inside the VWs, users are able to feel immersed, develop the sense of being part of the VW, and that they interact directly with the virtual context of the world. In [53] immersion is defined as the users’ sense of belonging in a VW. In [30] Bredl et al. indicate that immersion occurs when, in a given period of time, users interact more with the context of a VW than with the physical world. Similarly, in [46] immersion is defined as the phenomenon during which “one has
left the physical world and is now ‘present’ in the virtual environment” or, more simply, a phenomenon during which the users of a VW focus their senses on stimuli received from the VW and completely or partially ignore the stimuli received from the physical world.

Childs [52] seems to agree with both Onyesolu [44] and Bredl et al. [30] on the fact that immersion is not an intrinsic feature of VWs, but only one potential characteristic of them. He notes that some users never experience immersion in the VWs, others evolve into partially immersed ones, while others get to the point of feeling absolute presence in a VW. Nevertheless, he stresses that just using a VW is not enough for immersion to be achieved; a number of conditions is essential to be met.

In the relevant bibliography, four factors that influence whether and to what extent users of VWs will experience immersion were identified (see figure 11). These were:

a. Users’ willingness to be engaged and immersed
b. The use of avatars
c. The coexistence of users and their interaction with others in the context of VWs
d. The technical characteristics and the context of the VWs.

Childs [52] and Bredl et al. [30] rank users’ willingness and ability to become part of a VW, to be immersed and engaged, among the top factors influencing immersion. Childs [52] emphasizes that, regardless of the characteristics of a world, its plausibility, its vividness, and its interactivity, whether and to what extent users will experience immersion within its context depends on them, since all the features mentioned cannot be assessed completely objectively. Instead, users judge VWs subjectively, from their perspective, according to their own needs and influenced by their own unique psychological and mental processes, which ultimately are the ones that lead them or not to a certain level of immersion within the VW.
Figure 11 - The factors influencing the development of the sense of immersion

The use of avatars in VWs like SecondLife and OpenSim, has a positive effect on the users’ development of the sense of presence, according to researchers’ opinion. This view is supported by Bredl et al. [30] who, in fact, emphasize the positive impact that the use of avatars has on educational processes. Meanwhile, De Freitas et al. [3] refer specifically to the sense of presence users develop because of the opportunity they have to directly handle their avatars and, through them, the content of the VWs. Levesque & Lelievre [25] add that, through the use of avatars, users distance themselves from what is taking place in the VW and believe that the avatars, and not themselves, are the ones that act in the world. It is this conviction that results in increased levels of immersion on the part of the users. Kay Michel et al. [31], from their point of view, refer not only to the use of avatars, but especially to the use of avatars that users themselves have altered and shaped according to their individual taste and choices, as an important element that affects their immersion.

Some scholars, based on their research results, proceed the formulation of their conclusions one step further and note the effect of the sense of co-presence on the development of the sense of presence. Vosinakis et al. [53] highlight the
importance of users’ coexistence in a “shared space” and stress that this plays a
decisive role in the engagement of users in-world. Bredl et al. [30] emphasize that
the coexistence with others in the VW is more efficient than the individual and
independent existence of avatars, in causing immersion to develop. Thereby, an
additional factor which concerns the network of interactions occurring among
users is raised. Annetta et al. [46] indicate characteristically that a virtual
environment “exists” when there are users in it, interacting with its content and
with each other; respectively, a user “exists” in a virtual environment when
interacting with other users and the world. At this point, based on what was stated
in [46], the following reflection shall be expressed parenthetically: to what extent
is this sense of immersion and actual sense of presence likely to be cultivated
within the context of an OpenSim IH, like those that may be developed through
the use of OpenSim technology?

Childs [52] notes that the activation of this sense of presence and co-presence is
greatly hindered when users find it difficult to manipulate the context of the
virtual environment and the technology of the VW. Of course, the vividness and
the plausibility of a VW contribute positively to the users’ engagement in the
world, as reported by Bredl et al. [30]. Even though Childs [52] does not disagree
with this view, he regards the users’ willingness to be immersed in the world as a
more important factor in achieving their engagement. Finally, Childs [52] notes
that the technological problems and the utilitarian issues which characterise VWs
like SecondLife, are like obstacles to the users’ path towards immersion.

In conclusion, it can be stated that immersion is not an inherent feature of any
VW, in contrast to their context. Nevertheless, under the influence of the four
factors mentioned above, VWs, in general, and SecondLife and OpenSim, in
particular, are potentially immersive for some users, depending on the features
they possess according to each user’s opinion.

3.2.2 Orientation
Even though the quest for suggestions in an effort to address the technical failures
or possible malfunctions of VWs is beyond the scope of this thesis, the
presentation of proposals which could help new users overcome the difficulties they face in using the “tools” of VWs is considered necessary.

Many new users are either simply unable to acquire the navigation and operation mechanisms of VWs or refuse to do so because they consider this practice as a waste of time and effort, with no practical value [52]. When a VW is to be used for educational purposes, decent time is essential to be devoted to the students’ familiarization with the world in order to enable them to form their avatar, and by extension their virtual identity, and also learn to interact fundamentally with the virtual environment, as reported by Childs [52] and De Freitas et al. [3]. Additionally, De Freitas et al. [3] note that the realization of these procedures, which on the whole they call “orientation”, requires that specific actions be undertaken under the supervision and assistance of the educator in charge in favour of students.

3.2.3 Immersion: Necessity and Factors

Through the research they conducted, Bredl et al. [30] concluded that when students are immersed in a VW, they have increased motivation for learning through this world, while they are more likely to be engaged in educational activities. Childs [52] on the other hand, finds a positive correlation between the development of the sense of presence and the satisfaction felt by students during the execution of an educational activity in-world. Combining this statement with what was mentioned above, it can be deduced that immersion in the VW is necessary if educational activities are to be found as really pleasant for students. However, this presupposes that proper orientation of students has been carried out. Therefore, orientation is a vital first step towards preparing learners for one or more in-world educational activities, which are both pleasant and effective for them.

Despite the fact that the topic of immersion in VWs in general has been investigated extensively and in detail, literature search revealed that there are few studies focusing their interest on the immersion that develops within the worlds of SecondLife and OpenSim in particular. Furthermore, no research was detected
directly comparing the two worlds as to their ability to provide their users with a sense of presence.

Kostarikas et al. [28] carried out a research on the educational use of SecondLife and realized that the students under observation developed a sense of presence within the world, they got immersed and did not hesitate to cooperate in-world with their –unknown until then– fellow students. The same research also suggests that lack of familiarity with the world of SecondLife causes insecurity to new users and acts as a barrier to the students’ way towards immersion. Nonetheless, all the students who participated in this research were satisfied with their learning experience within SecondLife and were also positive to the idea of using it again in the future [28], thereby indicating that eventually they experienced immersion inside the VW.

Hockey et al. [55] emphasize that the advantages that SecondLife has, as an immersive virtual environment, are not exclusive to this specific world. On the contrary, immersion is a feature of any VW that provides opportunities for direct visual contact with the subject taught and interaction with the environment and other users. This view can lead us to the conclusion that such immersive experiences may be provided by OpenSim as well, since it shares many common features with SecondLife concerning its context and function. Ridgewell et al. [48] report that the OpenSim technology creates environment which may accommodate engaging and playful educational activities that lead to the immersion of students into the world. Zhao et al. [45] also suggest the use of OpenSim technology for the creation of immersive virtual environments, which are characterized by plausibility, interactivity and ability to engage students.

However, Childs [52] argues that the number of simultaneously logged-in users in a VW plays vital role in students’ engagement, and that moving virtual universities to less populated environment decreases the probability of immersion occurrence. Co-presence and interaction with each other are considered as necessary prerequisites for the achievement of students’ in-world immersion and moving to private hosted servers is even viewed by some researchers as “a missed opportunity to address some of learners’ misconceptions and prejudices” [52].
Figure 12 summarizes all the benefits that apply to the learning processes that take place within the VWs, when the state of immersion is reached.

![Figure 12 - The effects of immersion on the educational activities](image)

### 3.2.4 Summary

Neither SecondLife nor OpenSim are by definition immersive. They both have the potential to become immersive, but this greatly depends on: a) the users’ willingness to be engaged and immersed b) the use of avatars c) the coexistence of users and their interaction with others in the context of VWs and d) the technical characteristics and the context of the VWs.

It has been shown that SecondLife meets three of these four conditions. Its technical characteristics are satisfactory and its content is suitable for educational use. Also the network of interactions within this world appears to be wide, rich, and complex. Besides, avatars are used. The only factor that is imponderable and none of the developers of SecondLife or the researchers are able to foster or predict is the users’ willingness to be engaged and immersed.

OpenSim, on the other hand, undoubtedly meets two of the four conditions that are responsible for the development of immersion. There is agreement among
researchers as far as the content and the use of avatars are concerned that OpenSim is not inferior to SecondLife and therefore the percentage of immersion corresponding to these two factors is exactly the same as that of SecondLife’s. Regarding the coexistence of users and the interactions among them, the landscape is blurred. Even though the context of OpenSim provides all the necessary elements for the coexistence of users and the development of a wide and sophisticated network of interactions, a general conclusion about the levels of immersion within each of the VWs of OpenSim cannot be drawn. Each virtual environment created through the use of the OpenSim technology has some unique features in order to serve specific needs. These characteristics determine whether and to what extent there will be interactions within each world, and by extension whether and to what extent users will experience immersion in them. Finally, as mentioned in the case of SecondLife, the users’ willingness to be engaged and immersed is considered imponderable in the case of OpenSim as well.

In any case, whichever VW is chosen for the conduction of learning activities, students’ orientation in the world is a vital first step because without it they will hardly manage to get immersed.

Reaching the state of immersion in the worlds of SecondLife and OpenSim has an equally positive effect on the educational activities of both. Students immersed in SecondLife and OpenSim regard their experience of the educational activities as pleasant and interesting. Therefore, they have increased motivation for learning in-world. They willingly engage in the educational activities and do not hesitate to cooperate with each other to reach their learning goals. Consequently, these activities become more effective and students feel immense gratification for the progress of their work and the results they bring.

Coming to a conclusion, it can be stated that SecondLife usually appears to have more features which bring users to immersion in comparison to OpenSim. However, this should not lead to the erroneous conclusion that the OpenSim worlds are not or cannot become immersive.
3.3 Data Analysis

Figure 13 - The structural elements of immersion’s four dimensions
As shown in section 3.2.3, immersion is necessary for the successful implementation of the educational activities within VWs. When students experience immersion, the educational activities become more empirical, more attractive and more enjoyable for them and they are also motivated to achieve better learning results. When educators were asked to answer whether the educational activities, carried out in SecondLife or OpenSim, had these features, they stressed that the effectiveness, the attractiveness, the experientiality and the pleasure of the learning activities occur when students are immersed in the VW and engaged with the educational activities. Additionally, all this is influenced by a wide range of factors.

Generally, the immersion that students may experience within a VW during their participation in educational activities, depends on the network of interactions that take place in-world, on the students, the educational activities, the technical issues that may occur in each environment, as well as on whether or not they will be oriented during their first contact with the new medium (see figure 13).

3.3.1 Orientation

Orientation plays an important role in the successful implementation of engaging educational activities. Interviewees stressed that orientation is a vital component for achieving immersion\(^{59}\), while some of them even mentioned that the first projects they carried out using a VW of their choice failed due to their omission to orient their students\(^{60}\). Orientation may be carried out in several different ways, while its content and structure vary depending on the type and purpose of the educational process to be held in the VW, on the students’ familiarity with these environments, and also on each educator’s viewpoint. For a more detailed presentation of various forms of orientation, the reader is referred to Appendix B to question 5 in part 2 of each interview.

3.3.2 Students

Like any educational event, so are the learning activities that take place within VWs influenced by the students who participate in them. The students’

\(^{59}\) see for instance interviews: 5, 6, 7, 9, 14, 15, 17, 20, 22

\(^{60}\) see for instance interviews: 18, 22, 31
personality and familiarity with the VW determine whether and how effective these activities will be. Several interviewees reported that the activities carried out were not sufficiently effective for some students, because the use of VWs for educational purposes did not fit their personality and preferences, fact that, by extension, affects the attractiveness, pleasure and experience arising from these activities. At the same time, the range of experiences that students gain through their educational activities depends on the extent to which they understand the value of the activities in which they participate. Even though educators cannot take actions to change their students’ personalities, they can, however, manage to help them see the value of the activities in which they will be involved and familiarize them with the VW through the orientation process. Apart from orientation, which is certainly vital, students can become more familiar with the VW spending time in it. Indeed, several educators mentioned that the more time students spend in-world, the more they engage with it, gain new experiences, exchange information and share their experiences with others. Finally, it is common opinion of several interviewees that students must participate actively in the in-world educational activities and not just watch them, because only that way they can experience them to the fullest extent possible, become engaged to them and therefore feel immersed in the world.

### 3.3.3 Activities

Another factor that influences whether students will reach a state of immersion within a VW while using it for educational purposes, is the activities in which they participate. More specifically, the activities carried out in-world should have a clear purpose that indicates the implementation in the VW and also affects the way these are planned and designed. In particular, activities involving creativity, communication, collaboration and playfulness are more attractive for students. Furthermore, activities that encourage collaboration among students and make

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61 see for instance interviews: 2, 4, 5, 6, 7, 9, 10, 15, 19, 20, 21, 22, 23, 29, 32, 34
62 see for instance interviews: 4, 5, 6, 7, 8, 10, 11, 12, 14, 17, 23, 25, 26, 31, 33, 34
63 see for instance interviews: 6, 8, 9, 11, 14, 18, 20, 25, 27, 29, 31, 32, 34
64 see for instance interviews: 5, 9, 10, 14, 20, 21, 28
65 see for instance interviews: 5, 6, 8, 9, 10, 18, 28, 29, 31
proper use of the tools and the opportunities the world offers, are more effective. Additionally, the participants noted that students experience the educational activities to a greater extent when it comes to experiments, role-play activities, simulations, action-based learning activities and activities which have VWs as their subject. On the other hand, it is recommended that lectures not take place within the VWs when educator aims to hold experiential sessions. Besides, holding lectures in-world is a practice that educators avoid (see in section 2.3.3).

Moreover, it’s worth mentioning that, according to several educators’ viewpoints, the brief and innovative playful projects are the ones that please students and thus lead them to feel immersed. The novelty of the approach attracts students’ interest and leads them to participating pleasantly in every new project. Regarding the projects’ length, it should be both long enough to let students engage in it, and also brief at the same time so that the students’ interest caused by the novelty of the approach will not be eliminated.

Playfulness is a vital component for pleasant educational activities because it makes students receptive to learning, as they get engaged in learning activities and learn unconsciously. However, these activities should be neither too playful, since then the playful element disrupts students, nor miss playfulness since that will not lead students to an easy engagement with the undertaken projects.

3.3.4 Interactions

The interviewees noted the different kinds of interactions that occur within a VW as the most important factor in the students’ way to develop a sense of immersion. They underlined the importance of exchanging experiences and ideas among the members of the student groups and between students and other users of VWs. On top of that, one of the participants emphasized the influence that thematic groups operating in open VWs have, on the satisfaction of students’ interests, a fact that leads to them being immersed in-world.

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66 see for instance interviews: 1, 2, 6, 7, 8, 9, 18, 29, 30, 31
67 see for instance interviews: 16, 17, 18, 33
68 see for instance interviews: 9, 18, 22
69 see for instance interviews: 9, 18, 22
70 see interview: 5
Therefore, it seems that the context in which interactions are carried out, the content and the components of these interactions are factors that determine the effectiveness of the learning activities that take place in VWs. Based on that, it can be said that educators choose the VW based on the network of interactions they want their students to develop with each other, with the world and other users. 

Thus, there were participants who chose SecondLife because they consider the interactions encountered between their students and the in-world community as an essential aspect of their sessions, while others seemed to be satisfied with the interactions encountered within OpenSim DP or OpenSim IH.

According to educators, when students have the opportunity to interact with the virtual environment, with other members of their group and also with other users of the VW or thematic groups, they consider the in-world sessions as attractive and pleasant. The impact the students’ network of interactions will have on their experiences gained from in-world sessions, depends on the purposes of the activities and the context within which these take place. Some interviewees reported that the interactions developed by their students within the virtual environment of an OpenSim IH were enough for them to gain the necessary experience.

Others stressed the importance of students’ interactions with other non-student users and generally the development of a wide variety of interactions with other components of the VW that do not necessarily belong to their university’s campus, and thus they opted to use SecondLife rather than other VWs.

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71 see for instance interviews: 3, 5, 6, 11, 12, 28, 29, 31, 32
72 see for instance interviews: 5, 6, 15, 20, 22, 28, 32, 34
73 see for instance interviews: 3, 10, 12
74 see for instance interviews: 11, 30, 31, 33
75 see for instance interviews: 3, 5, 9, 12, 17, 19, 20, 22, 27, 32, 33
76 see for instance interviews: 10, 11, 18, 25, 29, 30, 31
77 see for instance interviews: 5, 6, 15, 20, 22, 28, 32, 34
3.3.5 Technical issues

Although a learning activity within a VW can be properly targeted and designed, as well as include all the elements mentioned above that make it effective, attractive, experiential and pleasant, the technical issues that may arise during its implementation decrease the levels of experience students gain and the levels of pleasure caused by the specific activity. Technical issues may arise either within SecondLife or OpenSim and educators have mentioned them as a significant disadvantage of the use of VWs in education.

3.4 Validation of the Framework

Regarding the phenomenon of immersion within the VWs of SecondLife and OpenSim, the framework seems to be confirmed. Comparing the immersion that students experience firstly in SecondLife, then in the OpenSim DPs, and finally in the OpenSim IHs, it was stated in the same, relying on anecdotal speculations that the immersion encountered within these three different virtual environments is neither equal in quantity nor similar in quality.

The observations during the course of the case studies carried out, led to the conclusion that the highest possible level of immersion can be reached in SecondLife. In the OpenSim DPs, the level of immersion is at a lower level. Respectively, in the OpenSim IHs students are likely to engage with the VW and feel immersed only if the use of it is seen as part of their daily university life.

Similar data were collected during the course of this study. SecondLife is regarded as the VW in which students can experience immersion more easily and to greater extent. In the OpenSim DPs, students can feel immersed, but this is not always as easy as in SecondLife. Finally, the research revealed that even though within an OpenSim IH, a high level of immersion is quite hard to be reached, students, however, can easily get engaged in the activities they take part in, an outcome that matches the statements of Conrad and confirms the arguments.

78 see for instance interviews: 3, 7, 25, 33
Therefore, Conrad based on anecdotal educational experience through VWs, identifies the primacy of SecondLife with respect to the multiple opportunities it offers its users so as to develop a wide network of various interactions. This view is in total agreement with the conclusions drawn from the data collected for this research.

Concerning the low level of immersion within the OpenSim DPs, Conrad noted that the small number of opportunities for interactions with the VW and other users is responsible for that. Although this type of VWs has very similar context to that of SecondLife, everything within them has a significantly smaller range, i.e. fewer users, fewer virtual spaces, fewer virtual creations and therefore fewer interactions. This viewpoint is fully confirmed. Nevertheless, the research showed that in cases where all the other requirements for the development of immersion in such an environment are met, the students can really get immersed.

Overall, the statement that the level of immersion that can be deployed within an OpenSim IH depends greatly on the world’s context is fully confirmed. In cases where the VW and its educational activities are designed in such a way as to attract students and make them experience the lesson with a pleasant and effective way, they will get engaged in the learning activities and also immersed in the VW. In some cases, actually, they may experience that virtual element as “an ‘augmentation’ of student life”.

3.5 Conclusion

Taking into account the gathered data, it is concluded that VWs are not immersive by definition. According to interviewees, whether and to what extent students can experience the sense of presence within a VW does not depend on the world itself. Instead, it depends on a number of factors such as:

a) orientation, which can enhance students’ familiarity with the VW, something that falls, however, under educators’ responsibility,
b) students themselves and all the unique elements of their personality and temperament,
c) the activities that take place within the VW, which, like orientation, are the
educators’ responsibility, since they are affected by their choices,
d) any technical issue which is associated with the use of VWs and also
complicates the implementation of educational activities, and finally
e) the network of interactions that occur within the VWs.

Students’ personality, ideology and views about the use of VWs for educational
purposes are factors that every educator should definitely take into account when
planning to implement educational activities within a VW. However, these are
difficult, if not impossible, to be controlled and curbed. Neither, of course, can it
be said that a particular VW suits better to the personality and preferences of all
students.

As already mentioned, students’ orientation in a new and unfamiliar to them VW
falls under educators’ responsibility. If ignored, that might complicate
significantly students’ way to the state of immersion in the world. The level of
educators’ competence is demonstrated and identified in the design and
implementation of the educational activities. Thus, whether the educational
projects, which took place within VWs, meet the criteria to be engaging and
immersive or not, depends on the educators’ educational choices, and not
exclusively on the context of each VW.

Various technical issues are identified both by the educational groups that use
SecondLife and by those that use OpenSim. In any case, these issues impede
students from feeling part of the VW, while many of them are caused by the fact
that both VWs have high technical specifications.

Last but not least, participants detected significant difference concerning the range
and variety of the interactions that may occur within each VW. It was shown that
in the VW of SecondLife, students have more opportunities to develop a very
wide network of interactions through coming in contact with student and non-
student users, becoming members in thematic groups, and also through visiting
virtual sites which are not part of the virtual space of their universities. The entire
above help students feel immersed in the VW. Similar but usually less extensive
are the interactions that occur within the OpenSim DPs. On the contrary, participants claimed that within the OpenSim IHs, students have considerably fewer opportunities to develop interactions with the virtual environment and other users, but this is not essentially the rule. This, however, might have a very negative impact on the development of students’ immersion into the VW in cases where those interactions are a central axis of the educational activities. On the other hand, when those interactions among students are helpful but not an essential component of the educational activities, then students can easily engage with the project and thus experience immersion.

Coming to a conclusion, according to the educators’ view with respect to immersion, SecondLife seems to be having the edge, however slight it may be, over OpenSim. These two VWs were judged by the participants as almost equivalent in developing a sense of presence to students, but the broader and richer network of interactions that exist in SecondLife gave it the lead. Second in line come the OpenSim DPs, and last of all come the OpenSim IHs.
4. Cost

4.1 Cost of SecondLife and OpenSim according to the framework

Conrad’s [9] viewpoint on the cost of using SecondLife and OpenSim has much in common with the data collected through the review of the literature. He underlines that the economic cost of using SecondLife is very high and not affordable, especially since educational discount stopped being offered. On the contrary, the effort and time that need to be devoted for the preparation of educational activities is low, since teachers can obtain many of the necessary objects from various sources, either paid or free ones. In reference to the OpenSim DPs, he considers that their prices are very competitive to those offered by Linden Lab. The economic cost of using such worlds is lower than using SecondLife, while the effort and time required for setting up the world and preparing activities are similar to the ones which are deemed to be in the case of SecondLife. The OpenSim IHs are, according to Conrad, the most affordable choice for universities, if they already have the necessary infrastructure and personnel for the creation and maintenance of the server. On the other hand, however, this is the most costly option in terms of time and effort.

4.2 Literature Review

4.2.1 Cost Overview

The cost of using VWs for educational purposes can be studied from many different angles. In this section, the cost of using SecondLife and OpenSim will be studied in terms of the time and effort needed for the preparation and
implementation of an educational project within each VW, and in terms of the funds that have to be spent for these purposes.

Trinder & Moffat [56] characterize the use of VWs for educational purposes as far too costly in terms of time, effort and money, explaining that for the preparation of such educational programs a lot of preparation and sufficient infrastructure are required. Therefore, they stress that the use of VWs for very brief learning programs may prove to be a wrong choice. Barker et al. [57], after examining the use of SecondLife in university education, seem to be sharing a similar view. They emphasize the high requirements on infrastructure and man-hours that the use of such VWs has. Crellin et al. [58] agree with them and stress that the implementation of such programs are both time and effort consuming. Thereafter, Barker et al. [57] suggest the use of such environments only when there is a very particular reason, and very specific needs that cannot be sufficiently covered using other methods. Parsons et al. [59] and Panganiban [60], concurring with that opinion, add the necessity for a very careful economic management from the part of the educational institutions regarding the time and money that will be spent for the needs of the learning activities in SecondLife.

In order to have the right to create virtual training area in SecondLife, a university has to, first of all, purchase virtual land by paying a certain amount of money, and then give monthly fees for its maintenance. These fees are justified considering that they cover the costs of maintaining the server which hosts each piece of virtual land and the objects existing in it. Linden Lab characteristically says that “it’s like renting a hard drive” [61]. The supply of the land with the necessary for the educational activities objects can be made either by purchasing already created objects, or by building and scripting new ones. Both options have a cost [59, 60]: the first one in terms of money, and the second one in terms of effort and time. Furthermore, Linden Lab imposes additional charges for the uploading of image files [54, 62].

Up until December 2010 Linden Lab was offering a 50% discount to non-profit and educational institutions for the acquisition and maintenance of land, a fact that encouraged the educational community to engage in SecondLife. As from January
2011 that discount stopped being offered and that caused great inconvenience to the universities maintaining their virtual land in SecondLife, since the cost became unbearable. As a result, some universities stopped using SecondLife, some moved to other cheaper VWs such as OpenSim, while others opted to coexist in a shared piece of virtual land [63]. The offer that came to replace the previous one included a 50% discount in the prepayment of the land for a use of six, twelve, eighteen or twenty four months. However, the only institutions that could take advantage of it were the ones that had already been using the previous discount and had also expressed a desire to use the new discount until 31 December 2010 [64].

In [65] the high cost of using SecondLife was addressed to with great displeasure by many participants. On the other hand, another view was expressed; that VWs like SecondLife allow for object creation and implementation of activities at a
cost much lower than the one that would be charged to the universities if the project took place in the physical world.

Regarding the prices of the OpenSim DPs, they vary depending on the services each of them provides [66]. Common feature of all, including SecondLife, is that the charges depend on the number of prims they offer for use, and on the possibility of simultaneously logged in avatars; in other words, they depend on the size of the storage space offered by the server [67]. In general, however, the charges of OpenSim providers are much lower than those of Linden Lab [68]. In terms of equipping the virtual space of each university with the necessary objects for the educational activities, educators have to either put effort and spend time on building and scripting, or turn to external partners that offer such services, some paid ones and others free of charge [69].

The use of OpenSim IHs does not require a fee payment for the possession of land, as in the two previous cases. The OpenSim software is free to all. Nevertheless, universities intending to host OpenSim locally must have or obtain the necessary infrastructure to set up the server, as well as the money for its operation and maintenance [70]. The technical specifications of the server and its final value depend both on the training needs that OpenSim will be required to cover, and on each university’s budget [71]. However, for the creation of such a server, which is a complex process [67], and its maintenance, effort and time are required from the educators, the technical staff of the University, or external colleagues. In the case of external personnel, the university will have to pay for their services. On the other hand, if the staff of the university is able to carry out these tasks, the choice of OpenSim can be a very affordable solution. Finally, regarding the in-world building and scripting, what was mentioned above for the case of OpenSim DPs, applies in the OpenSim IHs, as well.

The inversely proportional relationship between the economic cost and the required time & effort for the use of SecondLife and OpenSim can be demonstrated in figure 15.
4.2.2 Summary

In terms of financial cost, the use of OpenSim IHs is the most beneficial option, especially if the university has the necessary infrastructure and staff to run the project. A less beneficial option is the search for a dedicated provider, but, in any case, the most expensive option is that of SecondLife.

On the contrary, the use of SecondLife has lower cost in terms of time and effort, since many objects and educational tools can be obtained and do not need to be created by educators from scratch. Almost the same effort is needed to set up educational activities within the OpenSim DPs, and in this case various objects can be obtained from the online community and many of them for free. Finally, most effort and time consuming process is that of setting up and operating an OpenSim IH.

Considering the data collected through the literature review it can be concluded that, in terms of cost, the best choice among the VWs studied is that of an OpenSim DP, since the implementation of educational activities within their context requires the payment of not very high fees, while the effort and time needed to be spent on the preparation of the activities within them are quite low.
4.3 Data Analysis

Figure 16 - The costs of VWs
Both from the interviews and the literature review (section 4.2) it was shown that the cost of using VWs is an important concern for educators facing the decision to use them or already using them. In fact, there were several participants who stressed that the main consideration which affected their decision of choosing a VW was its cost\textsuperscript{79}.

Nonetheless, the cost of using VWs has two aspects: a) the economic cost and b) the cost in terms of time and effort. Both of these aspects determine whether and to what extent a virtual environment can be affordable for educational use. These factors (economic cost, cost in time and effort, and affordability) were taken into account in an attempt to determine the potential costs of using SecondLife and OpenSim, and are presented schematically in figure 16 and in detail in the following sections.

4.3.1 Cost in Terms of Time and Effort

Building and scripting for the formation of the training areas and the creation of the necessary virtual objects for the educational activities seemed to be the only actions that require time and effort in SecondLife\textsuperscript{80}. The same applies in cases where educators chose to use an OpenSim DP for their needs\textsuperscript{81}. Respectively, within the OpenSim IHs, building and scripting is considered as a time-consuming and laborious process\textsuperscript{82}. Indeed, the larger and more complex a project is, the more laborious and time-consuming the process of building and scripting becomes. Either the educators themselves\textsuperscript{83} or qualified personnel\textsuperscript{84} may put through these tasks. However, there were some cases in which the educators entrusted their students with building and scripting themselves in the context of their learning activities\textsuperscript{85}.

\textsuperscript{79} see for instance interviews: 3, 8, 10, 11, 12, 25, 29, 30  
\textsuperscript{80} see for instance interviews: 2, 11, 16, 17, 22, 28, 29, 32  
\textsuperscript{81} see for instance interviews: 3, 10, 12, 22  
\textsuperscript{82} see for instance interviews: 15, 18, 25, 31  
\textsuperscript{83} see for instance interviews: 1, 2, 3, 4, 5, 7, 11, 12, 13, 15, 18, 22, 29, 31  
\textsuperscript{84} see for instance interviews: 3, 5, 6, 7, 8, 7, 10, 14, 17, 19, 20, 21, 23, 24, 28  
\textsuperscript{85} see for instance interviews: 3, 4, 5, 12, 13, 18, 22, 29, 30, 31, 33
Great effort and time saving can be achieved through the exchange or even donation of objects and scripts\textsuperscript{86}. Besides, several educators strongly emphasized the importance and the potentials for effective and low cost activities, arising from the sharing of virtual spaces among universities\textsuperscript{87}.

Moreover, in SecondLife educators can purchase items from the marketplace, which, as they indicated, contributes to the significant reduction of the required effort for the creation of virtual items. Some interviewees reported that they often purchase objects which are necessary for their projects yet time-consuming to be created from scratch\textsuperscript{88}. Furthermore, educators with limited building and scripting knowledge can easily find there some of the items needed for their lessons\textsuperscript{89}.

Additional workload is required in hosting OpenSim internally. Educators who use or have used OpenSim IHs mentioned that either themselves\textsuperscript{90}, or qualified personnel\textsuperscript{91}, or their students\textsuperscript{92} managed the setup, the operation, and the maintenance of the server. Nonetheless, in SecondLife and in OpenSim DPs, such tasks are performed by the providers and the university members are not responsible for them (see section 4.2.1).

\textbf{4.3.2 Cost in Terms of Money}

In reference to the services offered by Linden Lab and OpenSim DPs, the interviewees mentioned that the charges depend on the size of the purchased virtual land\textsuperscript{93}. The fees cover the expenses for the operation and the maintenance of the server in which the universities’ activities are hosted, and they are taken care of either by the educators themselves\textsuperscript{94}, or by the universities\textsuperscript{95}, or through grants\textsuperscript{96}.

\textsuperscript{86} see for instance interviews: 1, 4, 21, 22
\textsuperscript{87} see for instance interviews: 3, 12, 17, 22, 25, 31, 33
\textsuperscript{88} see for instance interviews: 2, 9, 11, 22
\textsuperscript{89} see for instance interviews: 22, 25
\textsuperscript{90} see for instance interviews: 11, 15, 18, 30, 31
\textsuperscript{91} see for instance interview: 8, 11
\textsuperscript{92} see for instance interview: 29
\textsuperscript{93} see for instance interviews: 3, 22, 25
\textsuperscript{94} see for instance interviews: 16, 18, 23, 24, 25, 26, 29
\textsuperscript{95} see for instance interviews: 1, 5, 6, 8, 9, 10, 12, 13, 15, 17, 20, 21, 22, 23, 27, 28, 31, 32
\textsuperscript{96} see for instance interviews: 2, 3, 4, 7, 9, 11, 14, 19, 22, 30, 34
Furthermore, some educators stressed that the additional charges imposed on the uploading of image files make the use of SecondLife unaffordable for them. Similar fees are not imposed for the operation and the maintenance of the institutionally hosted servers, since the responsibility for these actions lies with the university members themselves. In this case, the only direct costs borne by the university are those of the infrastructure which will be used to host the server, of the network connection services, and the cost of electricity (see section 4.2.1). However, the costs concerning electricity and the network services were considered negligible by educators. Regarding the infrastructure, it was noted that there is no need for acquisition of new machinery, since an existing computer can be used to host the OpenSim server, as long as it meets the necessary requirements. Moreover, as one interviewee reported, the cost for a new machine was covered with a grant. Nevertheless, in cases where university members lack the knowledge of setting up and maintaining a server, and thus, the universities hire additional staff for that reason, then the option of an OpenSim IH will prove to be really costly and unprofitable.

With respect to the in-world development needs, the interviewees reported several different potentials. In cases where the university members opted to form the virtual space themselves, it cost them in time and effort, as already mentioned. Furthermore, some educators reported that additional charges were imposed by Linden Lab when they exceeded the maximum number of primitives allowed in their purchased land. This was highlighted as a very negative feature of SecondLife, particularly by educators who use VWs for building and scripting purposes. The fact that such charges do not exist in the OpenSim DPs or OpenSim IHs, led educators to choose these worlds rather than SecondLife.

Alternatively, educators with limited knowledge in building and scripting or with a busy schedule may employ affiliated builders and scripters to form the virtual space.  

97 see for instance interviews: 29, 31  
98 see for instance interviews: 11, 15, 18, 25, 29, 30, 31  
99 see for instance interviews: 8, 11, 15  
100 see interview: 29  
101 see for instance interviews: 11, 18, 29, 31  
102 see for instance interviews: 3, 11, 12, 30, 31
space according to their educational needs. Although this option is time and effort saving for the educators, it involves extra charges for the university. Finally, the marketplace is a service offered only in SecondLife, and the transactions presuppose payment (see section 4.3.1).

4.3.3 Workspace sharing

Several interviewees stated that they are ardent supporters of the “workspace sharing” practice. “Workspace sharing” is the process in which the educators lend their virtual space to other educators or students for one or more sessions. As a result, this practice can reduce the effort and time required to be spent by university members, and also helps institutions to save money.

4.3.4 Affordability

All interviewees were very dissatisfied with the decision of Linden Lab to discontinue the educational discount and some of them indicated that the use of SecondLife is now being unaffordable for their universities. As a result, one of the interviewees mentioned that his university has stopped using VWs, while some others resorted to the “university space sharing” solution. There were some cases in which the universities significantly reduced the space they had purchased, and some others opted to use other open source technologies used for the creation of VWs, such as OpenSim, OpenWonderland, and Unity3D.

Nonetheless, there were interviewees who reported that SecondLife is still quite affordable for them considering the provided services, and mentioned that it offers “best value for money”. For several, the affordability of SecondLife stems from the fact that they had the chance to obtain a new fees discount for their projects. Others consider it affordable compared to LMSs which are thought to be overpriced. Some educators argued that carrying out short-term and

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103 see for instance interviews: 3, 12, 17, 22, 25, 31, 33
104 see interview: 15
105 see for instance interviews: 17, 25
106 see for instance interviews: 10, 15
107 see for instance interviews: 3, 8, 11, 12, 17, 25, 27
108 see for instance interviews: 1, 9, 25
109 see for instance interviews: 2, 4, 9, 10, 32
110 see for instance interviews: 1, 21, 32
undemanding educational projects in SecondLife is fairly affordable for them\textsuperscript{111}, while others stressed that the implementation cost of some specific projects in the physical world is much more expensive compared to the corresponding cost within SecondLife\textsuperscript{112}. Finally, some educators reported that they kept their projects running within SecondLife taking advantage of an external fund, and, thus, these projects had no direct economic cost to themselves or their university\textsuperscript{113}.

The participants using OpenSim DPs gave very positive feedback concerning the provided services in relation to the economic cost\textsuperscript{114}. The provided services, i.e. the server operation and maintenance, are exactly the same as those offered by Linden Lab, but their quality varies\textsuperscript{115}. However, the fees paid by the academic institutions to the providers are much lower than those of Linden Lab (see section 4.2.1). Nevertheless, the institutions interested in using this solution should carefully seek a provider that offers the appropriate services for their needs.

Finally, the choice of an OpenSim IH can be either very affordable or very unaffordable. Interviewees stated that the maintenance and educational use of an OpenSim server is a very cost-effective practice for the university, since the qualified staff was already working in it fulfilling other obligations, therefore they could, at the same time, perform the necessary for the server tasks too\textsuperscript{116}. On top of that, one interviewee reported that the assignment of the server maintenance and operation to students as part of their practical training is a very cost-effective solution for the universities\textsuperscript{117}. The above also apply to the coverage of the needs for content creation\textsuperscript{118}. In the cases where the options above were not feasible, the educators mentioned that their university was forced to hire additional staff so as

\textsuperscript{111} see for instance interviews: 25, 29  
\textsuperscript{112} see for instance interviews: 7, 25  
\textsuperscript{113} see for instance interviews: 7, 14, 19, 23  
\textsuperscript{114} see for instance interviews: 3, 10, 12  
\textsuperscript{115} see for instance interviews: 10, 22  
\textsuperscript{116} see for instance interviews: 8, 11, 18, 31  
\textsuperscript{117} see interview: 29  
\textsuperscript{118} see for instance interviews: 18, 22, 29, 30, 31, 33
to meet these needs. In these specific cases, the option of an OpenSim IH can be particularly unaffordable.

Regarding the infrastructure requirements of the institutionally hosted servers, it was reported that the most cost-effective option involves the use of the existing infrastructure, if it is considered appropriate to the server requirements. Alternatively, the investment in new infrastructure might also be a choice, though costly, since the equipment can cover multiple needs of the university apart from just the operation of the OpenSim server. Consequently, it can be deduced that if a university settles upon the use of pre-existing equipment, then the infrastructure costs of the OpenSim server is minimal. Otherwise, if the infrastructure is to be used exclusively for hosting the OpenSim server, then that might not be a good investment and, by extension, this solution cannot be considered affordable.

4.4 Validation of the Framework

The outcome drawn through the analysis of the collected data, fully confirm the framework regarding the cost of using SecondLife and OpenSim. Specifically, it is confirmed that SecondLife is the most expensive choice for educational purposes, especially after the educational discount was discontinued, but, at the same time, the most time and effort effective solution. Nevertheless, some participants noted that SecondLife can also be a cost-effective solution under certain conditions.

Regarding the cost of using an OpenSim DP, Conrad’s empirical observations are fully confirmed. Indeed, educators reported that the economic cost of using an OpenSim DP is lower than SecondLife, and also that the required time and effort for the preparation of the in-world activities is almost equal to the time and effort required in SecondLife. However, in SecondLife the time and effort needed are at slightly lower levels, because educators can easily obtain the needed objects ready for use.

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119 see for instance interview: 11
120 see for instance interviews: 8, 11, 15
121 see for instance interview: 29
Finally, the use of OpenSim IHs has the lowest economic cost compared to the other options, but also the highest cost in terms of time and effort consumption, as shown through the interviews and as also pointed out by Conrad. Specifically, hosting an OpenSim server within the university can be a really cost-effective solution but it is essential for the university to have the necessary infrastructure and personnel in order to cover the server’s needs.

4.5 Conclusion

It can be concluded that, although SecondLife is still considered affordable under certain conditions, it has become far less affordable since the educational discount stopped being offered by Linden Lab. Thus, a considerable part of the educational community has already started abandoning SecondLife and looking at other alternatives, while those who continue using it have made reductions in their spaces and activities.

The educators who operate within the OpenSim DPs are very satisfied with the provided services and the corresponding fees. The effort and the time needed for the organization and preparation of the in-world activities seem to be quite the same as the ones required in SecondLife, yet the providers’ charges are much lower than those of Linden Lab.

Finally, the interviews showed that the cheapest option among the three studied in this research is that of the OpenSim IHs, on condition that the university does not have to invest in infrastructure and personnel exclusively for the needs of the OpenSim server. In that case, the use of OpenSim is an inexpensive option, but still it requires the dedication of time and effort by the university staff or students.

To sum up, SecondLife and OpenSim DPs are the most affordable solutions in terms of time and effort, while the use of the OpenSim IHs requires commitment of time and effort. In terms of economic cost, the most affordable solution is that of an OpenSim IH, given that the university is equipped with the necessary staff and infrastructure. The second cheapest option is that of an OpenSim DP, while SecondLife is considered to be the most expensive of all. These results are in complete agreement with the data collected through the literature review.
5. Persistence

5.1 Persistence of SecondLife and OpenSim according to the Framework

Conrad [9] made a reference to the articles and rumours of the past two years (2009-2011) claiming that SecondLife is heading towards the end of its operation. He noted that, by August 2011, SecondLife was still operating, and that it would continue for as long as it was still profitable. With regards to the persistence of the OpenSim DPs, he emphasized that the transfer of regions from one server to others was enabled with the use of the backup files. Thus, even if a provider stops offering services, the world still persists in the form of a file. Finally, he notes that the universities have the absolute control over the persistence of their OpenSim IHs.

5.2 Literature Review

Undoubtedly, the future of VWs and their persistence over time cannot be predicted with certainty. Nevertheless, the possibility of a VW stop operating, is certainly not a pleasant prospect, considering the fact that educators and universities are based on it for the implementation of successful projects, investing time, effort and money on it. Some indications showing the future of SecondLife and OpenSim are presented below.

5.2.1 What Does the Future Hold for the Competitors?

There was a brief reference to “workspace sharing” in section 4.3.3 as a practice of many universities in SecondLife aiming to reduce the cost of using the world,
without, however, losing the multiple benefits it offers. This, of course, in-world is not just a practice which only universities follow. It is a general trend of many individuals, businesses and educational institutions to opt to share a common virtual space, as well as its fees [72].

Furthermore, the discontinuance of the educational discount led many universities away from SecondLife, as its use was no longer affordable to them (see section 4.2.1). The universities, however, were not the only ones that left their spaces in SecondLife. The first six months of 2012, private estates, the fees of which are the main source of income from SecondLife for Linden Lab, decreased by 4.7% (see figure 17), while it is expected that, by the end of 2012, the private estates in SecondLife will be 10% less [73]. This obviously implies an income reduction for Linden Lab, which, according to estimates, will have to face serious economic problems [72, 73], if this issue is not addressed to soon.

Thus, the future of SecondLife looks uncertain. Given, however, the situation in SecondLife and Linden Labs’ attitude towards educational institutions, predictions like this of Rogate [74] should not be taken lightly: “SecondLife as a
product for educators is actually dead, unless something dramatically changes with the strategy of Linden Labs—which always remains unclear”.

On the other hand, although OpenSim technology had several glitches and instability issues at its first steps, it has become considerably stable over time. The qualitative improvement of OpenSim, in conjunction with its low economic cost of use (see section 4.2.1) makes it attract new users, whereas SecondLife keeps losing them [75]. Therefore, OpenSim has lately become a very worthy competitor of SecondLife, since it has evolved into a VW almost as functional as SecondLife [76].

Moreover, the features of keeping backups of the world and hypergridding, i.e. the teleportation from one grid to another, are exclusive advantages of OpenSim, which enhance its persistence over time. OpenSim, essentially, is not a VW, but a technology open to anyone who wishes to develop a VW. This world can be backed up along with all its content at any time and reused whenever necessary, by anyone holding the backup files [17, 67]. This means that each VW persists for as long as its backup files exist. Furthermore, every OpenSim world exists independently of the operation of the others, but all can be linked together when turned to hypergrid mode [77].

5.2.2 Summary
The future of SecondLife, as presented in the literature, seems uncertain. Especially the fact that the persistence of the world depends on the decisions and policies of Linden Lab increases the users’ insecurity. However, no one can predict for how much longer SecondLife will continue operating. On the contrary, users are the ones who largely have control over the persistence of OpenSim, thanks to the advantages of the OpenSim technology and particularly the features of backups and hypergridding.

5.3 Data Analysis of Persistence
5.3.1 The Future of Education in SecondLife
As illustrated in figure 20, the spreading rumours about the future of SecondLife and its potential closure raise interviewees’ concerns about the future of their
projects running in-world\textsuperscript{122}. They state that they worry less about their educational projects, which anyway may find shelter in other VWs\textsuperscript{123}, but more for research projects on SecondLife which cannot be carried out within another world\textsuperscript{124}. They are also concerned about the resources spent for the needs of these projects that will be lost if SecondLife terminates\textsuperscript{125}. Furthermore, the concern that, if the SecondLife terminates, its community and the thematic groups will be lost\textsuperscript{126}, was also expressed. Then, these groups will no longer be able to organize in-world professional events, which are considered to be very useful and constructive for professionals in any industry operating in SecondLife\textsuperscript{127}.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure18.png}
\caption{The educators’ views about the future of education in SecondLife and OpenSim}
\end{figure}

\textsuperscript{122} see for instance interviews: 6, 7
\textsuperscript{123} see for instance interviews: 1, 4, 7, 9, 13, 14, 18, 19, 20, 21, 23, 24, 25, 27, 32, 34
\textsuperscript{124} see for instance interview: 27
\textsuperscript{125} see for instance interviews: 11, 15, 18, 19, 28, 32
\textsuperscript{126} see for instance interviews: 5, 7, 21, 32
\textsuperscript{127} see for instance interviews: 5, 32
However, some educators indicated that they will continue using SecondLife for educational purposes. Some of them stated that their stay in SecondLife will last until the expiration of their contract with Linden Lab\textsuperscript{128}, or until their projects stop being funded\textsuperscript{129}. Others stated that they are not intending to stop using SecondLife, either because it is money, time and effort consuming to create their workspace from scratch within another VW\textsuperscript{130}, or because they have not yet found another VW as worthy as to replace SecondLife\textsuperscript{131}. Contrary to them, some other educators stated that they are intending to replace or have already replaced SecondLife with another VW or technology such as OpenSim\textsuperscript{132}, OpenWonderland\textsuperscript{133}, Unity3D\textsuperscript{134}, Blue Mars\textsuperscript{135} and Active Worlds\textsuperscript{136}. Finally, the view that, if SecondLife keeps following that path, educators will opt to continue without the use of VWs, was expressed, as well\textsuperscript{137}.

Nonetheless, at this point it should be noted that the high cost of using SecondLife (see section 4.3.4) affected educators in making these decisions.

5.3.2 The Educational Potentials in OpenSim

The participants stressed that the OpenSim technology has been significantly improved in the recent years (see figure 21). The competition with other well-established VWs had a positive effect on improving its stability\textsuperscript{138}, its reliability\textsuperscript{139}, and its interoperability\textsuperscript{140}. Nevertheless, this competition has a negative effect on its evolution too. The OpenSim worlds have online communities narrower than SecondLife, and given that it is open-source software, its upgrading may be slow, since it depends on the involvement of its own

\textsuperscript{128} see for instance interviews: 2, 27
\textsuperscript{129} see for instance interviews: 19, 32
\textsuperscript{130} see for instance interviews: 21, 25, 28, 32
\textsuperscript{131} see for instance interviews: 5, 6, 7, 9, 15, 34
\textsuperscript{132} see for instance interviews: 3, 8, 10, 11, 12, 13, 26, 29, 30
\textsuperscript{133} see for instance interviews: 14, 24
\textsuperscript{134} see for instance interview: 4
\textsuperscript{135} see for instance interview: 9
\textsuperscript{136} see for instance interview: 9
\textsuperscript{137} see for instance interview: 2
\textsuperscript{138} see for instance interviews: 10; 11, 25, 31
\textsuperscript{139} see for instance interviews: 11, 15, 31
\textsuperscript{140} see for instance interviews: 11, 18, 25, 31
community, rather than a company’s\textsuperscript{141}. It was also suggested that competition has no impact on the evolution of OpenSim, as it provides services very different from other worlds\textsuperscript{142}.

During the interviews, the importance of backups for the persistence of OpenSim worlds was also highlighted. More precisely, it was stated that it is very useful for cases where the workspace retrieval is considered necessary\textsuperscript{143}. In these cases, the educator keeps a backup of the world when it is in a desired state, introduces students to the world so as to carry out their activities, and then uses the backup file, in order to “regularize” the world and bring it back to its previous state. The same technique can be used in cases where technical issues that affect the smooth conduct of activities arise\textsuperscript{144}. Other educators reported that they use the backups in order to transfer to other servers and share with other educators objects, tools or even their entire workspace\textsuperscript{145}. 

Finally, the interviewees’ view of the hypergridding potential was very positive, even though some of them seemed never to have used it. It is thought that hypergridding contributes to the overcoming of the isolation that is likely to occur in OpenSim IHs or in worlds with a very small community\textsuperscript{146}. Consequently, interuniversity communication and collaboration can be achieved\textsuperscript{147}. Students have the opportunity to see the creations of others, and this may be an inspiration for them, making that way the lesson more interesting\textsuperscript{148}. Beyond these, it was reported that migration options are given to universities, and therefore a training group or the entire university can carry out their activities in another OpenSim world, any time and for any reason\textsuperscript{149}. All the above are summarized in figure 21.

\textsuperscript{141} see for instance interviews: 11, 29, 30, 31, 33
\textsuperscript{142} see for instance interviews: 10, 15
\textsuperscript{143} see for instance interviews: 12, 18, 22, 25, 31
\textsuperscript{144} see for instance interviews: 12, 18, 22, 25
\textsuperscript{145} see for instance interviews: 3, 10, 11, 15, 29, 31
\textsuperscript{146} see for instance interviews: 3, 10, 11
\textsuperscript{147} see for instance interviews: 3, 10, 11, 12, 18, 26, 29, 31
\textsuperscript{148} see for instance interviews: 12, 15, 31
\textsuperscript{149} see for instance interviews: 3, 10, 11
5.4 Validation of the Framework

Through the data analysis, it was shown that, in the educational community, a generalized uncertainty for the future of SecondLife, in general, and the education in SecondLife, in particular, prevails. Given Conrad’s [9] speculation that the operation of SecondLife will continue for as long as it is still profitable for Linden Lab, and, at the same time, given the reports that are showing the revenues of Linden Lab coming from SecondLife gradually declining, the educators’ concerns for the future of their in-world projects are absolutely justified. As part of this study, shedding light on whether and for how long the operation of SecondLife will continue is very difficult, since it falls within the context of an economic study. However, the data analysis showed that the educational community is very disappointed with the policy of Linden lab, and several universities have already dropped out of SecondLife or intend to do so, if the company’s policy does not change. This partly confirms the framework.

Concerning the persistence of the OpenSim DPs and IHs the framework is fully confirmed. Educators are aware of the flexibility of OpenSim technology, and the advantages arising from the potential of keeping backups and hypergridding, and are willing to use them in order to preserve the persistence of their own worlds. The stability of the OpenSim technology, which is significantly increased in its last versions, has a positive effect on all the above, and thus, the OpenSim worlds have become valuable tools in the hands of educators.

5.5 Conclusion

The potential closure of SecondLife arises educators’ concern both for the projects taking place within the VW, and for the fact that the closure of SecondLife will result in the loss of the online community, as well as of all the benefits it provides. Three different viewpoints regarding the educators’ future plans in case of a potential closure were presented: a) stay in SecondLife, b) replacement of SecondLife with another VW and c) abandonment of VWs in general.
Participants underlined that the competition between SecondLife and OpenSim resulted to a more stable, reliable and interoperable version of OpenSim technology, although its development is slower than the one of SecondLife. Therefore, OpenSim is considered as a worthy replacement of SecondLife by some educators. However, another viewpoint is that each VW offers very different services and serves different needs, and thus this competition does not affect OpenSim at all. Unlike SecondLife, the potential that OpenSim offers to its users to keep backups of their virtual spaces is considered as a very valuable tool by educators. Backups help educators maintain their worlds in good condition for as long as it is necessary, share them with other educators or transfer them to other servers. Finally, the hypergrid architecture offers the opportunity for interuniversity collaboration, communication and exchange of ideas, whilst educators and students can migrate to other worlds.

It seems, overall, that whether and for how long SecondLife will persist depends purely on Linden Lab. Therefore, educators have to accept the decisions of the enterprise and then decide about their future plans. On the contrary, the persistence of the OpenSim worlds depends on the aims and plans of the educators.
6. Conclusion

6.1 Guidance for Educators on how to Use Virtual Worlds

6.1.1 Context

As shown in chapter 2, the use of VWs, in general, and of SecondLife and OpenSim, in particular, is considered purposeful only when very specific educational needs, which cannot be fulfilled in an equally effective way with other educational tools, are to be met. Using them without a specific aim, just because they are considered a contemporary trend, is not recommended. This view is fully justified given that both SecondLife and OpenSim present not only a very positive and useful for both educators and students context, but a negative one too. Therefore, it is advisable that educators use these worlds only in cases where the maximum possible exploitation of their positive context with minimal influence from the negative is likely.

It also seems that the ideal use of VWs can be pursued through the use of blended learning approaches, in which students are presented with the course material both virtually and in the university classroom. Thus, the educational processes derive maximum benefits when both the virtual and the physical classroom are employed. Activities related to content creation, problem solving, role-playing, simulations, and collaboration can bring the best possible results when attempted within the VW. On the other hand, activities, such as lectures and presentations, that presuppose face-to-face communication, which is absent from VWs, usually have better results when given in the physical world.
Comparing SecondLife to OpenSim, it seems that the former is more appropriate for the implementation of activities in which the communication of the students with non-student users, or remote student-users and the utilization of the global context of the world are considered as essential requirements. Exploratory and distance learning methods can support such kind of activities.

On the other hand, OpenSim worlds are believed to be the best choice for these educators who seek closed, protected, and flexible workspaces. These features can be found in the OpenSim IHs. These worlds are completely closed, protected and the university has full control over their context and the users who can access them. This implies that these worlds can accommodate only the content that the university has approved. Meanwhile, the institutions are able to adjust the world, its specifications, and its tools to their students’ learning needs.

Finally, the option of an OpenSim DP is the middle ground between the OpenSim IHs and SecondLife. Its context is usually wider than the one of the OpenSim IHs, but not global as that of SecondLife. It hosts a limited online community that is likely, however, to develop a network of interactions, which is not as wide as the one of SecondLife but it is wider than the one developed in the OpenSim IHs. Moreover, since its online community is limited and the communication with the provider, most of the times, direct and easy, the educators are able to be aware of the characteristics of this community and choose the most suitable for their case server depending on the community that each world hosts and the existence in-world of the most advantageous content.

6.1.2 Immersion

Chapter 3 reveals that immersion is not an inherent feature of VWs like SecondLife and OpenSim, since its reaching depends on the synergy of multiple factors. However, the literature review and research part differ in two points. What was given emphasis in the conclusions of the data collected from interviews is that, additionally to the factors mentioned in section 3.2.1, educational activities carried out in-world affect the level of immersion experienced by students as well. It can be assumed that this is not named as a separate influence factor in the literature because it is integrated in the broader category of the various
interactions that occur in-world. On the other hand, although the literature review highlighted the importance of the use of avatars for the immersiveness in VWs, the interviewees seemed to include it in the characteristics of the context of a VW that make it immersive, rather than recording that as a distinct factor.

On the issue of comparison of SecondLife and OpenSim regarding the potentials of reaching a state of immersion in the worlds, it seemed that this is more likely to happen in SecondLife rather than in OpenSim. This is because SecondLife brings together more of the conditions that must be met for the students to be immersed. Nonetheless, the OpenSim worlds would be inappropriate to be considered as non-immersive. Within the OpenSim IHs or DPs, students may reach a state of immersion, but this is a little more difficult than in SecondLife, since, within the OpenSim worlds, fewer of the necessary conditions are met.

Therefore, if the primary objective of educators who choose to use a VW for educational purposes is to lead their students in having an experience as immersive as possible, then SecondLife is the best choice for that case. If this objective is important for the educators, but not the most important reason for using a VW for their courses, then it is recommended to them to opt to use a VW created through the use of the OpenSim technology. More precisely, for moderate degree of immersion they may appeal to dedicated providers, while choosing an OpenSim IH may lead students to experience immersion, but in a lower level compared to the other two types of VWs. Nonetheless, in any case, students also “choose” whether and how much immersed in the VW they will feel and this factor cannot be directly controlled by any educator. Instead, it is at each educator’s discretion to design for their students such activities that turn a world, which theoretically does not satisfy all the conditions to be immersive, into immersive one.

6.1.3 Cost

Chapter 4 revels that each VW has different advantages in terms of utility costs, while each can cover different needs. Specifically, SecondLife is the ideal choice for those educators seeking a more time and effort effective option, or for educators who cannot devote much of their time for the preparation of the
educational activities, or even for those who do not have enough knowledge on building and scripting to create the virtual space in accordance with their teaching needs. This is actually the case because of the existing wide marketplace in SecondLife where educators can buy various items ready for use. Furthermore, there are many builders and scripters working in SecondLife, able to offer their services to anyone upon payment. Additionally, educators often resort to the solution of “workspace sharing” or “items sharing” within the VWs, and are greatly facilitated by the fact that SecondLife has a very wide community. Nonetheless, universities that face a decision to use SecondLife for educational purposes should be prepared to pay high enough monthly fees for the rental of the virtual land, and they should also be aware that additional charges apply on the uploading of files and the use of more primitives than those granted along with the purchase of the land.

Exactly the opposite applies in the case of OpenSim IHs. This choice is ideal for the universities which seek the most cost-effective option, but a basic prerequisite for this is the existence of proper infrastructure and qualified personnel which is able to spend time and effort to set up, maintain and ensure the server’s proper operation, and which is also able to build and script for the creation of the needed in-world facilities for the educational activities. Therefore, even though the economic cost of this option for the university is minimal, it cannot be considered as time and effort effective. Nevertheless, the required effort by the university staff can be significantly reduced, if these actions are assigned to students as part of their internship. It is also worth mentioning that the OpenSim IHs are an ideal choice in cases where the main purpose of the in-world sessions is to allow students to build and script. In these cases, on one hand both the effort and time which has to be devoted by the university staff for the preparation of the in-world spaces is reduced, while on the other hand students can freely “play around” with the space, since there are no restrictions similar to those that occur in SecondLife regarding the amount of objects and scripts. Moreover, the “workspace sharing” and “objects sharing” mentioned in SecondLife also apply in the OpenSim IHs, even in a different way than that of SecondLife, since the backup files which are parts of the OpenSim technology can be run in any OpenSim server. Thus, the
workspace created by a university can be copied and given for use to another university. Obviously, this is a highly money, time and effort effective practice.

Finally, choosing an OpenSim DP is the “middle ground” between SecondLife and OpenSim IHs. Even though the university has to pay monthly fees for the provider’s services, the land fees of dedicated providers are considerably lower compared to the fees charged by Linden Lab for SecondLife. Furthermore, unlike Linden Lab, the providers offer, from the beginning, the maximum number of primitives which can be used in each piece of land, while their cost is included in the monthly land fees. Therefore, similarly to the OpenSim IHs, this option is also very suitable for building and scripting activities.

On the other hand, an apparent disadvantage, compared to SecondLife, is the lack of a marketplace which helps educators to save effort and time. However, the “workspace and objects sharing” practice applies in OpenSim DPs as well, as described both in the case of SecondLife, i.e. the temporary use of the in-world facilities from other universities, and in the case of OpenSim IHs, i.e. the backup files exchanging. Besides, there are no additional charges for files uploading.

Therefore, it seems that the case of OpenSim DPs gathers many of the advantages—in terms of cost— that the other two solutions have, but it also shares few of their disadvantages, as well. It seems to have the lowest cost in terms of money, time and effort, if seen in total, but which one is the most “cost-effective” choice clearly depends on the needs and capabilities of each university.

6.1.4 Persistence

In chapter 5 is shown that the educational community is very disappointed with the overall current situation in SecondLife and some educators have already dropped out of it, choosing to use other VWs, even though it keeps operating. Therefore, the question is “for how long the educational community will be present within SecondLife?”, or, in other words, “for how long will SecondLife worth being used as an educational tool?”, rather than “for how long will SecondLife persist?”. Regarding these questions, the views of the educational community members vary. A part of them still sees SecondLife as a very
convenient educational tool. Some consider it appropriate under certain circumstances, while others believe that education in SecondLife has no future.

The advantage of OpenSim regarding its persistence is that it is a technology for the creation of VWs, which is not supported by an enterprise, but by the open source community. Therefore, the persistence of OpenSim depends on the choices of individual educators or universities. However, even if an educator opts to use the services of an OpenSim provider, there is always the potential of transferring the activities to the server of another provider, or a private server, if it is deemed necessary, using backups and the hypergrid architecture.

This leads to the conclusion that educators who wish to obtain the widest possible control of the persistence of their world should opt to use either an OpenSim IH or an OpenSim DP. In cases where the long-term persistence of the world is not a major concern for educators, they may use SecondLife, if they think that its benefits are essential for their projects.
Figure 19 - Summary of the VWs features
6.2 Future Work Recommendations

This research sought to examine the validity of Conrad’s [9] speculations and further develop his proposed framework. Although this aim was achieved in a satisfactory degree, new queries arose both during and upon completion of the research. These concerns fall outside the scope of this study and are, therefore, proposed to be explored in future studies.

- Although Conrad [9] had evaluated and compared six different options of using VWs, only three of them were explored in detail in this research. Thus, the remaining three are suggested to be evaluated in a future research.
- In addition, it is considered purposeful that Unity3D, Open Wonderland, Blue Mars and Active Worlds are studied with respect to the framework proposed by Conrad [9], since some of the participants mentioned these VWs as alternatives in case they stop using SecondLife.
- The conduct of case studies is also recommended in order to specify and clarify the circumstances and conditions under which the immersiveness of a VW used for educational purposes can be maximized.
- Furthermore, what is proposed is the investigation of the possibility to further develop standardised backups, which are compatible with the architecture of many VWs, so that educators will be able to transfer their educational activities from one VW to another, depending on their needs (idea expressed in the interview 18).
- The workspace sharing seemed to be a cost-effective solution. However, it was not thoroughly studied. Hence, the possibilities and limitations of this practice are suggested for future investigation.
Appendices

A. The Framework of the Interviews
The interviews were divided into six parts:

Part One: General questions about the participants’ in-world educational experience
The first part was composed of 8 questions that were intended to gather general information about the participants’ in-world educational experience. These general questions aimed to show the educational characteristics of the academics who participated in the interviews.

Which virtual environment(s) have you used?
The interviewees were asked to list all the worlds that they had used in the past and were using during the period that the survey was taking place. The aim of the question was to reveal the full range -if possible- of VWs used for educational purposes at university level, and also to show which one of them is the most popular and widespread with regard to such use.

What was/were the reason(s) that led you to choose this/these virtual environment(s) for educational issues?
From this point of the interview and on, the researcher made sure to focus the interest on Second Life and OpenSim. The educators were asked to express briefly the grounds for selecting these particular worlds and the factors that led them to this choice. As soon as the participants had named the worlds that they had chosen for their lessons, it was important to give them the opportunity to justify their choice. At this point the interviewees were not expected to report in detail the benefits of each VW.
For how long have you used this/these virtual environment(s) for educational issues?
This question aimed to expose the extent of the participants’ experience in the use of VWs for educational purposes. It was considered that the more the years each educator used each VW, the more accurate and comprehensive their views on the processes taking place in it would be.

On what academic level(s) have you used this/these virtual environment(s)?
This question attempted an initial mapping of the student population that uses VWs as part of their university courses. Furthermore, the same question was intended to unfold the academic levels that teachers deem appropriate for the constructive use of VWs.

Are you using this/these virtual environment(s) for universal conduction of the courses or just to support the usual educational methods (in class)?
During the preliminary research these two possible ways of using VWs had been found. This question aimed to identify in which one of these ways participants choose to use VWs and the reasons of this choice. Through this question, inter alia, information on the terms “distance learning” and “blended learning” was expected to be gathered.

How many educational projects have you carried out using this alternative teaching method?
This question followed the same logic as the question: “For how long have you used this /these virtual environment(s) for educational issues?” Its intended purpose was to elicit information on the extent of the educators' experience in using VWs for educational purposes.

How successful was (were) this (these) project(s)?
This is a question of great importance. The effectiveness of the educational activities is, in any case, the goal. Therefore, the educators were asked to share the evaluation of their in-world activities with the researcher and point the finger at what they considered to be responsible for any failures.
What is (are) your current educational project(s) (if any)?

This question was designed to encourage the participants to talk briefly about the content, the purposes, and the objectives of their educational projects that were in progress at the time they were being interviewed. This question was expected to give the fullest possible picture of anything occurring in Second Life and OpenSim, associated with the educational aspect. The parenthetical phrase “if any” at the end of the question was added because some of the interviewees had stopped using VWs in their courses by the time the interviews were conducted.

The questions in parts 2-6 address the heart of the concern raised by the current research and immediately serve the goals of this study.

Part Two: Questions about the context of SecondLife and OpenSim

As shown in the review of the relevant bibliography, SecondLife and OpenSim have many features in common regarding their contexts, and consequently many common advantages and disadvantages. Nonetheless, they are not identical and hence each one of them has its own unique advantages and disadvantages. Accordingly, the educational needs that each VW can cover and the activities that each one can host are different. Through the questions of this part what was aimed to be shown was the common advantages and disadvantages, the unique positive and negative features of each VW, and the way these features affect the educators’ choice of VW, depending on their educational needs and learning objectives.

Part 2 consists of 4 questions concerning the context of Second Life and OpenSim. The participants who had used only one of them were asked to indicate their opinion only on the one they had used. However, the participants who had used both of them were welcome to express their opinion on both.

What does a typical lecture of yours look like in Second Life’s/OpenSim’s virtual environment?

This question sought to supplement the picture that had started taking shape since the fifth question of the first part on how VWs are used. It is based on the information collected through the literature review and presented in section 2.2, which describes in detail the context of the two VWs. At this point, the academics
are asked to impart to the researcher the way they work with their students in the VW and the way they exploit the opportunities offered by the context of the worlds. Moreover, through this question the participants were being prepared for the next question that directly asked them to refer to the advantages of each VW.

Nevertheless, it should be noted that the term “lecture” was initially used inadvertently but in the course of the interviews, given that many educators indicated that “they never lecture in-world”, it was replaced by the term "class" which is more general and includes all the educational styles that may be applied in-world.

**Why do you use Second Life/OpenSim in your teaching? In your opinion what are the advantages of this teaching method?**

Almost all the positive characteristics of the context of these two VWs and all the features and the tools they offer were analyzed in section 2.2. Thus, detecting which of the advantages educators regard as the most useful, appropriate, and efficient, from an educational point of view, was viewed as necessary. At this point of the interview they were asked to present directly the advantages of both VWs, in general, and the positive effects their context may have on the educational activities that take place in them, in particular.

**Respectively, are there any disadvantages?**

Of course no educational practice is absolutely perfect and no technology is flawless. There are disadvantages to both VWs, which were expected to emerge out of this question. Their identification, mapping, and description from the educators' perspective were considered necessary as they can provide full guidance for anyone who wishes to make use of the VWs in question.

**Comparing the university classroom with the virtual classroom, which one may have better results?**

Once the interviewees reported the advantages and disadvantages of the VWs that they had used, they were asked to compare the effectiveness of the in-world educational activities with the effectiveness of the lectures and the educational activities taking place in university classrooms. The purpose of this question is to
complete the picture presented by the participants of the suitability of each VW's context for educational use. Moreover, this question will contribute to better understanding in relation to the reasons, the occasions, and the objectives that educators have in mind when they decide upon the use of VWs instead of the physical classroom and the reasons why they consider that this option has more positive results in their lessons. An equivalent report of their opinion was similarly expected in case they claimed that the in-class activities were more efficient.

Part Three: Questions about immersion in SecondLife and OpenSim

For the deeper and more substantial study of immersion encountered by students in SecondLife and OpenSim a framework was formed. This framework was based on the findings of the literature review and was aimed to ease the investigation of students’ immersion in VWs during their participation in in-world learning activities. According to that framework, when students are immersed in a VW they perceive the in-world activities as effective, attractive, pleasant and experiential. Thus, it was thought to be meaningful not to ask educators directly about their students’ in-world immersion, but, in contrary, about the attributes conferred to the educational activities when students are immersed. That way, educators would have the opportunity to express their opinions about all the factors that make their in-world activities effective, attractive, pleasant and experiential. After all, scope of the educational activities that take place in VWs is not to lead students to immersion ad hoc, but to achieve their educational goals when students are immersed; immersion is the means and not the end.

The questions were common to the users of both VWs. The interviewees who had used only one of the two VWs were expected to express their opinion about that one only, while the interviewees who had used both were encouraged to express their views on both of them.
According to your opinion, does the fact, that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time make your lecture more effective and attractive?

As shown in the literature review, the fact that some students opt to use a VW beyond their course hours in order to spend their leisure time and communicate with others is a sign that they are immersed in that world (see section 3.2). Based on this assumption, this question seeks to identify whether and to what extent students' immersion in a VW may contribute to making educational practices in the VW more effective and attractive. At this point the term “lecture” was initially used inadvertently but, in the course of the interviews, it was replaced by the term “class”, which is more general and includes every educational style that may be applied in-world.

Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?

When students are immersed in a VW, as shown by the literature review (see section 3.2.3), they feel part of it and experience everything that takes place in it, in general, as well as the educational activities, in particular. Thus, this question aimed to provide further confirmation of this view and encourage educators to elaborate on the phenomenon of “experiencing the lesson”.

Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

There was a similar question in questionnaires addressed to students. At this point, relying on their in-class observations, the participants were asked to comment on whether and to what extent students found the virtual learning activities more enjoyable in comparison to those held within the physical university classrooms. This question, too, was based on the findings of the literature review, according to which immersion in VWs makes the educational activities more enjoyable (see section 3.2.3).

Part Four: Questions about the persistence of SecondLife/OpenSim

The rumors that have been stated about the potential closure of SecondLife, gave rise to the set of questions about SecondLife in this part, whereas the group of
questions regarding the persistence of OpenSim is based on the generally established belief that any new technology is not sufficiently stable and reliable.

This part consisted of 2 groups of questions: 6 questions regarding the persistence of Second Life and 4 questions concerning the persistence of OpenSim. These questions were complementary in terms of content and, on many occasions, when interviewees were asked one of them, they actually answered beforehand 2 or more. When that happened, the already answered questions were not raised again.

If Second Life were to close many educational institutions would be left “homeless”.

Have you taken this issue into account?

Just because this is a rumour and not a statement made by an authoritative source, the question was intended to reveal whether the interviewees were aware of it, and if they had taken it into account when conducting their projects, or were simply indifferent to it.

What is your opinion?

Taking the discussion one step further, the participants were asked to express their personal opinion about the validity of that rumour and whether this could actually happen, eventually.

Are you concerned about Second Life’s closure?

Through this question, the participants’ feelings on the potential closure of Second Life and, particularly, their concern –if there was any– about the progress of their projects and the future of their in-world activities, were sought to be detected. Furthermore, the interviewees had the opportunity to give a first report on how they intend to tackle such circumstance.

Does this possibility affect your decision to use Second Life?

At this point the participants had the chance to give some more clues about the action they would take if the above rumour finally materialised. Also, this question aimed to detect the percentage of the educators who were influenced so
much by the rumour that they chose to leave the VW of Second Life even before that was proven real.

If eventually Second Life terminates, will you attempt to replace it with another virtual environment? Since educators have reported several positive features of using Second Life in education, it was thought reasonable to ask them whether they would choose to use another VW, if it terminated, or rather not, on the grounds that they find nothing else equally worthwhile to replace it with.

If yes, can you please name this alternative solution? As long as the interviewees had agreed that a replacement for Second Life was necessary to be found and that they would take all the necessary steps for that, they were asked to name a VW which could become the best alternative to fill in the gap created by Second Life’s alleged closure.

The group of questions regarding the persistence of OpenSim starts with the following sentence: “OpenSim is a new technology used for the development of virtual environments”. This sentence was intended to emphasize that the OpenSim technology is new. Based on the generally established belief that any new technology is not sufficiently stable and reliable, this introductory statement seeks to make the interviewees sceptical about the persistence of OpenSim technology, give them food for thought, and encourage them to express their views thereon.

How stable do you expect this technology to be? Through this question, the interviewees were introduced to the heart of the debate and were asked directly about the stability of the OpenSim technology. At this point, the interviewees were expected both to refer to the stability of OpenSim as experienced so far and also make predictions about its evolution, based on their observations. This question has been particularly on the assumption that an unstable technology or a technology without the prospect of becoming stable in the future is unlikely to be preferred for educational use. Consequently, the participants who had chosen to use OpenSim considered it, to a certain degree, stable. Otherwise, if that was not the case, at this point the interviewees could
express in what way they were influenced by the lack of stability and what their suggestions for making it more stable were.

A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?

Although OpenSim is a new technology, from the outset, it has provided its users with the ability to keep backups. Therefore, even when participants stressed that OpenSim technology could not be characterized as stable, they were asked to express their opinion about this opportunity to keep backups and refer to the advantages it provides. Also, at this point they were given the chance to mention the effects of keeping backups on the persistence of their OpenSim VWs, the conservation, and the preservation of their content.

OpenSim grids have the potential of “hyper gridding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?

This is another great advantage of the OpenSim technology. The information collected from the literature review (see section 5.2) makes clear that hyper-gridding combined with the opportunity it gives for keeping backups can be proven to be safeguards for the persistence of the OpenSim worlds. However, do the educators perceive these functions as safety valves? Even if they do not, this question would spot all the reasons that make hyper-gridding, useful to universities.

OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?

As Second Life and OpenSim have many features in common (see section 2.2), they could reasonably be seen as competing virtual environments. Furthermore, there are many other similar VWs which also increase the competition that OpenSim faces, hence the question about whether and to what extent this competition could lead to the closure of worlds based on the OpenSim technology. On the other hand, however, in several cases the competition that grows between similar products has a positive effect on them, as it promotes their improvement.
The above question would explore the interviewees’ attitude towards this double-edged competition and let them describe either its positive or its negative impact on the future of the OpenSim technology according to their estimation.

Fifth part: Questions about the cost of using SecondLife/OpenSim
In this part, questions regarding the cost of using each VW were included and were aimed to highlight the world that offers best value for money. This implies that this part of the interview was set up not with a view to be considered independently of the rest of the factors, but, just as designated by the grounded theory, in relation to them. Therefore, the questions about the cost of using VWs were raised towards the end of the interview and after the participants had been asked about all the rest parameters based on which the present study compares SecondLife and OpenSim.

Similarly to the previous one, this part consisted of two groups of questions. The first concerned the cost of using Second Life and the second had to do with the cost of using OpenSim. The two groups contain four identical questions, while, at the same time, one group has got three additional questions exclusive to Second Life and the other one has got one further question exclusive to OpenSim. The questions that are common to both VWs are presented and justified only once.

At this point, it should be noted that it was known from the beginning that some educators might not be able to answer some of these questions, either due to the fact that they were not involved in the financing of their in-world projects, or because of their university’s policy according to which this type of information should remain confidential.

What is the monthly cost of using this virtual world? / What is the monthly cost of using this technology for the creation of a virtual environment?
The first of these questions concerned the cost of using Second Life and the second one the cost of using OpenSim. Although the wording was slightly different, their content and purpose was the same. The interviewees were expected to specify the approximate amount of money invested monthly in the use of these
two VWs. It was thought that this question would give rise to a direct comparison of the operating costs of the two VWs in question and identify the most economical. Apparently, this was one of the questions that not all of the participants were expected to be able to answer.

Who usually funds your in-world projects?
The use of VWs for educational projects may be very costly, as illustrated in the answers given by the interviewees in the previous question. This question sought to gather information about the financial support the educators had for these undertakings. The purpose of the question was not to come up with names of specific individuals or companies that funded the projects. Instead, more general responses, such as “the university”, “myself”, “a company”, “individuals”, etc, were hoped for. Exactly the same question was addressed to the participants who had used either Second Life or OpenSim for their projects.

How affordable do you consider it?
As soon as the participants had revealed the amount of money they had to invest in the VW monthly and had stated who bore these costs, they were asked to indicate whether and how affordable they considered that cost. At this point the interviewees were required to take into account the cost of using VWs, not alone but in connection with the services provided by each world and in comparison with the expenses they would have to cover for the same activities, if these were carried out in the real world.

Have you ever paid qualified personnel to create virtual items for your virtual university (buildings, items etc.)?
As shown in section 2.2.2, the content of Second Life and OpenSim is created by their own users. However, users need to have sufficient knowledge in order to be able to create anything in the VWs and make it perform certain functions. Not all of the academics who opt to use such an alternative teaching method were thought to have all the necessary knowledge in order to be able to create their virtual campus. So, the question about whether they had ever hired qualified staff to undertake these tasks on their behalf naturally arose. If a university was hosting its own OpenSim server, the participants were also asked to indicate whether they
had hired professional staff to build it up and maintain it. These additional “hidden” costs were supposed to be identified through this specific question, which was common to the users of both VWs.

Have you used the discount offered by Linden Lab to academic institutions?
In section 4.2 reference was made to the discount offered by Linden Lab to educational institutions. This question aimed to determine the proportion of the institutions that took advantage of this offer. Moreover, this question paves the way for the two following questions in relation to the offer being discontinued. This and the next two questions were addressed exclusively to the educators who were using or had used Second Life in the past.

If yes, how do you consider the decision of Linden Lab to discontinue this offer?
In the cases where the participants had used the discount offered by Linden Lab to educational institutions, they were asked to comment on the company's decision to discontinue it. Furthermore, they had the opportunity to indicate whether and in what ways this event would impact their educational projects and whether and to what extent the company’s resolution would negatively affect the presence of educational institutions in Second Life.

How do you intend to deal with this?
Having presented their views on the discontinuation of Linden Lab's offer, the interviewees were asked about their future course of action. So, having replied to the whole group of questions concerning the cost of using Second Life and concluding with their answer to this question, they would clarify whether the cost of Second Life was prohibitively high for the academic community or whether it was actually alleged to be so high that it would drive academics away from it or finally whether, despite the cost, the educators still considered Second Life the best option and were not planning on replacing it with another similar VW.

Is your virtual university hosted by a dedicated provider or by your university?
This was the only question that concerned exclusively the cost of using OpenSim and was the first of the group of questions addressed to the participants who had used this VW. The cost of hosting a university server and the cost of hiring a
dedicated provider’s services were presented in section 4.2. So, this question was actually likely to prepare the ground for the rest of the discussion explore whether the educators were obliged to bear the cost of maintaining a server or were financing a provider to host their virtual space.

**Sixth part: Comparison questions between SecondLife and OpenSim**

Given that this part includes questions related to all the aspects discussed in the previous parts, it was formed to provide the necessary framework for structuring and presenting the final results. Besides, the main scope of this research is to compare SecondLife and OpenSim in respect to the above four parameters (context, immersion, persistence, cost) and of course it would not be appropriate not to give participants the opportunity to compare them themselves.

**Which virtual world have you used first and for what reasons have you decided to turn to the other?**

The first question of this part aimed to identify the chronological order in which the interviewees chose to use the two VWs and the reasons that explain their “migration” from one to the other. In fact it was one more question that was intended to gather information about the negative aspects of each of the two worlds, which displease the educators, and how the other VW overcomes the drawbacks of its competitor.

**Which one of these two virtual environments do you consider more appropriate for educational use?**

This question concerns the context of the two VWs. At this point the participants were asked to name the VW which, according to their experience, is the most appropriate for educational use. This is a question directly comparing Second Life and OpenSim. Because the factors which the participants were asked to examine in order to compare the worlds were numerous and complex, the fact that many academics would not be able to name one single world as the most appropriate, was initially expected. Nevertheless, an answer that would define the conditions under which each one could turn out to be more appropriate was considered to be fully acceptable and useful for the research needs.
Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).

This is one more comparison question regarding the context of Second Life and OpenSim. The participants were asked to determine the context of the VW in which their educational activities were more effective and attractive. Through the literature review (see section 2.2) it was shown that these two VWs are, by and large, similar and the effectiveness and the attractiveness of the educational activities that take place in their contexts are much the same. So, it was considered that the educators’ opinion, derived from their experience, would highlight which VW gathers the most features that make the educational activities more effective and attractive. The request that the participants name only one of the VWs aimed to complete the picture that had already started taking shape from the previous question regarding the “most appropriate for educational use” VW.

Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?

This is a question referring to the persistence of the two VWs and was addressed to the participants who decided to turn to OpenSim even though Second Life had been their initial choice. It aimed to identify the proportion of the educators that decided to leave Second Life and use OpenSim on the assumption that, since it is a recent and promising open source software, as reported in the relevant literature (see section 5.2), it will have long term persistence in comparison to Second Life.

Which one of these two virtual environments offers best value for money?

The aim of this question was to lead to the comparison of the overall costs of Second Life and OpenSim. The interviewees were asked, taking into consideration all the advantages and the services that each VW offered, on the one hand, and the expenditure of time, effort, and money, on the other, to specify which one of them offers best value for money. It was, certainly, a difficult and
complex question, which was asking participants to bear many different factors in mind.

**Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities?**

The last interview question, similarly to the previous one, concerned the cost of the two VWs. Since the interviewees, in an earlier part of the interview, were invited to reflect on the cost of using Second Life, its affordability, as well as the termination of the discount offered by Linden Lab, they were now urged, by extension, to ponder whether these factors convinced them to choose OpenSim for their educational activities, which, generally speaking, is considered cheaper (see section 4.2).

**Additional Questions**

The flexibility and creativity that characterize the grounded theory have enabled the addition of questions which were not initially included in the structure of the interviews, however, their contribution was deemed to be vital in the formation of the final results and the highlighting of all of the relationships developed among the studied aspects.

It has been stated that educational projects within virtual worlds may fail due to lack of orientation. Have you faced a similar problem? What do you do to orient your students? / An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?

Before starting the conduct of the interviews, when the questions were still being formed and the structure of the interviews was being edited, this question had not been included. It had been taken for granted that all educators always made sure to carry out induction and orientation sessions for their students, when they were going to carry out educational activities within a VW.

However, during the first interview the participant Mrs. Patricia Murphy, widely known as Pamala Clift, emphasized that she had heard about several unsuccessful first projects within VWs, due to lack of proper student induction into the new educational method, students’ ignorance of how such worlds are used and also,
due to teacher failure to provide proper orientation to their students. Mrs. Murphy underlined that orientation is extremely important to the success of any educational curriculum that takes place within any VW and suggested the issue of orientation be investigated in this research.

Out of respect for Mrs. Murphy’s extensive experience, the question above, which was addressed to all the educators who took part in the interviews from then on, was added to the body of the interviews. The question was asked at the end of the second part of the interview, which contained questions regarding Second Life’s and OpenSim’s context, since it was considered better suited there, and had two parts. In the first part, the participants were asked if they had ever experienced failures in their first in-world educational projects due to lack of orientation and in the second part they were asked to describe briefly the activities that they were carrying out for their students’ proper induction in the use of VWs.

This question aimed, on the one hand, to identify the proportion of the educators who had experienced what Mrs. Murphy described as unsuccessful educational projects due to lack of orientation and, on the other hand, to gather information about the potential methods the participants employed to facilitate their students’ proper induction into VWs. Through this question’s data collection, a twofold target is pursued: educators, who have not yet used a VW in their lessons but are willing to do so in the future, are informed that orientation is an essential introductory part of in-world educational projects and, additionally, they learn about the potential methods for achieving it.

What do you think about the fact that the wide network of interactions, contrary to Second Life, may not apply within a private hosted OpenSim server?

This question arose during the course of some interviews in response to the interviewees’ replies. As indicated by the content of the question, it was addressed only to the educators who had used OpenSim IHs.

Considering that access to an OpenSim IH is restricted to the educators and the students who belong to the community of this institution, it seemed logical that there wouldn’t be any interaction between the students and non-university users of
OpenSim. By contrast, this doesn’t happen within Second Life, where students have several opportunities to get in touch with random users.

The educators were asked to ponder whether and to what extent this absence of a wide network of interactions may affect negatively their lesson. This question was not addressed to the participants who had already indirectly expressed their opinion on that issue, while answering a previous question.

Since your virtual university is hosted in a private server, do you think that the fact that your students don’t have, constantly, the opportunity to interact with users who don’t belong to your university’s community may affect negatively their immersion?

Similarly to the previous question, this one also arose in the course of some interviews and was directed only to the interviewees who were using their university’s OpenSim IH. The objective of this question was to collect educators’ opinion on whether and to what extent that lack of interactions between students and random VW users could interfere with their immersion. This question came to complete the picture of whether there can be immersion or not in an OpenSim IH and underline the significance of its presence or absence to the educational activities.
Dear Prof./Dr.,

My name is Athanasios Christopoulos and I am an MSc by Research candidate at the University of Bedfordshire, U.K. My supervisor, Dr. Marc Conrad and I are working in the Institute of Research in Applicable Computing and we are conducting a research study on virtual environments. Your valuable experience in that alternative teaching method led us to invite you to participate in this study.

The potential of virtual worlds in education is thought to be very important and this is indicated by the fact that many educational institutions have utilized them widely as an alternative teaching method. The purpose of the study is to investigate and highlight the advantages and disadvantages of using the virtual environment of Second Life and the OpenSim technology in the educational field, aiming to provide clear guidance to educators who are indecisive as to whether to use them or not in their teaching.

If you agree to participate in this study, you will be asked to list and describe the advantages and disadvantages of the virtual environment(s) you use for educational issues, by taking into consideration their context, their persistence (how long they will last), their operational cost as well as the immersion encountered by your students. Your teaching experience is equally important and your willingness to share it with us will be highly appreciated.

The interview will be held by me (Athanasios Christopoulos) and the conduction of the interview will be achieved through the following methods – web conference (for instance via Skype or within the virtual world) or in person interview when distance permits it. The total amount of time, the interview is expected to take, is approximately 30 minutes and the process will be recorded for review purposes. When the review is competed, you will receive an electronic copy of the edited interview and you will be asked to review, modify and approve the information included.

As with all research projects the results of the study are expected to be published after its completion. However, your personal identification information will be revealed, only if you have consented to this. For security and confidentiality reasons, various methods have been utilized to ensure the safety of your personally identifiable information.

It is worth mentioning that, due to your assistance, the outcome of the study is expected to contribute significantly to the implementation of this alternative teaching method by the educational institutions. Nevertheless, under no circumstances are you obliged to take part in this study. Your participation is purely voluntary.

If you have any questions or concerns about this study, please contact Athanasios Christopoulos or Dr. Marc Conrad at: Athanasios.Christopoulos@beds.ac.uk or Marc.Conrad@beds.ac.uk.
Consent

The research study has been fully described to me and I am aware that my participation is completely voluntary. I have the right to withdraw from the study before the predetermined date, which will be arranged before the interview, without any negative impact on me. I understand that the interview will be recorded for review purposes and that the records will remain confidential. I am also aware that the interview will be modified to suit on the writing needs and that I will be able to review it, after the corrections and modifications have been applied, in order to approve it or not. Finally, I understand that the final outcome will not be shared with anyone nor published without my permission. Such permission will be requested after the completion and emendation of the interview by the researcher as well as my own review, correction, modification and approval.

I have fully understood the aim of the study and the content provided to me above and I agree to take part in this study.

Name: ___________________________ Date: ___________________________

Signature: ______________________
C. The Interviews

Interview 1

Mrs. Angela Addison — School of Science & Engineering (Forensic Investigation and Law), Teesside University, UK

Part 1

1. Which virtual environments have you used for educational purposes?
I have looked at OpenSim as part of a development that they are doing using OpenSim in a different area of the university, but I have not used it myself. I have only used Second Life for my teaching.

2. What were the reasons that led you to choose Second Life for educational issues?
Basically, because when I started the work that I am doing in terms of my research, Second Life was the most accessible and developed format at that time – six years ago. So, at the time, it was basically its flexibility, its ease of access, its reliability, its standard of graphics, and the fact that it was user-friendly. It presented the best options.

3. For how long have you used Second Life for educational issues?
I’ve been working in Second Life for about six years. For educational purposes, I’ve been using the developments for students for about the last two years.

4. In what academic levels have you used Second Life?
Undergraduate level.

5. Are you using this virtual environment for universal conduction of the courses or just to support the usual educational methods (in class)?
I use the Second Life application as part of the blended learning approach to looking at what they need to do in terms of decision making, as a means of actually building the confidence and skills to make decisions about what things they should be asking of people, what things they should be looking at, how they apply the things they have learnt in the classroom into practical scenarios. So, it’s a bit like role-play, but in a virtual environment.

6. How many educational projects have you carried out using this alternative teaching method?
I have taken two sets of students through it so far.

7. How successful were these projects?
I have just completed the last set of interviews with the last set of students who went through. I’ve still got the analysis to do myself, in relation to that, in my own research, but, on the surface the information I’ve got back from the interviews shows that they are very keen on using it. We only had one student who particularly didn’t find it very user friendly and didn’t really enjoy using it.

8. What are your current projects (if any)?
We’ve got the anthropology one which is due to be rolled out to its first set of students in the next couple of months and they will be MSc level students. I also have the Regulatory Enforcement Scenario of the Food Factory which is the one I have used with the students.
Part 2

1. What does a typical lecture of yours look like in the Second Life’s virtual environment?
   It’s built up over a number of classes. Obviously, first we have the acclimatization of the students with their avatars within that environment and learning to interact with the environment. There is a skill set that students have to learn in order to access the environment, much the same as you would expect in somebody who begins using a games console for the first time, for example; they have to learn the skills about how this games console works before they can actually get into playing the game. To some extent, Second Life and virtual worlds generally are the same as that, and, if you think of it in those terms, then you must acclimatize and accommodate the learning curve that your students need to be able to really engage with the environment past those skills. That is where I start from- the skill set and learning that skill set. Then we move on to team building communication exercise. I get them to undertake an exercise where they have to learn to communicate better with each other, because they don’t have the facial indications that they would have in the real world. Bear in mind that we take a lot of our clues from people’s facial expressions when we converse. I find that a really interesting exercise because it encourages them to think about the words that they use and the real meanings of those words. So, that is quite good in terms of team building and learning to communicate in there. Then they actually do the exercise itself which is based around carrying out an inspection, and there are two ways in which they can access that: there is a group work exercise where they all take on different roles, and also there is an individual exercise where they face avatars which are generally members of the staff that take on those roles but are not students in those roles. If they take on as a group exercise, we give them the different roles, then the advantages are that they have to research looking at that activity from different perspectives and understanding different approaches and different perspectives to that activity. If we do a staff to student ratio exercise, then we can really get them to dig down into the theory and apply the theory that they’ve got through the questioning that we use with the avatars.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
   I’d like to start with the things that I don’t believe you should do with Second Life. I’m not a believer of reproducing in Second Life something that you can do better within your own campus facilities. So, if all you want to do is show a PowerPoint and sit with the students in a group, talking to them, you can easily do that in the real world and, probably, better and more effectively. Therefore, I’m not a fan of using it for those things, but I do think its advantages are in cases where you have geographically distant students whom you can bring together, thus giving them the opportunity to develop a sense of being a part of a group and that being a part of a group is a big part of learning and feeling that you belong in that learning environment. Also the collaborative opportunity is that it gives us for both group sets of students, who are distance learners or are based within campus, an environment that we can’t produce as well on campus. So, for example, I can’t bring a food factory onto campus and give them a full operating factory neither due to health and safety can I take them out repeatedly to factories to undertake these exercises. In other words, it gives me an environment I can’t give them
on campus far more effectively. I think the third advantage for me, in terms of looking at the exercise and activity as learning through role-play, is the anonymity. According to the students that I’ve spoken to and started to do data collection on in relation to it, the anonymity is important for them, in so much as they like to not know who’s on the other side of the avatar, because, this way, they feel they respond in a more real fashion.

3. Respectively, are there any disadvantages?

There are, not necessarily from the perspective of learning but obviously in terms of the technical issues. We don’t own what’s in Second Life and if the Linden Labs chose to close it down tomorrow, then there would be nothing at all that we could do about that. That is somewhat different to OpenSim given that you can run OpenSim on your own server, and that overcomes those difficulties if we compare OpenSim to Second Life. Also the platform itself initially –six years ago– was a little unstable. You couldn’t always access it, and to some degree you may still encounter those difficulties although that has considerably reduced as the years have gone by, so it tends to be relatively stable now. You are really relying on just a sim login system as everybody else in the outside world in relation to Second Life, whereas in OpenSim you’ve got an opportunity to have script writers who can write patches, so you can log into your OpenSim development through your server directly from your higher education institute’s logins. Thus, you have got more control of accessing terms of specific student groups to specific areas, for example, if you want to exclude certain student groups from certain areas.

4. Comparing the university classroom with the virtual classroom, which one may have better results?

I don’t think it’s an issue of what is better or not as good. I think it’s more an issue of having additional tools available to help learners with different learning styles and different learning needs. For some people it won’t be better but for others it will –it depends on what you are classifying as “better”. I definitely think that that is subjective with the students and it very much depends on their learning styles. Some students will take to it very well, and other students will not like it. The demography that I found in my research in relation to which students will be more likely to like it, you might expect to demonstrate that the younger generation of students are more able to access it and enjoy using it and perhaps the more mature students less so, but this isn’t necessarily a foregone conclusion either. Some of the younger students find the graphics are not as good as the gaming platforms that they use, so they find it a little archaic and some of the more mature students really engage with it and really enjoy it. I don’t think it’s as simple as saying one is better than another. I think it’s just an additional tool that we have the potential to offer our students and may appeal to different learning styles.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?

I don’t control what they do outside of my classroom, so I don’t want to control what they do outside of the learning exercises in Second Life either. That’s entirely up to them. It’s their own time and just the same as we can’t tell our students what to do in their lives outside the university, similarly we can’t tell them not to engage and talk to people in
Second Life. That is not particularly an issue for me. In relation to that, I don’t find that I draw a different line. I do expect them, obviously, to engage with me in a learning exercise when I am in there. However, generally speaking, because most of them only have their avatars for a short time to do that with me, I’ve never really had a problem with that at all.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?
I think this is probably one of the areas of interest in my research in relation to the detail of the environment and how much you put in there for them. I’ve obviously studied different educational builds in various places over the time I’ve been in there. I think one of the big dangers is that people build something because they can and because it looks pretty, inviting, and interesting, but they forget to think about what the learning objectives and the learning outcomes are for the exercise that they want. So, what they have built doesn’t meet the learning objective that they had set, so they have to start again. I think that another problem is that they make the surrounding area far too interesting or fascinating, so the students spend their time looking at that rather than doing the activity. So, there is a fine balance to be drawn between the two. In fact, there are some pitfalls to doing it, surrounding those issues.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
Yes, the majority of students, that I already have collected data from, seem to have enjoyed and engaged with the activity.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.
1. Have you taken this issue into account?
Yes, I am aware of it.

2. What is your opinion?
Obviously, that is definitely one of the considerations you take into account when you are doing a development. I mean, as I said for me, because our development started so long ago, when we started it, that was the best operational platform available to us at that time.

3. Are you concerned about Second Life’s closure?
I’m not concerned that it is going to close any time soon. Nevertheless, there are cost advantages to move into OpenSim as well, which obviously has to be a concern for higher education institutes at the moment.

4. Does this possibility affect your decision to use Second Life?
If I was making that decision now, I suspect that I would choose OpenSim over Second Life. Once I complete my research, as I am at the moment, then I hope to devote some time to looking more seriously OpenSim and having more control of the environment that we are built in.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment?
Yes, certainly.
6. If yes, can you please name this alternative solution?
At the moment my choice will be OpenSim but with the proviso, you don’t know what else may come about before that. I think it’s like old technology; you have got to try and keep abreast with what is new. Although, at the moment, OpenSim looks like it will present the best opportunity or alternative to Second Life that is not to say that this will always be the case.

Part 5

1. What is the monthly cost of using Second Life?
   It gets paid centrally, so I can’t actually tell you that.

2. Who usually funds your in-world projects?
   We split the cost across the various schools which contributes so much to the Second Life presence—the Teesside University has—and then some of that is funded through the central development fund for the University for learning.

3. How affordable do you consider it?
   If you are comparing it to other software packages, it is very affordable.

4. Have you used the discount offered by Linden Lab to academic institutions?
   Yes we did, when we first got the island and the discount was available, but it is no longer so.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
   Clearly, we would wish it was different in support of education, but at the end of the day, what we have to remember about Second Life and Linden Labs is that it is a business to them. So, businesses, just the same as everybody else are found in the credit crunch tight, so if they can find an opportunity to make more money, then they will do that. You can’t really argue with the business.

6. How do you intend to deal with this?
   We have already renewed our deal under the current system with no financial support for education, so the answer to that would be “yes”, we are going to stay within Second Life.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
   It’s a combination of things. I build and script myself. Other academics share what they have made, and we share what we have made, and there are free educational tools out there that we can use, so we make use of what is available free in terms of a lot of the developments, as well. Nevertheless, if I, specifically, wanted and needed something for my built, then I am quite happy to fund that myself—if that is something very specific that I want and it isn’t a large amount of money.
Interview 2
Dr. Geoff Barker-Read — Dep. of Computer Science & Informatics (Computer Science), University of Leeds, UK

Part 1

1. Which virtual environments have you used for educational purposes?
I have used only Second Life.

2. What were the reasons that led you to choose Second Life’s virtual environment for educational issues?
Extensive educational use elsewhere; well-documented case studies; easy to gain access; relatively (in 2007) small cost implications for the institution; no cost to create an avatar; ability to bring students into a private, relatively safe environment to learn; existing community of educators, including several in the UK; some technical support available within my institution.

3. For how long have you used Second Life for educational issues?
I have been a “resident” of Second Life since 2007 and the “owner” of a private region (on behalf of my institution) since May 2009. The region – Education UK – is intended to be a place that University of Leeds staff can use to investigate the opportunities afforded by a virtual world to augment their teaching. It has been used for one teaching exercise with a class of some 80 students, together with various projects conducted by single students. Other UK institutions have also brought students onto the island for meetings and classes.

4. In what academic level(s) have you used Second Life?
Students have ranged from first year undergraduate to post-doctoral. The island is currently hosting a research project involving academic staff from several countries.

5. Are you using the virtual environment of Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
The largest teaching exercise involved bringing a class of 84 second year computer science students into Second Life for them to investigate it as an example of Human-Computer Interaction (HCI). The task, which was presented to students over a three week period in Nov-Dec 2009, involved opening a Second Life user account and designing an avatar; joining an in-world group (to facilitate access control); learning how to navigate and communicate within the world; investigating and documenting an e-Learning opportunity of their choice; and presenting this, in groups of four, in the form of a virtual poster displayed in a gallery on Education UK island. Second Life was thus both the environment within which the learning took place, and also the subject of the learning.

6. How many educational projects have you carried out using this alternative teaching method?
One major project, described above, together with about 8 or 9 smaller projects such as final year undergraduate projects, postgraduate research activity, post-doctoral activity, staff research and collaboration with other institutions.
7. How successful were these projects?
The computing assignment was given out in three weekly parts, on 20 and 27 November and 4 December 2009. Two of the students did not log in to Second Life again following distribution of the first part of the assignment and a further 14 did not visit again following release of the second part. About a fifth of the class, therefore, disengaged before they knew the full details of the task they were expected to perform. A further 25 students did not log in again after the Christmas break (teaching ceased in December 2009 but the assignment was not due to be submitted until January 2010); 16 remained active into January and only six have logged in since the start of February 2009. None of the students appears to be continuing to use Second Life (or, to be correct, to use the avatar they created for this exercise). Two groups eventually uploaded finished posters. Analysis of students’ reflective blogs indicates that the majority experienced some difficulty in getting to grips with controlling their avatar. For about a quarter of the class the initial frustration resulted in loss of interest and no further attempt to complete the assignment (although these students may have contributed to other aspects of the group activities). Some simply weren’t interested in exploring the virtual world. Only a small proportion –1 in 14– has been sufficiently motivated to continue to visit Second Life after the module has been completed. Induction into the world of Second Life is obviously crucial to its successful exploitation as a learning medium. Most students seemed to see Second Life as a game and could not see the more serious application for learning. The exercise has not been repeated. The final year individual projects were more successful due, probably, to a greater level of investment on the part of the students, i.e., it was their decision to use Second Life as the medium for their project.

It has been my experience that the involvement of staff tends to tail off after an initial burst of enthusiasm. This might reflect the lack of technical support in the institution, or the realization that the effective use of Second Life involves a steep learning curve and the investment of considerable time for success.

8. What are your current projects (if any)?
Current projects involve support for an artificial life ecosystem; an art/design gallery complex and a music venue which is used to raise funds for charity. No teaching is being conducted in Second Life by Leeds staff at this time although the Education UK facility is being used by staff from other UK HE institutions.

Part 2

1. What does a typical lecture of yours look like in Second Life’s virtual environment?
Second Life has not been used as a medium in which to conduct teaching; rather it has been used as a place in which students can undertake their own investigations and present their findings. In addition, Second Life itself has been the subject of such investigations as an example of HCI.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
Second Life was chosen since it offers an extensive stable environment with relatively easy access. Using Second Life as an evaluation exercise was a good choice for HCI
teaching. I also feel that Second Life would be useful for teaching creative subjects, or topics which would be helped by physical (in a virtual sense) examples.

In respect of the artificial life research project, Second Life provides a unique means to visualize computer code.

3. Respectively, are there any disadvantages?
Many. Not all students are willing to engage fully with this type of learning: there is a “perception barrier” that needs to be overcome. It should have been easy enough for computing students to pick up, hence I only provided some initial handouts for help and let them get on with it. It seemed that for those students who could pick up Second Life easily, they treated it as a game and did what they felt like doing at the time. There are plenty of distractions in Second Life. For those who struggled, some seemed a little embarrassed to ask for help.

As an instructor, quite a bit of time is needed to learn how to use Second Life effectively. I have not looked into scripting and did not build complicated artifacts. Although it was fun when I was learning it, there were other pressures on the use of my time. One major shortcoming of Second Life is the lack of an “undo” button which is de-facto in most interaction. That makes one very cautious in handling things outside the sandbox area if one has the power of permanently deleting things. While anonymity prevents stereotyping during interaction in Second Life, I found this a nuisance in a learning environment.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
My experience has been that the conventional classroom provided better results – but this is probably just a reflection of inadequate preparation and lack of planning on my part. I had assumed that the level of interest in Second Life as a social media space would be greater, and that the learning curve for students to get to grips with using their avatar would be less steep. There are things one can do in a conventional classroom that cannot be replicated in a virtual world, and vice versa. Use of both environments in appropriate circumstances provides the best solution.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
I had assumed this would be the case but experience showed the reverse. The majority of my students were not interested in using Second Life as a social space. Facebook was their preferred social networking medium, with Twitter second.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?
For those who are prepared to invest the time to learn how to use Second Life effectively, and who believe in the value of the experience, yes. For those who simply see it as a game, no.
3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
Not able to answer this question definitively based on the single experiment. My feeling is that some greatly enjoyed their experience of a virtual world whilst many did not enjoy the experience at all, probably because they experienced difficulty with controlling their avatar.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account?
Due to the level of interest currently being shown in Second Life within Leeds University, and the absence of technical support, the loss of the virtual campus will be of no consequence.

2. What is your opinion?
In my case the use of Second Life as a medium for learning and teaching was an experiment: the subject of a Developmental Teaching Fellowship. I had a small grant to establish a presence for my institution, to investigate the possibilities and to show staff what the possibilities were. Not many were sufficiently interested to create an avatar account and see for themselves. My conclusion is that were Second Life to close its loss would be of no consequence to Leeds University. However, it would be a shame if the more successful and better publicized educational builds and exhibits were lost.

3. Are you concerned about Second Life’s closure?
No. It’s too big a business now to close.

4. Does this possibility affect your decision to use Second Life?
Not at all.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment?
At the moment there is insufficient interest in the institution to warrant this. In another five years or so things may be different.

6. If yes, can you please name this alternative solution?
I suppose the alternative of choice (at this time) would be OpenSim.

Part 5

1. What is the monthly cost of using this virtual world?
I took advantage of Linden Labs offer to pre-pay for our island region at the Educational Discount rate. It’s paid for until June 2013; the cost is just about £100 per month.

2. Who usually funds your in-world projects?
Leeds University’s presence in Second Life has been funded jointly from a Developmental Teaching Fellowship and from pump-priming funds from our Information Systems Services. Both are fixed term. There are no plans for future investment.
3. How affordable do you consider it?
At the educational discount rate it’s affordable; at the full commercial rate we’d need to see significantly greater involvement from teaching staff and the provision of central technical support to make it a viable proposition. It could be a worthwhile investment, but Second Life would need to be used much more extensively in teaching to justify this level of continued expenditure. It’s not the direct expenditure that’s expensive, rather it’s the marginal costs (staff time, technical support time, etc.)

4. Have you used the discount offered by Linden Lab to academic institutions? If yes, how do you consider the decision of Linden Lab to discontinue this offer? (5th question)
Yes. It was a very short-sighted. The educational community is world-wide and represents a source of many future individual avatar accounts. Linden Lab clearly has its sights set on other sectors of the market and is not willing to provide support for educational use.

6. How do you intend to deal with this?
When the lease on the island region expires in June 2013 it will not be renewed (unless things change before then). Leeds University’s virtual campus will close.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No; I have not needed to. Although I have purchased pre-fab buildings, textures, furniture and fittings, etc. from vendors in the world.

Interview 3
Prof. Klaus Bredl — Institute for Media and Educational Technology (Digital Media)
University of Augsburg, DE

Part 1

1. Which virtual environments have you used for educational purposes?
I have used Second Life first. For only a brief time I used Google Lively and I did some experiments or trials with Open Croquet and OpenSim. However, we have switched to OpenSim and we are now exclusively working with it.

2. What were the reasons that led you to choose these virtual environments for educational issues?
The first reason is that I have been in the area of e-Learning since my Master thesis. I developed a computer-based training program about psychoacoustics – that was my starting point. Besides, I have always been interested in e-Learning and I have seen some learning platforms and Learning Management Systems which are really boring for students. It is a big collection of PDF-files where there is no interaction, thus my goal was to have a media-based interaction platform. I learned about Second Life and I tried it out as I always do with media tools. There, I discovered great possibilities for interaction with a lot of people and since my focus is on education I saw a great potential for educational purposes, so I started to integrate it in my teaching. When I was in the University of Neubrandenburg, we had built a whole university within Second Life which appeared as realistic as it could be. There, I met in-world with my students. At some point I realised that it has no limits virtuality, and doing the things you can do in reality too.
Virtual worlds can do more. Virtual worlds are more fruitful and that is the reason I have been using one until now. So, when I went to Augsburg I started working with some students on various forms of activities in virtual worlds and we built up serious games. Now we have switched to OpenSim, exploring environments, like Monet’s garden, environments where students learn something about first aid or train for a driving license in-world. We’ve tried to come to the limits of virtual worlds.

3. For how long have you used these virtual environments for educational issues?
We have been using Second Life for 5 years and OpenSim for 1 year.

4. In what academic level(s) have you used these virtual environments?
Mostly with undergraduate level students but also now Masters’ level. It’s only that with postgraduate students, the virtual environment functions in OpenSim plays the role of a virtual lab where students do research on virtual worlds, since that is required from postgraduate students.

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
It is a little diverse… I don’t teach students with OpenSim or Second Life. I teach students about OpenSim. So, OpenSim, Second Life or virtual worlds in general are my content or part of the content. Part of this content could be education, counselling, or coaching. We always have a certain subject, such as coaching, learning, communication and leadership within this medium. We are “media people”, not medicine teachers. I am not in a domain closely related to teaching, so it’s different. I am not a teacher of medical students who wants to teach something about the lungs or the heart; I am a teacher who could co-operate with a medicine teacher and work with students on a solution for his content. So, we can try and have a didactic approach to virtual worlds in relation to media.

6. How many educational projects have you carried out using this alternative teaching method?
So far, we have conducted 3 educational projects using Second Life and 13 using OpenSim.

7. How successful were these projects? Did you achieve the targets you had?
My objective is accomplished if students write a concept and manage to implement this concept. So, in the virtual world, if this concept is implemented the way it was intended to, this is a success. Unfortunately, we don’t have real users and that’s my big wish, to have real users, to have projects with people who don’t care about scripting and building, who only want to teach something, train, or coach and in the end, we would have real users, which would be very nice! Until now we have had prototypes. I believe that no other people have used it the way our team and our students have. I think, if someone says, “oh, I would like to have something like the thing you did here”, that would be a pleasure for me to work with people towards achieving that.

8. What are your current projects (if any)?
What you have seen (see screenshots in Appendix F) are the results of the semester which has now been completed. In April, when the next semester starts, we will try to have other interesting projects too, but we are very open to ideas and to the needs of potential
partners. I would like to have real projects, real needs from people who will say, “I will use it after that”, “I will work with these people”, “I will work with students”, “I will work with managers in it”. That would be nice.

Part 2

1. What does a typical class/session of yours look like in Second Life’s/OpenSim’s virtual environment?

I don’t lecture within OpenSim, and I didn’t do that in Second Life either. While I was working in the University of Neubrandenburg, I met with my students in Second Life, and we organised knowledge fairs, discussions, excursions to other interesting sights, and we invited other educators and researchers to come to our Second Life domain, which was very interesting.

In the University of Augsburg we started working on different kinds of projects in virtual worlds, and we built up serious games. We had fairy tales or empirical methods as a content embedded in fairy tales. We also had a serious game about training emergency groups that was also well-known in the community. In the context of this game, a plane crashed into an island in a suburban area and it was carrying chemicals which led to fire spreading all over the area. The plane crash resulted in a lot of people getting injured, therefore there was a call for emergency groups to put out the fire and provide first aid to the victims. This was our last work in Second Life.

At the moment we have 13 different projects running in OpenSim. Postgraduate students are using OpenSim as a virtual lab. So, if someone is writing a master’s thesis, then they should not only building up sights but rather develop a research question, conceptualise, and experiment, which is totally different.

2. Why do you use Second Life/OpenSim in your teaching? In your opinion, what are the advantages of this teaching method?

My subject is OpenSim or any other virtual world, and my job is to make it possible for students to learn something about it or to work with it. In other words, “practical competence” is more or less what we try to provide our students with. So, the media is the message. Concerning the advantages, in OpenSim you have unlimited prims, unlike Second Life. So, you can build up regions and regions. Besides, we have a lot of islands, whereas in Second Life we would have to pay an incredible amount of money, I would say 10.000€-15.000€ or even more for so many regions! So, that’s an advantage of OpenSim which is free of charge. Nevertheless, Second Life is much more stable than OpenSim.

3. Respectively, are there any disadvantages?

The disadvantage of OpenSim is the incredible effort it takes to administer the grid. There are a lot of problems with the OpenSim’s region in this version (0.7). We have a lot of crashes of the region, and we find a lot of errors that we have to work around. OpenSim is still in its infancy. In the last semester, we had some problems that we reported to the OpenSim group, and they have taken them into account in the new update. So, our experiences from our own OpenSim regions have been integrated into the new updated software. We are obviously not the only people reporting to the OpenSim developers and forums –that’s actually the advantage of open source thinking. Knowing that you yourself
can contribute to a better version of the current OpenSim software is a kind of satisfaction for us. Sometimes, we may say that OpenSim is not that great because it is not as stable as Second Life but, after all, we come to the realization that in Second Life we wouldn’t have built up all these regions, sights, and buildings we have built here.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
I would never compare the virtual classroom with the real life classroom. I would compare the virtual worlds with the classic tools of e-Learning – that’s the only comparison I can see. I think it wouldn’t make sense to make a comparison between virtual and real settings. In the real classroom I can sense the mood of the students, I can see their facial expressions, gestures or body movements, I feel closer to the students, and thus I can better interact with them. On the other hand, everything that a virtual environment stands for, all its features, I mean, can only be compared with the equivalent features of other tools of e-Learning and systems like Moodle or Blackboard, for example. I think that in this context the virtual worlds “win”.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?
My first step is to introduce them to the virtual world, getting them familiar with the idea of immersion, social presence, avatar representation, etc. I start explaining what different virtual worlds there are, and finally we go into OpenSim and begin to navigate within it. At this point a tutor comes into the picture, Amrei Groß, who gives tutorials for building and scripting. The students build and script stuff. If they have difficulty in this area, they can contact me, Amrei, or another person from the field of computer science who, over this last semester, is also a tutor responsible for the more sophisticated building and scripting tasks. Our students, eventually, come up with presentations of their work, and we give them feedback to help them be more successful.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time make your lesson more effective and attractive?
As the virtual environment of OpenSim is the area where the students should realize their projects the students start at a certain point to meet in-world and to use the communication tools of OpenSim to organize their work. So the virtual environment develops to a learning and working environment.

2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?
Yes, actually, I think, they can live the lesson only in the virtual world where they can build, script, and bring their concepts to life. They can do all these things only in the virtual world.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
I don’t really know if they like them more. I only know that they partly say that they are afraid of whether they are capable of building and scripting. At the beginning of the
course, they feel rather insecure, thus them putting a lot of effort into it is required. They have to work a lot to build up things. Therefore, there are statements like “we will never make it”; they feel intimidated. However, in the end, they are very proud of themselves, and they are surprised that they did it.

There is one thing, though, that worries me and that is the fact that after they make it, they wonder, “What is this good for?”. They fail to see the point in it and regard it as a game, whereas for me it’s a didactic tool. The students, in fact, don’t know of virtual worlds or how to build a 3D element but after attending our course they are more likely to know how to handle this new medium, and this knowledge will come in useful for them one day. Besides, being able to manage this new medium is part of the lifelong learning one is supposed to be pursuing throughout their life.

Part 4 (Second Life)

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account?
No, not really.

2. What is your opinion?
If I heard someone saying they felt “homeless”, I would tell them, “come to us in OpenSim, we have plenty of space!” If we are given the little money to cover the necessary expenses, then everyone is welcome. Second Life for me was a bit too commercial. We had issues with the cost, but also Second Life is at some places like a “red light” area and it is called a “game”. OpenSim didn’t carry similar connotations, and I found that good for education and for all the serious things I would like to do.

3. Are you concerned about Second Life’s closure?
If I were still a Second Life user, I would be concerned but I think I would take comfort in the thought that Second Life could possibly have a new form coming up with the version 2.0 or 3.0 that come up with HTML5 solution, OpenGL etc. So, in this case, it would be possible to use Second Life in the browser, and you don’t need a viewer but it is also possible that another Second Life is coming up. I think, virtual worlds will come in diverse settings. I think, in the future some people in Facebook might be communicating or interacting with each other through avatars – that’s also a scenario.

4. Does this possibility affect your decision to use Second Life? (5th question) If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th questions)
Not really. We have already moved to OpenSim.

Part 4 (OpenSim)

OpenSim is new technology used for the development of virtual environments.

1. How stable do you expect this technology to be?
Well, I would say that it is unstable.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
I am really independent. If Second Life is terminated, everything will be lost. In OpenSim, on the other hand, I have backups, so in case of termination I can change my servers, my provider, I can reinstall my files and use them without having to start from scratch. I am the “chief”, so I have the power and I am independent – that’s a great feeling. I can say, “That’s my world”. Nevertheless, even though we are independent, we are also open to collaborating with others and to connecting with others via hypergrid.

3. OpenSim grids have the potential of “hypergridding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
Very useful because it facilitates interconnection which is crucial to what we are doing. Hypergridding gives you the feeling that you are not isolated, that you are part of a community. Others can visit us and we can visit others – that’s very good. That would be my vision to have a hypergrid with a lot of OpenSim grids connected with each other – that would be fine. So, all universities having grids interconnected with each other would be my vision for the future…

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?
No, I don’t think so.

Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?
The cost was 50€ per month but we had a really small parcel. I am not sure but I think we could build 500 prims or something like that.

2. Who usually funds your in-world projects?
In the beginning I had funding, so my first projects in the virtual university of Neubrandenburg in Second Life were funded. At present I have indirect funding from a 3D enthusiast who allows us to use the grid and we are the only users. So, we are partners, and we give life to the grid, hence he is very interested in what we are doing and he always tries to optimise the technical features. We have started to divide the costs of the grid hosting. Nevertheless, at some point we need to get stable funding for usage over the years and I am on the verge of accomplishing that, hopefully.

3. How affordable do you consider it?
While we were in Second Life, our projects were funded, so I could afford it.

4. Have you used the discount offered by Linden Lab to academic institutions?
We rented a parcel from a real estate agent – the agent being an educational organization – and that was given to us at a special price which was a kind of unofficial discount. As a matter of fact the educational organisation had secured the official discount offered by Linden Lab and they passed it on to us.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
Not a good idea. It was a mistake on their part because among other reasons they failed to see the potential behind the discount. I had a lot of students working in virtual worlds, building and scripting and I am pretty sure they would continue making use of them after their graduation from university, for instance, from inside the organizations they would
be working for. This way, they would multiply their customers since these students could play the role of a walking advertisement. It’s their loss too.

6. How do you intend to deal with this?
We have moved from Second Life to OpenSim. Cost was always an issue for us in there.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Yes, in 2007-2008 when I started since I had no idea how these things were working. I also used part of the funding in hiring a person to build the first virtual university, but after a while, when I started working with the students, I learned how to build, myself, and other students who were also tutors learned how to do so on their own as well. So, now we are independent in the area of building and scripting too.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
The server is hosted by a dedicated provider; otherwise we would have problems because of the security limits, closed ports, traffic limits, and so on. To be honest, this server here is combined with very high performance hardware. We couldn’t have such a server in the university.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, I have only paid students–tutors who help other students build. I haven’t paid any professionals to build and script in OpenSim.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
It is about 100€ a month.

4. Who usually funds your in-world projects?
None. I try to pay for them myself.

5. How affordable do you consider it?
It is affordable. I think, I will manage to find a solution to the issue of funding, but eventually, if I have to keep paying for it, this will work too.

Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
First, we used Second Life, and then we decided to turn to OpenSim. Second Life was too expensive for us.

2. Which one of these two virtual environments do you consider more appropriate for educational use?
OpenSim and Second Life are more or less the same. Second Life is more stable, but in OpenSim I am free; there are no limitations regarding the prims or the regions I can have. So, I can make a new island at the push of a button, which is an advantage in my opinion, but it is unstable. Another advantage of OpenSim is that you can close it; nobody can run
over your sim, over your region like in Second Life. Let me give you an example; I was working with students in front of our university when an avatar came along and “shot” us with a gun. That wouldn’t happen in OpenSim, I can control it.

3. Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).

I would say that Second Life is more attractive because it is more stable. OpenSim, on the other hand, could be the winner in the area of effectiveness if it works well.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?

Yes, indeed. We have lost a very nice environment where empirical methods were embedded in fairy tales, as I told you, such as Rapunzel’s tower where you could learn something about certain Empirical methods, a labyrinth, and the castle of “the Sleeping Beauty”. It was all so well done by our students, yet we lost everything because we didn’t have the money at some point to pay for our island. The European University which had rented us the parcel said they would close down the island and that was really frustrating. So, now that we are in OpenSim, all the things we have built are there and that’s a good feeling.

5. Which one of these two virtual environments offers best value for money?
That’s a hard question. Well, if you have money, you could have diverse or more than one island, therefore Second Life becomes attractive because it is stable and brings you together with the community of educators in Second Life and so on. However, if you don’t have money, OpenSim is more appealing.

6. Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities?
The cost was a problem because I would pay thousand euros a month for setting up what you have seen in here and this amount of euros per month is not affordable, at least, not for universities.

**Interview 4**

Dr. Brian G. Burton — School of Information Technology and Computing (Digital Entertainment Technology and Mobile Application Development), Abilene Christian University, USA

Part 1

1. Which virtual environments have you used for educational purposes?
Primarily Second Life. I have also developed and used virtual worlds for research based upon Garage Game’s Torque Game Engine and Unity3D.

2. What were the reasons that led you to choose these virtual environments for educational issues?
I primarily use Unity3D for virtual environment development now. With Second Life’s policy/pricing changes (and the fact that I don’t care for their GUI), I have found creating my own virtual environment much more effective for research and teaching.
3. For how long have you used these virtual environments for educational issues?
I started researching and using virtual environments for teaching in 1998/9. I began building my first 3D-virtual environment in 2002/3 for doctorate research in online collaboration and how knowledge is sustained and grows within virtual worlds. I started teaching how to design and build virtual environments in 2004 at the University level.

4. On what academic level(s) have you used these virtual environments?
I have used virtual worlds for teaching with students as young as 12 (I hold a teachers license as well as teach at the university level). I primarily conduct my research with college and university age students.

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
Both. I use virtual environments in traditional face-to-face classes and online courses.

6. How many educational projects have you carried out using this alternative teaching method?
I have a number of research projects that I have conducted or am preparing to conduct and use virtual environments regularly for teaching.

7. How successful were these projects?
I have had enough success with all of the research projects and teach projects to keep me motivated to develop and continue to use these resources in courses.

8. What are your current projects (if any)?
I have two major virtual world projects that are currently underway and a number of smaller projects that are also occurring. The major projects are: The Pygmalion effect in virtual world (a multi-national research project) and Virtual World world persistence on mobile devices.

Part 2

1. What does a typical lecture of yours look like in the Second Life’s virtual environment?
I generally don’t use Second Life/OpenSim to lecture. I teach virtual world/virtual environment development. When I teach or lecture using virtual environment, it is usually pre-recorded lecture and I then answer any questions afterwards.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
I don’t use either of these. The advantages are that it is cross-platform and any student can download and run them from their laptop. They do provide the ability to have a virtual presence if synchronous communications is critical to your teaching style.

3. Respectively, are there any disadvantages?
The GUI is horrible, it is slow, clunky, and it always seems to be having some type of communications problem. I have issues with how proprietary Second Life is. Second Life is a first step in virtual environment development, and was critical to that development.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
I have found no significant difference on student performance. Some students prefer face-to-face, others prefer the virtual environment. Students tend to perform better when given the choice to use the environment they prefer.

In my experience, virtual environment students perform slightly (but not significantly) better on exams, even though the situations are identical (open book, open notes, internet usage allowed). My theory is that they are able to take the test when/where they are more comfortable.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
   While I don’t use Second Life/OpenSim, in my virtual environment research I have found that yes, the ability to collaborate and use the virtual environment for their leisure time does make the virtual environment more effective and attractive to the student.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?
   I believe that if the virtual environment lessons are configured correctly, that it does help the student to retain knowledge at a higher level. Based upon several research studies that I have read, being able to “practice” in the virtual environment does improve retention and learning.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
   Very much so, but then again, I teach the classes where we make these types of environments, so my students are already predisposed toward such endeavors.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account? What is your opinion? (2nd question)
   Yes. It is one of the reasons why I don’t use Second Life. An educational institution cannot afford to be at the mercy of a commercial enterprise.

3. Are you concerned about Second Life’s closure?
   No, it would have zero impact upon my classes or research.

4. Does this possibility affect your decision to use Second Life?
   Yes, it is why I don’t use Second Life.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment?
   I am already using/building other virtual environments.

6. If yes, can you please name this alternative solution?
   My students are learning to build virtual environments using the Unity3D engine and Corona SDK.
Part 5

1. What is the monthly cost of using this virtual world?
I am not currently using Second Life.

2. Who usually funds your in-world projects?
My projects are part of my university research agenda and are funded through internal and external grants.

3. How affordable do you consider it? Have you used the discount offered by Linden Lab to academic institutions? (4th question) How do you consider the decision of Linden Lab to discontinue this offer? (5th question) How do you intend to deal with this? (6th question)
Not applicable

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Virtual items are created by my students for our projects. While we do occasionally purchase virtual items to help populate a world, it is not a significant cost, and most usually donate the item to be included in the research project.

Interview 5
Mr. Joff Chafer — School of Art and Design (Theatre), Coventry University, UK

Part 1

1. Which virtual environments have you used for educational purposes?
Primarily I have used Second Life.

2. What were the reasons that led you to choose Second Life for educational issues?
I was teaching a course for my theatre students, looking at site specific work which is using non-theatre based spaces and I wondered whether a virtual space would be a possible space for performance. The main reason I went in was to try to find a performance space.

3. For how long have you used Second Life for educational issues?
Since 2006 (5-6 years)

4. On what academic levels have you used Second Life?
Only undergraduates.

5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
I use it additionally. I use it, specifically, to look at virtual worlds rather than just as a way of teaching a normal subject.

6. How many educational projects have you carried out using this alternative teaching method?
I started working with my theatre students and did one project with them back in 2006. I then set up another course, an option course across the whole university, which was looking at Second Life as a creative environment. Within this course, we would teach them the basics of building and scripting and how the world works, and then they would
put forward projects that they wanted to do. There are 4-5 cohorts a year and this project has been running for the last four, maybe five academic years.

7. How successful were these projects?
Regarding the theatre one, I was just starting, so I didn’t really know the world very well. We were basically exploring the environment as a possibility for using it for theatre, and only one of the students decided to carry on with it and actually came up with something – she made a film in there. The others all opted for real spaces. However, with the other course, the students get different things out of it because they come with different reasons for doing the course in the first place. Sometimes, the reason they want to be involved is because they want to add a different element to the course they are doing or sometimes because it is more recreational and different. I would say on the whole it’s been very successful.

8. What are your current projects (if any)?
I have but not educational ones. The course that I set up, now, runs. I have other teachers teaching that course now – so, that’s running at the moment, twice every week for two different student groups.

I also, occasionally, teach purely in-world. There is a group called Danish Visions; they run classes every weekend on Photoshop, building, scripting, etc. and every now and again I will do a class for them but that’s not for my students. That’s for anybody in Second Life.

Part 2

1. What does a typical lecture of yours look like in Second Life’s virtual environment?
Mostly, the classes that I teach or have taught take place in a computer lab. More often than not the students are all there in the lab and I’ve got a projector up, so it’s a question of delivering the lecture in that room for them rather than remotely. However, sometimes the students will be remote and I have run the classes remotely but depending on the time in the term that the session happens, we start off just introducing them and getting them to know how to use the various controls. In other words we do a whole orientation session. We set them tasks, like sending them off to take pictures of themselves in various places. We then set them building tasks in order to teach them the basics of building and also take them on trips to places like the ivory tower of prims, the college of scripting, music, and science so that they can find out more about what they are interested in. So, if they really want to get into building, then we show them the places to learn how to do building or if they want to do scripting, we show them the places where they can learn how to pull scripts apart.

Once they’ve set up a project, once they’ve put forward their proposal, they are given a space and then it’s overseeing them and just keeping tabs on them. If they need something specific, they can ask questions and we try to give them guidance along the way. At the end of the module they do a presentation, normally starting off with the PowerPoint presentation, and then they go in-world to take us around the project they have been working on.
2. Why do you use Second Life in your teaching? In your opinion, what are the advantages of this teaching method?

I think one of the big pluses for Second Life is that you can do things that you wouldn’t necessarily be able to do either economically or safely in the real world. For example, lots of the students end up doing big building projects which they wouldn’t be able to do in the real world. They would probably do that on paper, but they wouldn’t be able to get a sense of what the real 3D space looks like or feels like. It also gives them a chance to be more artistic and creative about what they are doing because there aren’t necessarily the constraints of gravity or the real logistics when it comes to building. It also gives them a chance to try out something that they could possibly do in the real world. We had some photography students last term who built a gallery, exhibited their pictures, but then also linked it into the community in Second Life. Besides, they found other photographers, other photography groups in Second Life, invited them along to the launch, had a twitter feed, linked it up in Facebook, and had all sort of things going. What they were doing had very real applications in the real world after the course. One big advantage is that it is global and the chances are that whatever the students are interested in, there will be a group in Second Life that is also interested in it. For instance, I have had fashion students before who have gone off and met other people in Second Life who are interested in fashion, designers, game players, and all sort of different people. Therefore, I think the fact that it is global is probably one of the biggest pluses for it.

3. Respectively, are there any disadvantages?

One of the great negatives is orientation. If you are not comfortable with virtual worlds, that is going to really slow you down. Also, some of the students’ preconceptions of what Second Life is, can be another drawback. Second Life quite often gets bad press. I think Linden Labs themselves shot themselves in the foot several times by taking away support for educational projects. There are some fantastic educational projects still in Second Life but, because of the lack of support, a lot of educators are thinking of moving out, which is a shame!

4. Comparing the university classroom with the virtual classroom, which one may have better results?

From the teaching I have done in the classroom to the teaching I am doing purely and remotely in-world, I would say that teaching something in the classroom requires about half the time it takes to teach in-world remotely. I have been to other classes in Second Life that have been taught at a good speed but you need to have a certain amount of knowledge before you can do that. I find one of the good things about working in Second Life is that there are always questions and people need to ask questions to find out how to do things and how to make sense of what they are doing. Inevitably, virtual classes take longer. I think if you can afford the time, it’s good to teach in Second Life, but it does take time.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
Yes, some students do go off, some students do carry on or spend a lot of extra hours in Second Life which, to my mind, is a positive thing. Generally, they are learning more while interacting with other people. For the most part, I am not teaching a specific course, I am not trying to do anything other than open their eyes to possibilities and help them think about being creative or solve problems. So, that’s very useful for me, if they do that. However, if you were teaching engineering for example, I think it could possibly help because they meet people who are interested in the same subject but that’s a different kind of teaching; that’s not the teaching I do. My teaching is much more open-ended and tends to go where the students want to go, rather than necessarily an agenda that I have. Thus, I am absolutely against restricting students’ access to the university area only. It’s about what you are trying to seal them from or what you are trying to teach them. I find nothing wrong with looking out the window, for example. I think also there is an element of lecturers who possibly have been teaching for a long time, feeling safe in their university environment. For them, teaching in Second Life is like trying to teach in the student union or something like that. Either you go with that or you don’t go with that. So, I think that if you are trying to teach students in a very tightening arm in Second Life, you are defeating the object really.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson? Potentially, yes. I mean certainly when they are doing projects like building racing cars, if they get excited about something, they do get immersed in it. They may only be immersed for a couple of hours during that session and they may not necessarily carry on. However, I think that potentially there is a lot of room for that kind of learning, the immersive learning that they wouldn’t necessarily be able to get very easily in the real world.

3. Based on your experience, do your students enjoy the educational activities within the Virtual World more than the ones in the university classroom? Because I don’t necessarily see them on a day to day basis, it’s hard to tell how else they are being taught. I do know that a lot of the feedback comes back with positive responses showing that they had fun or enjoyed the virtual class. Thus, I do think that they get that from it.

4. As you have mentioned above, you devote time to getting your students oriented within the virtual world. Thus, how important do you consider orientation? I think that you have to give students time to get used to the space they are in, in the same way that teaching any subject. If they don’t know where the room is that they have been taught in, they will never get there to be taught. Likewise, if they don’t know how to use a pencil, they will not be able to write etc.

Part 4

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account? At the moment we have got another year to go on this scheme. I am not directly in charge of funding the island. It may or may not go. If it does go, I think it may still be possible to
do the teaching in sand boxes and things like that. On the other hand, if the university just doesn’t want to do it, then that’s fine by me.

2. What is your opinion?
I am a resident of Second Life, so I will still be there because I have got plenty of projects in Second Life, that I am involved with, which are not directly related to my teaching. I am with various theatre companies in Second Life, so I will get on and do that.

3. Are you concerned about Second Life’s closure?
I am not concerned from an educational point of view, I am more concerned for the user groups that are in Second Life because there are a lot of communities in there. There are plenty of other virtual worlds around now competing the Second Life, so I wouldn’t be surprised if eventually Second Life closes and everybody moves somewhere else, but it would be hard to get that infrastructure back up again. So, I think, from a personal point of view, from inside Second Life, it would be a shame for it to close. Linden Labs have been trying to fatten up Second Life to sell it to something like Google for years. So I don’t think they are particularly interested in the communities as such. It’s a question of how much money they can make out of it. So if it closes, it closes; if it carries on, it carries on. Besides, there are plenty of other virtual worlds.

4. Does this possibility affect your decision to use Second Life?
Not me personally, but there are other projects that the university has worked on, particularly building projects that will be affected. Also they were investing time and energy in projects for medical simulations, for example and as a result, I think from the university’s point of view, we are weary of actually putting a lot of time and energy into Second Life. So, I think that, potentially, there are some things that would be questioned about going ahead.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment?
It depends on the university’s interest in virtual worlds overall, really. For me, I don’t have the time to do the hands-on teaching that I used to, but the courses run now and I oversee them. However, if those courses stop running because of a change in university policy, which is quite possible actually but a totally separate thing to Second Life closing, then, we will run it for a few years... for its money.

At the moment we don’t do enough remote teaching for it to be necessary to have an involvement with a virtual world. I think from a research point of view there are a lot of good reasons for being in a virtual world or virtual worlds. So, our university has probably looked or would look at various other places to go to.

6. If yes, can you please name this alternative solution?
Not applicable

Part 5

1. What is the monthly cost of using this virtual world?
I don’t know because I don’t deal with the finances.

2. Who usually funds your in-world projects?
The university
3. How affordable do you consider it?
Not applicable

4. Have you used the discount offered by Linden Lab to academic institutions?
Yes. They said we could have two years of the old rate and we are currently in the last of the two years of discount we’ve signed up for.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
Linden Labs are looking at the cost of everything but not the value! Having the people in education in Second Life is a great benefit to the community as a whole, whether people directly access that or not. Having Universities “playing” with Second Life –I do use the word “playing” advisedly because I think it is a very positive educational tool and way of teaching– is a benefit for everybody. So, I think Linden Labs have made some huge blunders over the years and they continue making them. Probably, Linden Labs were hoping that people had put in so much time and money on Second Life that they wouldn’t bother moving somewhere else or going to OpenSim.

6. How do you intend to deal with this?
It is completely out of my hands, but I can suggest that we carry on using Second Life, because it’s worth having the global context of Second Life and that interaction. Nevertheless, the university may or may not go with that.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Yes. Initially, it was me and some students. Two of them were employed by the university for at least a couple of years doing that and other things using virtual worlds. There’s another person currently –one of my teachers- who has been employed to do stuff.

Is there anything else you would like to add before we end the interview?
One of the things with Second Life or probably any virtual world is that if you only think of it as a tool to do something, then you are missing a big point of it; you are missing out on a great deal of what it has to offer.

Interview 6
Dr. Mark Childs — Senior Research Fellow (my Ph.D. is about: using virtual worlds and anything educational at a distance which is bringing people together, at the same time), Coventry University, UK

Part 1

1. Which virtual environments have you used for educational purposes?
I have used Active worlds Europe (only very briefly) but mostly Second Life.

2. What were the reasons that led you to choose Second Life for educational issues?
Initially, the reason was the fact that I was involved in a project called “Theatron”, as a project manager. It was almost based in Second Life and it was with a group of people that I have already worked with as an educational advisor. These people moved on to a different kind of platform and said, “you are an educationalist; do you want to be
involved in this project and run it?”. I said “yes”, and then they said it should be in Second Life. So, that was basically my first exposure to it.

At the same time, I have been to a conference where a couple of the most interesting of the presentations that were held, there, were about using two virtual worlds, other than Second Life. So, these people were comparing web conferencing with virtual worlds, and I was interested in the comparison and what the two different environments did. That’s really my Ph.D. which then went to that direction and also my job went to the same direction, so they came all together at the same time, as a matter of fact.

3. For how long have you used Second Life for educational issues?
I suppose it is over 6 years now. I started in November 2005.

4. In what academic level(s) have you used Second Life?
It’s been nearly all undergraduates. There’s been no school-based stuff. I have done a small amount of postgraduates but the vast majority has been undergraduates.

5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
All of the sessions I have done involved, “blended learning”, as it is called in the UK. The courses in which there are some face-to-face sessions and some online ones are “blended”. In this sense, all of the classes I have taught have been blended. Thus, there has been some in-world and also some face-to-face teaching. I have to say that I didn’t use it to support usual educational methods. I used it to create a completely different kind of educational method from the face-to-face classes. So, there have been groups of students that would normally be taught face-to-face in a classroom and the reason I was using Second Life was to give them a completely different kind of experience. So, in that way, it wasn’t the usual education; apart from when we were using Second Life, it was a normal kind of classroom, most of the time, but the Second Life material was very different from my normal educational experience.

6. How many educational projects have you carried out using this alternative teaching method?
I think it is about twelve.

7. How successful were these projects?
Some aspects, in some of their parts, were not successful, but I think there was a lot of elements that made these projects successful and, maybe, worthwhile. This led me to think that this is a very good thing to be doing with students and it is providing something very useful for them. That is the reason why I have stuck to it for so long. So, yes, on the whole, it has been successful, with one or two small exceptions.

8. What are your current projects (if any)?
Yes, I am doing one for West Chester University, which is in Pennsylvania. Their plan is to do some simulations of activities which will teach students about ethics of science research. So, there are simulations of different kinds of tasks and things and the students do these. My role is to create an induction course for these students. One of the things I focused on with the research is the way that students develop a sense of presence and a sense of identity in the virtual world. So, my research here is to give some students an additional introductory course offering them all of the advice on creating an avatar,
dressing it, etc. and they would explore or feel part of the world while others are just going in cold with a few basic tips on how to move, teleport and the like. The idea is to look at the different kind of learning that goes on between those two cohorts and my hypothesis is that the ones given a better introduction will learn more effectively than the ones that are just given the basic navigation tips.

I am also doing one or two small bits of teaching as well. I teach at a University that’s actually local to where I live—I could do it through Second Life but it is only about 10 miles away from where I live. I am a guest lecturer on the course which is about digital media, digital society, and digital identity. My job is to teach these students, who are media students, what digital identity is. I might take them through and do a presentation about the kind of identities people have online and what’s different from offline. Then I get them to do an activity in-world which helps them explore their identity and then communicate it to other people. I find a lot of undergraduates, in particular, who are between 18-19 and they haven’t really reflected on identity, on who they are in the physical world, so I ask them to explore who they are in the digital world. That was very difficult for them, so we just take them through some tasks and activities in Second Life which helps them reflect on that and then we have a chat about what that means. That is something they gain a lot from and all students seem to really like.

I am teaching at the University of Southern Maine in two weeks. I am not quite sure yet about what I will be doing there exactly, the last time, though, it was something regarding identity. I teach a class on human behaviour which consists of postgraduate students who are still looking at identity but this time their role is to explore the difficulties that some of their clients face, either children or adults. Their work isn’t virtual. When you are a therapist and your client tells you they have just lost their boyfriend, you may reply, “what happened? I have just split up in Second Life”. If you are a counselor but you have never experienced what a virtual world is like, then you will not understand the importance of this for the client. So, my job in this course is to show these counselors and therapists what Second Life is like and take them through some steps of developing an identity and what social conduct is like in this world. This way, they will have an idea in their jobs, so, if they ever have to face the issues of virtual world relationships with any of their clients, then they will be able to actually know the context for it.

The third thing I am doing is a face-to-face session. I go into Coventry University and sit in a lab and talk to language students about how Second Life is used in language learning, so I show them some resources and I take them to places where they speak Spanish or Chinese. After that, I show them how it can be used as a resource for teachers of any language. So that’s the three different kinds of teaching that I am up to at the moment.

Part 2

1. What does a typical lecture of yours look like in Second Life’s virtual environment?
I try to avoid doing lectures. I sometimes do lectures as a backup, but I find that a lecture is probably the worst kind of teaching experience you can give people in a virtual world. I am dealing with the identity class that I do in Birmingham for the Birmingham students where they are exploring identity because the lecturer who normally takes them wants me
to give them a lot of information and explore ideas about identity. I really prefer going through with it quickly, giving them some of the basic information, and then get a discussion going about different things with all the avatars together. One of the things I also do with that class is getting them building cubes – I call them identity cubes -so they can make something. It is really easy to build a cube in Second Life, and then they upload pictures to that cube and those pictures represent their identity in different ways. I think this is important because not only do they make something but they can also walk from cube to cube with their avatars, stand around that cube, look at it and talk about their own identity and then talk to other students. That is quite collaborative since they are sharing more than just space while they are all walking around within it. With my language students, for instance, we would travel, we would do field trips and go to a Chinese school, for example, to talk about speaking Chinese. We would also go to a sim – simulation of Berlin and do German. Hence, I consider taking students to different places really important since they are given the opportunity to engage in exploring. Regarding identities, on the human behaviour course on the whole, we will do some dressing up, play with the identity and with our avatars-how they look like –and then sit around and talk about that. This is how I dress, this is how I look, this is why I do this. So, lecturing in-world is not the important thing here because you can do a PowerPoint presentation anywhere; however, using the tools of a virtual world as a way of exploring what it can do is a lot more important. Thus, that’s what I am trying to focus on, but for backup I sometimes do lectures as well because it’s still a good way to get information out.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?

I think that there are two main ways in which you can actually use any kind of technology and Second Life is a good example of this. One of these ways is to actually focus on the technology itself and the things that technology does. With virtual worlds, for instance, it creates a new identity, an interesting space, and provides different tools. If you are using it to teach in education, then I can show that it has educational tools too. So, in a sense that’s a lot easier because you are actually focusing on the tool and you are showing people how the virtual world works and maybe how identity works. I think that, when you are using it that way and you are aiming at teaching people in that virtual world, you have to show them a virtual world and I think it is important for people to learn about this because they are getting more dominant in the way that society, identity and communication works. So, giving either teachers or therapists a taste of what that looks like is very important because that’s part of the new reality. That’s one set of ways that it is important.

The more difficult way to use virtual worlds is to use it as a tool to learn about something else because then you have to use the tool effectively. If you are teaching about how virtual worlds work and something breaks down, you can still learn in it because you are learning that the virtual world breaks down sometimes and this is how you have to deal with that. If you are using the virtual world to learn something else like theater, which is another thing I have taught, then you have to make sure how the thing works and it’s a lot more difficult I think to use it to teach something completely different. When I use Second Life, for example, to teach them about theater, the virtual world is important since it enables me to show them theaters that don’t exist anymore. I am showing them
simulations of ancient Greek theaters, such as the theater of Epidaurus or the theater of Agrippa and plenty more, ancient Roman theaters, and others. Therefore, the world is very important in that context, because there is no other way for them to see these. They can’t travel 2000 years back in time. Even if they still exist, like the Globe Theater, they can’t go around and walk on the stage of the Globe because it is being used for performances. So, I think those are two very different ways: one is that you are going to show them the tool because the tool is important to know about and the other reason is because the tool is the only way to do things, and also in the second category, it’s also a great way to bring people together; it’s better than Skype or telephone in some ways because you have a shared sense of a space that you are walking around and sharing between you. I think that it does bring people closer together.

3. Respectively, are there any disadvantages?

Yes, there are some huge disadvantages. The biggest is the amount of time it takes to learn how to use it properly. It only takes an hour, maybe two hours maximum, but if you want to do a two hour session, showing students what a particular theater looks like, then you have to actually spend an additional two hours, learning how to use it. This is doubling the length of that session; it is using up two sessions, where you would use one. So, that is a problem.

The other one is that still, sometimes, the technology doesn’t work. For example, we were having an enormous problem in Coventry, where I was working with the language teachers, because there was only one IT suite in the entire University that would run Second Life and its open access so we can’t book it and use it exclusively. The last time we used it, there were students coming in and out, and that was really awkward; there was nowhere we could just pick a space to have a private session because nowhere else would run it.

Another problem that I faced is that there is always going to be some students that just don’t accept it. They always struggle with it. The more I learn about it, the more I realize that it is actually a neurological reason why some students just don’t feel part of the virtual world. They don’t feel the sense of presence and connection with their avatar or the virtual world, so all of these things that we are trying to do, giving them these experiences in the space, just completely bypass them because they don’t get it and can’t make that connection with that virtual space. The avatar just feels like a cartoon on the screen. There is some interesting research now that indicates that there are two different ways that the brain works. Most people get it, most people can feel part of it but there is always a fraction—it’s about 1 in 4 (25%)—a quite big minority of people who cannot feel the sense of presence within a virtual environment. So, that creates a problem because you have 1 in 4 or even 1 in 3 students just sitting there really hating what they are doing, because they just don’t feel part of that session. Finding a way around is still something I struggle with anyone who feels left out.

4. Comparing the university classroom with the virtual classroom, which one may have better results?

Very rarely have I done a direct comparison like that because obviously with the virtual world you are trying to do something you have never done before in a physical classroom. There is only one of the projects I have done which has actually been in direct
comparison, and that was a project on disaster management communication. This runs in
the physical classrooms; it’s been running for several years and the idea is that it is a
simulation of the groups that have to take over when there is a natural disaster. According
to the scenario they do, there is the north island with a volcanic eruption and the south
island whose people have to manage this situation. So, you get military, refugees, aid
agencies and such kind of groups coming in and helping. In the physical classroom, you
have a room full of different tables, each one of them representing an agency, and, then,
the students who have to walk from table to table, negotiating and trying to get all the
things done through their agenda. That gives them an idea of rough simulation of what
actually happens when there is a disaster like that. In Second Life, on the other hand, we
replicated that, and, instead of having tables that students walked around, we had
buildings and the avatars moved from building to building and did the same sort of
negotiations. When I asked students which they preferred, nearly all, except one or two,
liked Second Life better. Note that, even though this is a virtual world, they were saying
it was more real because you have a virtual recreation of an actual building, while in the
physical classroom you just have a table representing a building. They also preferred it
because they were all having to role-play. It’s very difficult, unless you are an actor, to
role-play being a military commander or a refugee person because you see, meet, and
date the physical person. If you are not an actor, that just doesn’t work. Whereas in
Second Life, they could wear the uniform and have a completely different avatar which
disconnected them from their physical selves and made the role-play a lot more effective
for them. They could just do it more easily, without all the other mess that they associate
with the physical self. So in that one instance –and remember this is only for role-play
specifically– we found that Second Life worked a lot better than the physical world
classroom. Now, I can’t generalize for all sorts of activities but Second Life is my choice,
when it comes to role-play with non-drama students. Without a doubt, it would probably,
nearly always, work better.

Part 3
1. According to your opinion, does the fact that your students may also use the virtual
environment of Second Life to communicate with others and/or spend their leisure time,
make your lesson more effective and attractive?
I would hypothesize that, yes. So far, there has only been two sessions with students who
have used Second Life before. One of them –3 to 4 years ago– had spent 2 years in
Second Life beforehand. The other one was last time when I was dealing with identity
and a lot of the students there had played with it before. I would say that the more you
spend time in there, the more you develop an identity and a sense of presence. As a
matter of fact, my thesis for my Ph.D. was entirely about that particular question which
is, “If you spend more time in there, do you learn more effectively?” and the answer was
positive. Without a shadow of doubt, the more time you spend in there, the more you feel
presence and, thus the more effectively you learn in it. In other words, if you don’t feel
presence, you will probably not learn. The research, I did, indicated without any question
that this is actually very important. Unfortunately, not many students do that.
2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?

Getting them to live in it is important for an educator. I don’t do as much now as I used to when I was actually doing the Ph.D., but I try going in-world a couple of times a week so as to keep that experience going. It seems that something happens after 2 or 3 months of experiencing it. Particularly, if you want to give them experiences and, by extension, experiential learning –they direct the feeling of the direct experience of what you are doing in Second Life and that is really having an emotional impact. It takes about 2 or 3 months of actually working, playing, moving, and interacting in the space before you get to that sense that is really happening to you in some way. Thus, if you can give students that amount of experience during your teaching, this is wonderful. Unfortunately, we don’t normally have that amount of time. So, I deal with it, spending some time, outside of the lessons, to learn it. We are still in the early days of virtual worlds, and we are facing a lot of issues such as the induction time, which is a huge overhead, and the fact that students are not that embedded in it, because they are not that experienced. The more education happens in Second Life or any other virtual world the less of a problem these become. So, the lesson will be to tell our students, “Okay, so, let’s go into this”. They will all of them have an avatar, they will all be familiar with walking around inside and working in that space, so the learning will then be a lot more effective, once students become a lot more familiar with it. I think, in a few years –four or five years perhaps– we will get to a point where a lot of these issues are not problems any more.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

You will find that three quarters of the students have actually enjoyed the field trips I have done around theaters. The first time I did this, I made the mistake of going straight from the one-hour induction session into my teaching activity. That was a huge mistake because most of the students were so into it that they wouldn’t switch to the work they wanted to. I got some students in a night club somewhere, others were found somewhere where they could take magic mushrooms and their avatars were high on these magic mushrooms… That work was very difficult. I have to note that I never got some of them to actually do any work because they were so into it –which is great– that’s how they learn, that’s how they feel embedded, that’s where this feeling of living there actually comes from. So, what I am doing now is that I have one induction where we just learn and play, then we stop, and then the next time –the following week– is when we do the teaching activity. Most of them, particularly the ones that usually tend to be quiet and the ones that may take a back seat, when it comes to classroom activities, normally get a lot from it. However, we still have the 25% or 1 in 3 of students that just really hate it. They just feel it’s worthless, it’s no point to it, and it’s unpleasant. We get some here who are just scared of it, they are frightened by what goes on there. So, we get a range of different reactions, but the majority, I would say ¾, really love it, find it a lot of fun and they actually enjoy it.
Part 4

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account? What is your opinion? (2nd question)

Yes, but since I am a lecturer advisor and I only do some occasional lectures, I don’t have to worry about that. I was just brought in and I do 2-3 hours, and then I disappear again, so I don’t have to worry about issues such as finding a home for the class and where to build those builds. However, I have noticed that this is a real concern for a lot of my colleagues and, if they are doing something new, they don’t want to commit the building in Second Life. So, they are building in ReactionGrid or OpenSim grid. They will still pick something that has the same kind of browser but still the same kind of interface, so OpenSim really provides the kind of new home for them that they like. A lot of the people I know, my friends, my colleagues, are moving away from Second Life and into OpenSim, but there is still quite a few who stay in there. I think more than half is still in Second Life, but more and more are moving to OpenSim and I think that’s the way things will go in the future.

3. Are you concerned about Second Life’s closure?

Well, I am not concerned in as much as I don’t have to make that kind of choices, but I am concerned. If Second Life closes down and there isn’t something similar to take care of us, a lot of work that I want to do in, as far as teaching is concerned, will disappear. The things I like teaching about are community, identity, embodiment and such like. They happen in Second Life because there is such a community there. Apart from educators, there are vampires, steampunks, fairies, weird things going on, and actually lots of people just hanging there, having a good time, and living there. One of the advantages of being part of this world whose population is only a million now-used to be 1.4 million, but it’s a lot fewer people today— is that there still is this community going on that you can explore and learn from, there is still an economy, which means that you can buy things, so you can get a really nice avatar, for example, or dozens of different things. So, it’s really good from that point of view, and OpenSim isn’t replacing that. All OpenSim is doing is creating a few simulations which, in my opinion, are just standalone things that just teach. For instance, science ethics is great, but it only teaches you science ethics. So, there is a huge hinterland of all the stuff, weird stuff, people stuff going on which is a very interesting experiment to look at a social experiment if you like, that would disappear if Second Life closes and there is nothing new taking its place. I think, from that point of view, research, experience and all the things that may be living in that space are important and living in that space is important for learning. People won’t want to go and live in an OpenSim environment if it’s not fun. If only we could recreate that sense of Second Life being and if Linden Lab, who run it, only got back into supporting education the way they used to then, we are really going to lose something important. So, yes, from a researcher’s point of view, to be honest, I am concerned. However, administrators have to face this kind of decisions, I don’t make such choices.

4. Does this possibility affect your decision to use Second Life?

I will stay in there for the research I am doing about embodiment, identity, and community. I will stay in there continuing to observe it and get experience of the space as well because it is still fun for me.
I am also involved in a project that is using OpenSim but we haven’t set up the activities yet to use it but in the next few months I will be doing my first attempts in teaching. I have used OpenSim and explored it as a resident but I have not yet used it in teaching.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment?
For the setting up of actual educational experiences for students, I think, I will be switching to OpenSim.

6. If yes, can you please name this alternative solution?
The solution of OpenSim, in the future, for this dilemma that people have, is hypergriding. When you can have the same avatar and the same inventory, you can just teleport between OpenSim, OS grids, Reaction grid, and Second Life too. In this case, this question becomes irrelevant because, then, you can move between all these different spaces as much as you like and it doesn’t matter which one survives and which doesn’t, because you will have all your virtual belongings all the time anywhere. So, that may be a solution: probably Second Life for research and doing interesting things, then OpenSim for teaching and finally—fingers crossed—there will be hypergriding so we can use both and move freely between the grids. This might really be a solution.

Part 5
1. What is the monthly cost of using this virtual world?
I only pay my premium residency fee which is 74$ a year, I think. So, as I said earlier, since I am not an administrator and I don’t own any of the universities’ sims, I don’t have to manage their payment. However, I know a lot of people who have been paying them and then had to stop, because they couldn’t afford them anymore. So, I know it’s up a lot and I know that’s a big financial issue for a lot of people. For me, the expense is purely 6$ per month. It’s not a big deal at all, for me.

2. Who usually funds your in-world projects? How affordable do you consider it? (3rd question)
One of them, the Disaster Management, was funded by the Coventry University, but all the rest have been externally funded by different groups and companies.

4. Have you used the discount offered by Linden Lab to academic institutions?
Yes. The discount used to exist, but it doesn’t exist anymore.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
The ending of the educational discount was the beginning of the end for educationalists in Second Life. When the educational discount ended, that was when people started to leave. Before that, everybody used it, and that discount was what made people carry on using it.

6. How do you intend to deal with this?
Well, I am not involved with the funding issues at all, but my friends and colleagues that work in the area have spoken about it a lot and followed different directions. Quite a lot of them have switched to OpenSim, some of them just found the money to continue in Second Life, while others are actually sharing a sim. So, instead of each institution buying and funding their own virtual environment, they all actually combine and share
one between them. Finally, some people are just stopping using virtual worlds, altogether. Some colleagues of mine, since their sim closed down, are not working in virtual worlds anymore because they can’t afford the fees. So, the ending of the educational discounts has been hugely disruptive to a lot of the teaching and research that has been going on. So, of the people I know, those are the different groups they are taking. But, note that everything has an impact.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Yes, regarding the project I have managed, I wasn’t directly involved in the technical side of the things. I was the overall project manager, so my job was to oversee the project, the technical development, and the educationalists that were running the project. All of the technical things were delegated to one of my colleagues who contracted designers to carry out a massive amount of building on the university’s sim.

Interview 7
Dr. Brian Cleveley — College of Architecture (Virtual Technology and Design Program), University of Idaho, USA

Part 1
1. Which virtual environments have you used for educational purposes?
We have used Second Life, a little bit of OpenSim and also a JIBE / Unity 3D combination. Our use of OpenSim to this date has been pretty much as a testing platform for what we have done in Second Life. So, we haven’t really implemented any educational projects in OpenSim so far.

2. What were the reasons that led you to choose the virtual environment of Second Life for educational issues?
There were a number of reasons. One was the development pipeline. Being able to easily create what we were looking for, creating our environments, creating our assets went fairly smooth with Second Life. Also, the access for our students and our clients was crucial, meaning that they didn’t have to buy any particular account or anything similar. They could get a free account and utilize what we were doing through their own system. Moreover, the established community that Second Life has was important for us because our students and all the other people that we collaborate with are able to reach out and explore other areas—not just our own regions—thus having a greater community to draw from.

3. For how long have you used Second Life for educational issues?
We have been in Second Life since 2007.

4. In what academic level(s) have you used Second Life?
We have worked by providing access both for the higher education and high school communities, mostly at the latter. With respect to education students, we have engaged our students from their 1st year through their senior year. We have also done some graduate work but have mainly worked at the undergraduate level.
5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?

A little bit of both. What we have is some role-playing productions which are then used to extend and augment an existing course. Furthermore, a number of our faculty are very remote. For example, we have a faculty member who lives in Portland, Oregon, which is eight hours from where we are at, and she teaches a couple of online courses in Second Life. In addition, we have some other role-play components for which the students will be in a traditional lecture hall for one part of the coursework and then in Second Life for another one. On top of all that, we have at least two other classes that will take advantage of Second Life; it is more of a progression. We will start them off in the design studio face-to-face and then, as we start to explore the virtual world, we move them into Second Life as part of that exploration.

6. How many educational projects have you carried out using this alternative teaching method?

Within those 10 semesters, we have held classes or educational events almost one every semester. The first grant that got us into Second Life was to explore teaching within the virtual environment. So, right away we started a seminar class to explore that. Overall, since 2007, approximately 8 out of 10 semesters, we have had some form of activity in Second Life.

7. How successful were these projects?

That’s a good question. I think they have been very successful in a couple of ways. One of them is that we are engaging our students in a new way, and we are asking them to explore the concept that learning in the class can be achieved in different ways. Learning is not just about coming in to have a lecture. There is also a lot of discussion and then there are other activities they can engage with, as well. We feel there are more things along the process. We are in fact in the middle of starting some serious assessments on how well we are actually doing. Up to this point, we have had our class evaluations where the students have talked about their successes and challenges within the virtual world. For the most part, we have had positive responses and that is definitely a good and encouraging thing, since it shows that our students are engaging. So, in terms of success, we are still developing the assessments for hard numbers. However, because of the feedback that we are getting, we feel that the students are engaging and it is challenging for them. They are asking great questions and they themselves are being challenged. I think that in a certain level this is a positive indicator of where we are going.

8. What are your current projects (if any)?

We just finished our semester, during which we had 4 activities that took place. To begin with, we had a financial simulation where local high school students learned about things such as budgeting. That finance class was held over a two-day period and the students worked in our simulator in order to learn about how to set up a budget. We also host an accounting class and a fashion design class about apparel online. Moreover, we have a design studio within the virtual technology and design program which was taught partially online; we start the class in the physical design studio first and then moving it to the virtual one. Finally we hosted a history class where we engaged our students in a role-playing scenario or series of role-playing scenarios to help them learn about the history. It was early American history, and they were learning about a specific era and the people of
that time and how they dealt with current issues. That’s what we did this last semester. So, surprisingly, we had a lot of stuff going on!

Part 2

1. What does a typical class of yours look like in Second Life’s virtual environment?
Taking the context of exploring and also pushing in the virtual world to see where we can go with it, we do have what we would refer to as the standard lecture where somebody would come in and present a concept, they may even have still images or videos to present etc. It looks very much like a classroom environment where the students are seated and look towards the stage or wherever the lecturer and the other information is. We also have the role-playing component, where the students take on the role of a person. For example, we had a case from 1770 in the emerging United States where the students took on the role to go through the process. In that case, it was less about lecture and discussion and more about learning through doing, the experiential way. Our third type of learning sees the virtual world as a design studio. We had one such case with a first-year class, the freshmen class, who were learning about avatars. They first define themselves, and then, through modifying their own avatar, they went through a process of designing themselves. So, we have 3 different kinds of uses of the virtual world.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
There are a couple of reasons why we use Second Life or any other virtual world. The first one is the experience component that is engaging students through the experiential nature. We are looking for ways to go beyond a traditional lecture and discussion. They are great, but if we can add to that, if we can add value to that component through the experience, then that’s even better. Depending on the type of role-playing, this experience may include exploring a topic that may or may not require a safe environment. For example, if there is a way that you can learn to put two chemicals together without harming anybody, therefore without worrying about noxious gases or other dangerous effects. The students can learn by doing and, in the case of our simulations, they can do it again and again. In other words, they keep coming back to continue to work and refine what they are doing. In Our financial sim, the students can continue to do that; in one event they can learn to budget in the role of a physician, in a secondary event they can learn how to budget in the role as a carpenter. The role-playing simulation will enable the students to explore personal finances across multiple professions over and over again. The other advantage that we are looking for in the virtual world is the distance component; it is important that we are not solely serving just those students who are on our campus, and it is important that we can share our resources with others. We can even incorporate experts and have them share with us and connect people globally, which is an amazing thing. So, if we can do that immersively by collaborating at a different level, then what more can we learn from that? What can we both take away from that experience? That’s why we are in the virtual worlds, because we see where it can go and what values it brings.

3. Respectively, are there any disadvantages?
I think that, first and foremost, the disadvantages we have found so far are just the pure technological ones. Not everybody has a computer or a network connection which is
really capable of engaging at the higher technological requirements of the virtual world. This is especially crucial as far as connectivity is concerned. In a number of regions, the further you get away from a more urban area or center, then there is a greater potential for the network throughput being less robust. Therefore, having to connect with people who are further off the path is a little bit more challenging. I also think that the other part of the challenge is the culture of using the virtual environments. Quite frequently, people say that it is just an interesting game. Well, it is indeed game-like and it is using game-style technologies, but in fact it is really not about entertainment. It may be “edutainment” (education and entertainment) but it is actually about connecting people. It is somehow changing the culture of how people look at “what education can be” and I think that is very important for us. We have to bring up the opportunities and show people what it can be. In other words, right now it may be a disadvantage but I think it is going to flip over, as collectively we will move forward.

4. Comparing the university classroom with the virtual classroom, which one may have better results?

When we talk about the virtual world with our colleagues, we always talk about it as an augmentation, an extension, and we never talk about it as replacing anything, unless it really needs to be. So, what we are trying to do is first of all to think about what we are doing in the basic tangible real world classroom and then try to translate and not transliterate it into the virtual world. We don’t want to do exactly what we are already doing unless we absolutely have to. But when it comes to the virtual classroom, we ask ourselves if there is any reason to use it and why we should be there. However, if we find a reason to use it in a way that we can engage the students, then we will go there. What we are looking for is to find a way to connect with the students as well as with anybody else. Also we are looking to find a way—through the students’ experience in this virtual environment, through their experience in exploring these concepts—to walk away with a better overall understanding of the topic they are exploring. Thus, to the questions “are there advantages and disadvantages” or “which one is better” the answers are going to be given at this moment on each individual component. Even when it comes to distance education, use of the virtual world is not clear yet. That is why I think the results are going to be very much based on what we are doing. I also think that, for the most part, we will have positive results because when we do engage digitally we do so because we have had a strong reason to use the virtual world. So, through the use of the virtual world, we can connect with our students and make the whole situation better than just having an online class which may be voice only or discussion board or e-mail, things that may not be as successful. In conclusion, in terms of the question, I can’t really give you an absolute answer; it will be evaluated on a case by case basis.

5. It has been stated that educational projects within virtual worlds may fail due to lack of orientation. Have you faced a similar problem? What do you do to orient your students?

We have discovered that just dropping people in the world is a bit pointless. You will not have a good user experience if you are unfamiliar in the world in which you are interacting. What we try to do is bring people in over a period of time. We typically start off with an orientation session where one of our team meets with the new users in-world where they will learn about texting or using voice and changing their avatar’s appearance. For example, with the financial simulation students, it took us about 3 ½ hours in total to
orient them to Second Life and then have them explore the simulation. For the first 30-40 minutes we let them play, fly around, change their outfit and appearance, we also showed them how to communicate with each other and how to interact with the environment and we just let them go. Then after about 40 minutes, we reorganized them and then we took them through the simulation. This was a group of young people that were used to playing video games and navigating in environments. So, it wasn't as difficult to get them up to speed. If we are working with people who are unfamiliar with navigating in the virtual world, we tend to take a little bit more time with them. Our experience to date clearly indicates that we need to continue this practice, in fact, what we would like to do in future work is to build more “mini games”. A mini game is just a quick environment, a quick thing that somebody can do such as a treasure hunt, but at the same time it is a safe way for them to learn to navigate. Our goal is to take away the challenges of navigation, orientation and communication and prepare our users to engage in the virtual world. In this way, by the time they are ready to go to the working environment, they are more comfortable with that and they can focus on what we are asking them to focus on.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?

Yes, if we encourage our students to explore –and that is what we are asking them to do— if we are teaching a specific topic, there are other people out there within the educational community and other communities that may also be exploring that particular topic. I think it is very important that they learn about what other people are doing as well and make contacts. For example, I had one student, a senior, who spent a lot of time in Second Life. He really engaged with the design and building community in Second Life, which I think led to better understanding of the project that he was working on and how to approach things. We also encourage people to go out because it is yet another way to socialize. One of the reasons why we like the community of Second Life is that it offers more to more students and, in doing that, they also have the advantage of learning about how to work in Second Life and how to work in a virtual world. Overall, that actually improves their skills to communicate with others, make contacts around the world and have a better experience.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?

That is our goal. That experience I think is what we are aiming at and the students can achieve a piece of it not only through what we are offering in Second Life, but also in the greater community. In my view, when they are living the lesson they will continue to enhance their understanding of it, because, as a student, you will have multiple opinions, viewpoints and approaches to the same concept and it is important for them to understand that. It is important for students to develop their own approach, their own process and their own knowledge base built around all the information and “experiential stuff” they are discovering. By doing this in the virtual world, we can expand that experiential environment. The experience is not just here, on our campus or in our community or the community surrounding us. It is worldwide and that is important, to be able to step into
the world of global economies. I think that understanding what other cultures are doing with the same topic, the same concept, is what makes for a better outcome for everybody.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

That is a question that has multiple answers of course. We have students who truly do enjoy the experience and we also have students who are not as convinced that this experience is a good one. I think part of that may come down to their navigational technical experience. Sometimes, people who did not have a good experience may have struggled with their computer because they could not see the video or the sound was intermittent. There was something that caused them some problems and so they weren’t able to fully engage. For instance, in a history class we held a very casual survey and the responses we got back were fairly typical. We had a few of the people who just absolutely loved the experiences and a few other people who had enough challenges and thus they were not really convinced that it was a good experience for them. Then we had the people in the middle that, even though they may have had some challenges, they really did enjoy the experience and they could see how it was beneficial. Therefore, on the whole, we had a good cross section of people. We are always going to have somebody who loves it or who is not too sure about it. However the majority of the people do have a good experience although they have had challenges which usually come back to things such as navigational orientation or technical experiences.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account?

We are not 100% committed to a single platform. We understand that companies will come and go, technologies will ebb and flow, and we are always looking at ensuring that we have options. So, yes we do have a commitment in Second Life, but we are also developing our experience in the JIBE world using the Unity 3D engine. We are also looking at the potential of using OpenSim as an augmentation or replacement for our Second Life worlds. We know that there are issues out there; we know that, as a privately held company, Second Life has to deal with their business plan. In a nutshell, the short answer is we have taken it into account and we are always looking and testing the other platforms to ensure that we have a sound footing for the project in similar environments.

2. What is your opinion?

I think that would be unfortunate. Of course, they are not the only virtual world providers available, but they do provide a rich community that people can take advantage of. Certainly, there are people that I know who work exclusively in the Second Life’s environment and there are those who just play. Nevertheless, I think they are one of the leaders in the use of virtual worlds for entertainment, edutainment, socializing, business etc. They have a rich community and that is what they brought onto the table, “how these worlds can be a rich community”. I would be sad in a way if they were to close because of what they provide and it would be important that other communities carry on ensuring that those experiences continue. We can’t lose the experience, or we can’t lose what we are trying to do –it is important in many different levels. Second Life is very proud and has become a household name and I would be sad if they were to consider closure.
3. Are you concerned about Second Life’s closure?
I would say yes.

4. Does this possibility affect your decision to use Second Life?
At this point, no. We still have projects that are in Second Life, because we have targeted Second Life as the delivery environment, but we also have projects in other worlds. We are constantly looking at different worlds to deliver our projects. We consider other worlds because we are looking at the technologies that are available that might best support us in what we are trying to do for a specific project.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
Yes, Probably with Unity 3D/Jibe or OpenSim.

Part 5

1. What is the monthly cost of using this virtual world?
There is the monthly maintenance cost that is the rate set by Linden Lab. Beyond that, in terms of people (human resources,) it is not too bad; we have 2-3 people that are working on our projects. Overall, I think it is probably pretty average to what everybody else is doing, but in terms of the actual dollar cost, I don’t have that at my fingertips.

2. Who usually funds your in-world projects?
We have been funded predominantly through grants. This funding typically pays for the purchase, maintenance and development of our projects and regions.

3. How affordable do you consider it?
If we are comparing it, for what it can do, to the cost of a physical structure, then it is affordable. For example, if we had to teach a particular class in a particular kind of physical space, then what would be the cost of designing, building and maintaining that space? Therefore, in that respect I do consider it affordable. The unfortunate side is that everybody is really struggling worldwide for resources. So, the challenge now is being able to create the funding models that will allow us to continue to maintain and develop new environments. I really don’t know how many other institutions are addressing those issues today and if they are incorporating them in their fees and tuitions or whether they are receiving specific budgeting sources from their administration, or they are continuing to fund them through grants and contracts. There are options available for us and everybody might be slightly different on how they go about that. However, I think that for the value we get from our investments and the potential value in the future, this is still a reasonable amount of money to do this.

4. Have you used the discount offered by Linden Lab to academic institutions?
Yes we did. When we originally purchased into Second Life, we utilized the educational discount.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
It was unfortunate that they had terminated the educational discount. However, it was a financial decision, a business decision. Of course, we were sad and disappointed, but, at the same time, if that is what they needed to do for their business model, then we have to respect that. They are a privately held firm that needs to ensure the health and safety of
their company. So, in a way we said that is their decision to make and we will have to work within the construct of that decision.

6. How do you intend to deal with this?

We are evaluating this and how it affects us in terms of a long term presence within the Second Life grid. This is a part of the decision process as we consider OpenSim or the JIBE/Unity 3D worlds. Being able to partner up with people in order to find ways to provide discounts is always welcome from our standpoint. I think that on the flip side is the value that we give back to Linden through the use of academic discounts. In other words, collectively we (the people who are in education) provide an amazing number of possibilities of what we can do in this world that others can then learn from. Through our use and exploration, I believe, we can augment this position and inform the position of the virtual world. Fortunately, when they announced the decision to terminate the academic discount, they also gave us globally the option to buy out a couple of years with the maintenance, which we obviously took advantage of. Will we change our presence in Second Life? I can't really tell on that one, but I suspect in some ways it has altered our vision as to how we will use this. Will we shrink our presence in Second Life? We don't know. Will we expand? We still don't know; that will depend on the funding model. If we are able to offer more classes and more research in-world, then the funding might be from these sources and thus, we may not have any problem. We are looking at different sustainable funding models to try to determine how we are going to move forward with the virtual world and in specific, Second Life.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?

Yes, we have, in two ways. First, through our grants we have hired a number of “Virtual World Builders”. These people are qualified builders both in terms of designing, creating environments, texturing, modeling as well as scripting. We have also contracted work. This is typically done for unique scripts or assets. If we hire a consultant it is because we know that the task can be completed more efficiently through this process.

Interview 8

A.C. (anonymous) — Department of Computer Science (Informatics / Computer Science / Engineering), N/A

Part 1

1. Which virtual environments have you used for educational purposes?

I have used Second Life, OpenSim and Unity 3D.

2. What were the reasons that led you to choose these virtual environments for educational issues?

My main aim was to increase the students’ engagement and motivation in the learning activity.

3. For how long have you used these virtual environments for educational purposes?

For about 3 years.

4. In what academic level(s) have you used these virtual environments?

Two at the university level and one at elementary school level (6-10 years old).
5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
At the moment it is just to complement the usual learning methods, especially in self-learning activities.

6. How many educational projects have you carried out using this alternative teaching method?
I have done three educational projects in university level.

7. How successful were these projects?
At a preliminary evaluation the results were good, but they have not yet been used thoroughly in the courses. So they are not already integrated in the course methodology.

8. What are your current projects (if any)?
My current project is the support of courses in introductory programming.

Part 2

1. What does a typical lecture of yours look like in Second Life’s/OpenSim’s virtual environment?
We don’t exactly lecture in Second Life/OpenSim. We propose games that the students perform on the virtual environment solving challenges closely related to the learning activity.

2. Why do you use Second Life/OpenSim in your teaching? In your opinion, what are the advantages of this teaching method?
The rapid deployment of 3D collaborative applications.

3. Respectively, are there any disadvantages?
The disadvantage of Second Life is the cost… In general, there are performance issues to take into consideration when using these virtual environments for classes with a large number of students (we have classes with almost 1000 students).

4. Comparing the university classroom with the virtual classroom, which one may have better results?
In my opinion the university classroom promotes better efficacy in terms of higher level thinking, i.e. the discussion and analysis of issues that go behind the teaching stuff. But the virtual environment can provide a good learning environment outside the classes and in self-learning activities, as it is self-paced and overruns distance.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
Yes. Being interactive and collaborative makes the learning process better.

2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?
Yes. The students are involved and participate.
3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
No. I think that they apprehend that both can be equally important to them and they adapt to each activity and profit differently from each one.

Part 4 (Second Life)
If Second Life were to close many educational institutions would be left “homeless”.
1. Have you taken this issue into account?
Yes. We are moving to OpenSim.
2. What is your opinion?
OpenSim can provide a good alternative.
3. Are you concerned about Second Life’s closure?
Not at all.
4. Does this possibility affect your decision to use Second Life? If eventually Second Life terminates, will you attempt to replace it with another virtual environment? (5th question)
If yes, can you please name this alternative solution? (6th question)
Yes. That’s why we are moving to OpenSim and we also thought about Unity 3D.

Part 4 (OpenSim)
OpenSim is new technology used for the development of virtual environments.
1. How stable do you expect this technology to be?
At the moment it isn’t but in the future I expect it to be quite stable.
2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
It is absolutely essential.
3. OpenSim grids have the potential of “hypergriding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
It is interesting for commuting into different grids, although we generally use closed worlds.
4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?
No. I think it will stimulate it.

Part 5 (Second Life)
1. What is the monthly cost of using this virtual world?
I think it was about 100€-200€.
2. Who usually funds your in-world projects?
The university
3. How affordable do you consider it?
It’s too expensive – we no longer fund it.
4. Have you used the discount offered by Linden Lab to academic institutions?
I think so.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer? How do you intend to deal with this? (6th question)
We decided not to continue using Second Life – that’s why we moved to OpenSim.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, we have qualified personnel to provide these assets.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
It is hosted by our university.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, we have qualified personnel to provide these assets.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
It is integrated in the complete offer of computation infrastructure of the university.

4. Who usually funds your in-world projects?
The university or the national science foundation and European funds.

5. How affordable do you consider it?
It’s very affordable… There are no direct costs in the university.

Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
Initially we used Second Life and we left it because of its cost.

2. Which one of these two virtual environments do you consider more appropriate for educational use?
Both have equivalent potential. OpenSim can be more tailored to specific goals.

3. Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).
Second Life.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?
No, it was purely the cost.

5. Which one of these two virtual environments offers best value for money?
OpenSim – there is not any direct cost.

6. Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities?
Yes, absolutely.
Interview 9
Prof. Liz Falconer — Director of the Education Innovation Centre (Environmental Health. Students Risk Assessment & Accident Causation), University of the West of England (Bristol), UK

Part 1

1. Which virtual environment(s) have you used for educational purposes?
Second Life is the only one.

2. What were the reasons that led you to choose this virtual environment for educational issues?
There were several reasons such as its ease of access, its ease of use, and the community that’s in here. Most of the educators in the UK and in the US who are active in virtual worlds tend to use Second Life. Some use their own platform, some use other virtual worlds, but the majority are in Second Life, therefore the opportunities for collaboration are greatest here I think.

3. For how long have you used this virtual environment for educational issues?
About four and a half years.

4. In what academic level(s) have you used this virtual environment?
We have used it both with postgraduate and undergraduate students.

5. Are you using this virtual environment for universal conduction of the courses or just to support the usual educational methods (in class)?
The motive that drives what we do in virtual worlds is actually our desire to do the things that are impractical or impossible to do in real life. So, we are very much not replicating classrooms, but we largely focus on using virtual worlds for simulations of activities which are difficult, dangerous, and awkward to organise in the real world and also for all these things we can’t really do in the real world with set-ups of role-play.

6. How many educational projects have you carried out using this alternative teaching method?
We have been involved in five educational projects so far. So, there were four projects for undergraduates and one for postgraduates.

7. How successful were these projects?
I think they have been very successful. We do a lot of evaluation with everything that we do and for the places where we have used Second Life in courses and assessed what students have done there as part of the course. We have done a lot of evaluation so as to make sure that students are enjoying it and that it serves its purpose. Every time, we get overwhelmingly positive evaluations back probably because we concentrate on the simulation aspect and on the aspect of being able to do things in the virtual world that we can’t do in the real world and the students really seem to appreciate that. Another thing that they tell us a lot is how real those simulations feel and that is because we concentrate on real life type simulations.

8. What are your current project(s) (if any)?
We have an Environmental Health programme in the context of which we do a lot of safety inspections, we investigate accidents, and do risk assessments. There is a Masters
programme in Environmental Health at UWE that has simulations running in it. We also have a business ethics project where undergraduate students can undertake some role-play in business ethics issues. We have a sociology project too where the students design a visualization of the sociology of different periods of time. It’s a lovely visualization of things which occurred in the past and that has recently been made more interactive. Besides, we have quite a lot of work with our psychology department; we have just received an award from Higher Education Academy to work with the psychology department where we have got four projects altogether, one of which is completed and is now piloting with the students. That’s a counselling project for students to observe counselling of people with different types of psychological issues. We are going to have three other projects, one is a work-based psychology project in a supermarket, the other is “a dragon’s den” where the students have to pitch psychology consultancy ideas, and the third one is an extension of the consultation and counselling aspect, but this time we are going to concentrate on using automated characters or bots to be able to do that as well. We also have the MA in “Education in Virtual Worlds”, which is my biggest project in the Education Innovation Centre and we are also supporting a number of other issues that we’ve just started to come up with, such as mental health nursing simulations and some engineering simulations as well.

Part 2

1. What does a typical class of yours look like in Second Life’s virtual environment?
Well, our classes vary depending on the project we are working with. For example, in the Environmental Health programme, we have a simulation of an accident that occurs in a warehouse where someone is hit on the head by a barrel that falls off some racking. I split my students who are usually 20-25 into two groups; half of them volunteer to be witnesses to the accident and the other half volunteer to be accident investigators. The simulation runs like a movie; it actually moves things around in the virtual world. So, the witness students who are standing in the warehouse are witnessing the accident that happens around them. Then the accident investigation students are coming in-world half an hour or even a week later. They don’t see the witness students in the real world, they only meet them in the virtual world, and they then start investigating the accident.

So, they start up by interviewing the witnesses to the accident, and they spend a couple of hours doing that which is quite interesting because they get different people’s points of view, just like they would do in a real accident association. When the witnesses have all been interviewed, the witnesses do a risk assessment in the premises because they have done their part as far as the accident goes so they can then take photographs, they can click on things which give them clues about what might have happened, and they can download documentation that is specific to the accident, such as the company safety policy and the safety committee minutes. In other words, they can spend the rest of that morning doing an investigation and inspection like they would do in real life.

They can also interview a NPC (bot) and ask questions like “what is like to work there?” or “do you know where the first aid kit is?” etc. Later they take all that information away out of the world and work on that, using analysis techniques that they learn in the module, for about 3-4 weeks. After that they can come back in-world where they interview the manager of the premises face-to-face for about 45 minutes each. They can do it in pairs
but again it is 45 minutes altogether for each pair. The manager is actually me in a different avatar, so they don’t know it’s me.

We do that in text chat, and afterwards I annotate that text document and send it back to them as a form of formative review on their interview technique and their findings. Next, they can go back in-world again, do the inspection they need to do, and write a report and reflective commentary on all of that. In the report, they need to determine what caused the accident, who is responsible, and whether or not they will prosecute. They need to decide on any action they might take in this situation in real life. Finally, they get marked on their reflective commentary and their report, summatively, at the end of the module assessment. The students who were the witnesses to the accident do similar things in their risk assessments.

So, the classes that take place in Second Life are very different from traditional real life classes. Besides, we couldn’t do that kind of activity in the real world because we can’t use real accidents for ethical and practical reasons and we just can’t get our students access to a kind of real life accident that they can investigate.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?

The major advantage of Second Life is that it enables you to do things that you can’t do in real life. In the virtual world, students are able to take on different kinds of characters, so they can become more like an accident investigator or in the business ethics, for example, they can become more like a manager and know what the manager has to do or a personnel officer and get a sense of what the personnel officer has to do, through the role-play. You can’t do that by role-playing in classrooms. Another essential benefit of virtual worlds is that they are what we call “safe spaces”. They are spaces where you can run a simulation of something, for example, and get it wrong and you can learn from getting it wrong. I just see that in my students. When they get it right, they do learn, but, when they get it wrong, they learn even better because you learn a lot from mistakes. Theoretically we learn probably better from mistakes than if you get everything right. They can do that in an environment which is safe, that is, forgiving of mistakes. When we do the evaluations with the students, one of the main themes that comes out is exactly that: “I thought that I could make a mistake, I could learn from that mistake, but there were no consequences to it”. Furthermore, virtual worlds are responsible for bringing together groups of students who otherwise wouldn’t meet very much. It’s a way of enabling big groups of disparate students to have a form of meeting; it’s a form of socialization. I think those are the major benefits.

3. Respectively, are there any disadvantages?

Of course there are. The technology itself is probably quite limiting at the moment in that you can’t express yourself through the avatar very easily. The avatar can make certain movements and has difficulty capturing the way you move. Take Microsoft Kinect, for example, which is a motion capture camera that we connected up to Second Life. It works but the problem is that it only sets off preformed gestures in Second Life. It doesn’t enable you to move around in the virtual world for your avatar to copy that. Some Xbox games do allow you to do that so I am pretty sure that the technology isn’t all that far away from accomplishing that. However, for the time being there is sometimes a sense of
disconnect between the avatar and the person who is driving the avatar and that’s an issue. Some other students say that even though they do like doing the accident investigation, they have to get used to not being able to actually touch things. The lack of tactile senses is something they find off putting at first, although the more they use it, the more they start to get used to it. It is also relatively intensive in terms of the hardware that you need and quite a few of the universities’ computers are a bit old and will not run this so there has to be a lot of attention paid to upgrading quite a few of the computers. It’s not perfect by any means, but certainly what drives us is just the ability to do all these things that we can’t do otherwise and that’s a real motivation for us.

4. Comparing the university classroom with the virtual classroom, which one may have better results?

We don’t use classrooms in the virtual world because we are trying to avoid replicating the real world in the virtual world. However, that’s a good question because when I was doing the evaluation with the Environmental Health students, the accident investigators, the risk assessors, etc., I looked at their marks. Before describing what I observed, let me tell you that what I teach is part of a big module. The part that I teach is worth 10 credits, while the rest of the module is worth 30 credits, so it is a big 40 credit module altogether. I compared the students’ results in the part that I teach with the results in the other 30 credits of the module – a large proportion of the marks for my 10 credit module is for the work they do in the virtual world and the marks for this 10 credit virtual world part were 8% higher than the marks for the other part. It’s not huge but it’s quite interesting especially when you add that into all that qualitative assessment that we did, in which we asked the students about their experiences and also the tutors about their experiences and the students’ abilities. We triangulated all of that data and we found that it was definitely more effective to teach it in-world than it was to teach it in a classroom. Nevertheless, in a way that’s not a fair comparison because we can’t do in a real life classroom what we did in the virtual world. So, that’s the difficulty we are having comparing it. However, I would say from everything else they did in classrooms, compared to what they did with me in virtual worlds it was definitely a better learning experience.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?

We spent a lot of time on orientation because we learned the hard way. The first time we gave it a try with just a very small group of students in Second Life and we discovered among other things that it takes a while to orientate yourself to what this does, particularly, if you are not familiar with computer games because you have never done anything quite like this before. Moreover, we found out that you have to give people time to play because if you don’t, they will do it anyway. Furthermore, we discovered how important people’s appearance becomes, and that you have to give them time to adjust their appearance to the point at which they are happy with it, and that it takes a little bit of time as well. We also realised that they just have to be given time to find their way around because everybody walks into walls, hits their head on the ceilings etc. when they first start.

So, we have our own portal that the students who are new can come into and create their avatars through that portal in our own orientation area. We also have a reasonably large orientation maze that the students have to walk through and as they walk through, it
shows them how to move backwards and forwards, how to fly, chat, click on things, and the like. It takes them about 15 – 20 minutes to get through that and when they get to the end there is an area where they can change their appearance if they want to. If you are watching them, you will notice that they all tend to run through the orientation maze, get to the area where you can change your appearance, and spend an hour changing it.

Honestly, it became apparent to us that this is really valuable time and we shouldn’t try to reduce it, so when we do classes with students we build in a significant amount of orientation time which some people might regard as a disadvantage. Actually, if you’ve got a very tight timetable and what you ideally want to do is to just plant people in, do your interview, sort it out, and come back out again, you can’t do that in virtual worlds because it takes too long to orientate yourself and it takes a while to “get it”. It takes you a while to get in there, feel comfortable, and understand what it is all about thus we have come to the conclusion that this step cannot be missed out. However, we have to build that into timetables, and that can be a problem in some courses that are very compressed and have very short timescales. There is another thing we do, “the treasure hunts”. I go to a lot of different places, teleport all over the places in Second Life, take photographs, and look at things and then I write a treasure hunt for them. Afterwards, I tell them, “starting from this point, teleport to this island”. There, they wander around, take pictures, etc. Then I tell them where else to go and what else to do and they’ve got an hour or so to come back to the starting point with an inventory with pictures and various things they have picked up where I will be waiting. The last couple of years, I have run it with a prize, so the first person back with everything they should have in their inventory gets a prize. They really enjoyed it and I think that kind of orientation is really important.

The other thing that happens then is that the students start to enjoy it, they start to see that when they are learning, they are actually allowed to have fun as well. It does not feel as a waste of time and money when you enjoy what you are doing. You don’t have to stay in a classroom just writing things all the time; you are allowed to enjoy it. The other thing that is really important in getting students “buying” it is that there has got to be a very good reason for doing this and it’s got to be a reason that you can “sell” to the students because they do pay a lot of money for education. So, they look at things and say, “What’s the point in me doing this? How is it going to get me my qualification?”. I think the reason why it is very popular with the Environmental Health students is because from the very beginning I tell them, “You are going to be able to do an accident investigation which feels real and there is no other way you are going to be able to do this”. Also I bring a lot of theory in, so I constantly get them to use the theory in the practice that they are doing in-world and because they see how meaningful that is nobody says, “This is a waste of time” or “I don’t know why I am doing this”. I think it is very important to get that kind of focus on the learning as well.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time make your lesson more effective and attractive?

I can see the way the students are talking to each other because I can see the chat that is going on. Some of my students are in Instant Messages, in groups, but I am a member of
those groups too so I can see what they are saying and it really interests me because this way I, as a teacher, can see more of the way the students are learning. Learning becomes more visible to me because I can see the kinds of discussions and transactions that they are having and the way they are communicating with each other. For the same reason, we’ve also thought about using Twitter in the classroom so that the students could be tweeting at certain points and then we could capture that and see what the main themes are. Consequently, I could adjust what I am saying in a tutorial or a lecture in terms of what the students really need to know so that I can get more dynamic feedback. You know what it is like in a classroom, the tutor stands there talking, and the students sit there thinking about something else and as a teacher I have no idea what is going on in their head. I haven’t got a clue if what I am saying is making any difference at all. So, when you observe their communication in virtual worlds, then you can see the processes, and as a teacher I find this really pleasing.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?

Yes, I do. I think that because they tell me so. We always do a lot of quantitative and qualitative evaluation, and one of our students wrote the following comment: “I really like doing this rather than sit in a classroom and just read, it brings learning to life” and I remember him also saying, “It brings things to life and makes me think about what it is really going to feel like when I do this for a job”. I’ve talked with some colleagues (mental health nurses) and they said that when their students come on the course at first, some of them have probably chosen the wrong job and they don’t quite realise what the job of the mental health nurse involves. Dealing with people with dementia and all kinds of psychiatric illnesses is a difficult job but some of them have not realised that they might not be cut out for it. Therefore, they wish to have the students immerse in different scenarios in-world and then tell them that these are similar to the things they are going to be doing in real life. The students doing the job in the virtual world is preferable to the tutors explaining it in a classroom because they don’t know how it feels. So, yes, I think it really does enliven things and brings a lot of learning to life.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

In general, yes, they do. That results from the evaluations in which we ask them some questions about preference, such as “Would you rather do this in a classroom or within the virtual world?”. Again it is interesting that the majority say they would rather do this in the virtual world because it is “learning by doing” and a lot of people reflect on their learning styles when they do it as well and say, “I am an active learner and I like to learn by doing things”. Interestingly, there are still three students out of a cohort of fifty undergraduate students who have gone through the fall accident investigation on risk assessment and have clearly not enjoyed the experience. They got something out of it, but they have not enjoyed the experience because their expectation has been that when they come to university, they will sit in a classroom. In fact, there are overseas students whose experience of learning up to that point had been entirely classroom-based so they got used to sitting in classrooms and having teachers instruct them. As a result, they told me that they hadn’t expected anything like this at university and had thought they would carry on sitting in classrooms, listening to lectures. I think it’s that experience they didn’t really
have that made it difficult for them. So, they kind of enjoyed it but I would say that their overall learning experience was neither painful nor totally enjoyable.

Part 4

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account?

Yes, we have. I read that a lot as well, and I’ve heard a lot of people saying that Linden Lab can’t possibly survive or that it is going to close. I think that’s nonsense. There is a website, KZero, which gives you statistics on the use of virtual worlds in general, the world over. There are now about 1.3 billion accounts in virtual worlds in the world. The majority of those are held by kids under the age of fifteen, and the number of virtual worlds is liable to increase to round about 800 by the end of this year as they reckon. So, virtual worlds and their use and also how accustomed the children are going to be to using them are just going to increasingly increase. So, whether or not Linden Lab exists in that current form, whether or not Second Life exists in its current form is a displacement argument, I think. It’s an argument so that people don’t have to really start talking about what virtual worlds really mean. I think virtual worlds are not going to disappear. It is highly unlikely that they’ll go away considering the amount of usage they are getting now. Linden Lab is one of the biggest virtual world technology companies for adults. Some of the virtual worlds for children are way bigger but as kids start to become adults there will be a big use to using this kind of technologies. So, I think, the use of adult virtual worlds will start to increase. If actually the worst came to the worst and all of a sudden, Linden Lab shut down—which is very unlikely—everything we have in-world is backed up. Citrus Virtual, the company we work with in Second Life, backs everything up for us according to the maintenance contract. We do have a copy of OpenSim in the university, but I don’t intend to use it because I want to be on the grid. It’s just sitting there as something that we could use if we actually have to. So, in the worst case, we can just copy everything and stick on OpenSim.

2. What is your opinion?

I will be sorry, I think, because I like Second Life and what it does but I wouldn’t worry too much because I can just use another one. So, we will look at Active Worlds, Blue Mars, etc; I constantly go around exploring other options. However, when you go to those and then you come back to Second Life, you realise that they are nowhere near as sophisticated. There is something funny with software; it is like football fans—people who are fans of certain thoughts and technologies hate other ones. I just don’t understand that. I don’t care who makes the software because all I am bothered about is that it works and it does what I want it to do. In other words, I don’t have any real loyalties towards Linden Lab or Second Life. In that sense I wouldn’t care if we took everything that we’ve got in Second Life and put it physically somewhere else as long as I could do what I wanted to do with it. I don’t really mind.

3. Are you concerned about Second Life’s closure?

Not really.
4. Does this possibility affect your decision to use Second Life?
No, it doesn’t because, as I’ve said, we are just about to start a Master’s programme in “Education in Virtual Worlds”. It was validated yesterday and will run from September. The whole programme will be taught entirely in the virtual world of Second Life because that’s our natural home so a whole course will run in Second Life. If the worst came to the worst and Linden Lab closed all of a sudden one day, we can redeploy all of that on our own OpenSim, or we will probably redeploy it with a company—we have partnerships with companies we work with in Second Life. There is one called Dayton and they’ve run OpenSim on their own servers, so we would probably ask them to run our islands for a time on their servers and then put them onto our own OpenSim servers. We have got a worst-case scenario backstop, thus it doesn’t affect our decision-making at all.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
Yes, initially OpenSim would be our backstop, and then we would look at other virtual worlds as well.

Part 5

1. What is the monthly cost of using this virtual world?
The university has altogether four islands. We, in the Education Innovation Centre, have three and the faculty called Health & Life Sciences has one of their own. So, the maintenance fees for all four islands is about £800 a month.

2. Who usually funds your in-world projects?
It’s a mix. We fund much of it internally but are also externally funded like the Higher Education Academy but once the MA gets going, the Masters will more than cover all of our software cost not only for virtual worlds but also for Virtual Learning Environments and all the other things we use in order to support it. Besides, we have some internal funding through internal grant schemes. So, it’s a mishmash. We have been doing it in a number of different ways, but at present we are trying not to depend solely on the university’s central funding for it. We are trying to generate income from various ways of doing it.

3. How affordable do you consider it?
Very affordable, I think. It is good value for money for what you get out of it. There is no other way that we could develop a 3D platform that would enable us to do what we can do here because we just couldn’t afford to do it as a university. We also use a kind of collapsible set system, so we have got the three islands but although we look like we are fairly built up on the island, actually, we use a system where we can collapse one set and have another one. Thus, if we have got different things going on, then we don’t have to build a static new building or set for every new thing that goes on. It is like Holodeck, in Star Trek, where they project things and you can walk around them. It is like that in that we collapse some parts into a box and when we press the button, another box opens, and another set opens up. So, we can make it really quite cost effective in terms of space.

4. Have you used the discount offered by Linden Lab to academic institutions?
Yes, we did get the discount, but they have taken it away now.
5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
Well, it didn’t make my day! However, we absorbed it, and they were quite good in so far as they did do a deal—if you pay two years up front, you can get it at the old discount. So, in fact, in a way we are still paying discounted until next year. Of course, I would rather they hadn’t stopped the offer but it hasn’t deterred us from using it, to be honest.

6. How do you intend to deal with this?
We are not going to stop using Second Life. We are dependent on a virtual world for the Master’s course we are going to run now. We will just absorb it and find a way to deal with this. I set budgets for my department every year, and the university also sets its budgets every year, so we’ll just incorporate it into those budgets. It is not a huge amount of money; it’s about £7,000 a year, which for a software license is not bad really.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
We do create and buy things but we haven’t sold anything. We have never created anything and sold it yet but we do buy things and spend money in-world. In a way, we have to. If you are going to do anything of any kind or level of sophistication, you end up having to spend a little bit of money in-world, but that’s actually really small because things are very cheap in Second Life because the exchange rate is enormous. So, yes, we probably spend £10£-£30 a year on that.

Interview 10
Dr. John Fillwalk — Department of Art (Digital Intermedia Art) — Ball State University, USA

Part 1
1. Which virtual environments have you used for educational purposes?
We have used Second Life, OpenSimulator, Blue Mars, and Unity 3D.

2. What were the reasons that led you to choose Second Life and OpenSim for educational issues?
In 2006 I was looking for a product that would allow us to teach 3D modeling to high school students and would enable them to have a collaborative, shared, real-time experience. So, one of the products we were looking at was Second Life which we finally chose for that particular project. Later we decided to bring other projects into OpenSim too.

3. For how long have you used these virtual environments for educational issues?
I’ve used Second Life for six years and OpenSim for about three years.

4. In what academic level(s) have you used these virtual environments?
From high school to undergraduate and postgraduate university students.

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
I do both blended learning courses and purely virtual classes. Keep in mind though, at least with my experience in my group, that we develop the environments that other faculty members use. We rarely teach the course itself. We make everything that is
required for a course that takes place in a virtual environment but we don’t often teach the course. Consequently, I typically don’t have much data on that kind of thing. We are developers. I am faculty too, and of course I used to teach other time but at present we make a product for others to use.

6. How many educational projects have you carried out using this alternative teaching method?
There must have been approximately 20-25 projects.

7. How successful were these projects?
In terms of what we design, I would like to think that it’s always successful. However, the degree of success is highly dependent on the way our project gets used. Sometimes we may work with a group that doesn’t really engage with the space as much as we would like perhaps. Other times it gets used even more than we had hoped for. So, it just depends on the faculty members’ dedication to this new way of learning and the extent to which they actually use what has been created for them.

8. What are your current projects (if any)?
We have several. One project we are doing right now is funded by the National Science Foundation in the United States and it’s a simulation of Emperor Hadrian’s Villa outside of Rome. He had a complex of about 30 buildings over about 300 acres, and we are creating that as a living museum so that you can go back in time. We’ve built all the avatars, the costumes, the gestures, the animals, and the like. We have also made it possible for users to be able to change the date and time of day, look at solar alignments that Hadrian was very interested in, maybe play the sun from specific movements via the user interface, and do similar things. We have created a system using NASA data in order to do that, which required considerable effort. We have released the first version of it actually just this week, and we are going to do a second version due in September. Besides, last month we released a virtual museum project for a real museum that’s being constructed and will be open in the Fall. So, those are two big projects we are working on right now.

Part 2

1. What does a typical lecture of yours look like in Second Life/OpenSim’s virtual environment?
Well, we have brought students a lot of projects in Second Life working with architecture, nursing, fashion, art, music, etc. Probably one of the most involved projects was when we did a simulation of a cinematography course where the students would learn the language of the cinema using virtual tools that actually work. So, we built cameras, light systems, dollies, cranes, tripods, microphones, and other virtual equipment. It was like a 3D textbook. This project won a few national awards for its innovation and instructional technology and involved the blended approaches in teaching and learning we were talking about. The students would learn the concepts of cinematography from the real world by bringing them to life in Second Life, so they would learn how to shoot, film, light, and do the necessary work right through the tools. The nice thing was that they could actually use the tools to record their understanding of what they had learnt so
they would submit virtual images and virtual movies showing that they had understood the concepts. That project was very visual.

2. Why do you use Second Life/OpenSim in your teaching? In your opinion what are the advantages of this teaching method?

For us the main thing is that we assess how the technology is best used for certain experiences. Some experiences, of course, are best experienced in a physical reality—for teaching and learning—environment, the web, on the other hand, is better for delivering other experiences, such as watching a movie, reading a lot of texts, etc. We would like a virtual environment that would be able to simulate a kind of hands-on learning and also connect people socially in case they are spread apart in a distance learning environment, for example. Its main strength is that it can unite people that are not physically in the same space, it can bring them together and help them feel they belong to a community, a sense that is of vital importance in a learning environment. So, for us, that’s the main strength and then I would like to stress once again the fact that we aim to virtualize certain experiences that make sense to do there, because not everything makes sense to virtualize. Thus, we think a lot about that and try to thoughtfully use different technologies for the different goals of the curriculum.

3. Respectively, are there any disadvantages?

Yes, I think it’s interesting because, typically, the age groups that get into Second Life are older than typical college student ages. So, for most of them, it’s their first time in there (the median ages are 30 and sometimes 40 in Second Life). The users of Second Life are rather not teenagers and 20 year olds, as a result they don’t usually have experience with it and sometimes for some, especially if they don’t play any 3D games, it’s the first time they’ve been into a 3D environment. Therefore, their initial attempt to function in such an environment can be disheartening and for faculty that have never done that can be even more discouraging. At least the students can learn this fairly quickly even if they have never been in-world before because they have adaptness with technology. Often the faculty, though, “freeze”; they don’t know what to do.

Any kind of new technology is explored when it first comes out. However, it is always very slowly adapted to teaching and learning environments. Even when PowerPoint came out, a couple of decades ago, it was adopted very slowly by faculty, especially by the older faculty. Consequently, Second Life, which is about a thousand times more complex to understand than PowerPoint, is likely to be even more slowly accepted by the academic community. I still haven’t seen a lot of faculty really adopt these sorts of environments in their teaching. I think it’s usually the more adventurous or younger faculty that would pursue something innovative. It’s not the norm, certainly. Also, a lot of this depends on the institution, on whether there is institutional support for really taking the risk to experiment with these new technologies, and how open the people involved are in making these experiences happen. Every now and then you may come across some faculty member who gets extremely excited by trying this out but that person is someone unusual. Most faculty need a lot of assistance to move into this kind of space.
4. Comparing the university classroom with the virtual classroom, which one may have better results?
I don’t know if you can really compare them in terms of one being better than the other. Again, I think it is a matter of picking the right type of delivery system for the content and the experience that you want to have with the students, and for the expectations you have formed. So, if I had to answer that quickly, I would suggest a blended approach or “hybrid learning” which is learning across different environments, from physical to web, virtual, and so on and again pushing experiences over to the appropriate environment. So I don’t think of them as one being better than the other but as one being more appropriate than the other, depending on the goals and the aims you have set.

5. An important concern is thought to be the orientation; the induction process. Some of the interviewees have mentioned that their first educational projects within virtual worlds have failed due to lack of orientation. Have you faced a similar problem? What do you do to orient your students?
Sure, I have. I think, as a remedy to that, for instance, there is a group in Second Life that is a kind of advocacy group for learning within all sorts of technology-based environments. However, the first action was taken by the New Media Consortium that had a big presence at getting back in Second Life. Thus, they created a whole orientation environment which they call “the first-hour experience”, your first hour in this new world. That was very thoughtful and it was especially geared towards students and teachers to address the problem you just mentioned. What used to happen typically in Second Life before that orientation environment occurred was that you were thrown in the middle of a “help island”, just as if you landed in the middle of a plaza with a bunch of people circling around you and that was it. The last maybe two-three years, they developed this orientation experience but they modeled it after what the New Media Consortium had done. So they tried to create a more thoughtful experience to get users oriented within the environment that they would be forced to go through essentially before they came out into the world. At least they have done that more recently.

A big part of the problem, I think, is that you’re thrown into the environment, as if you were born into this new world, having no understanding of how it works. For a lot of people it was too overwhelming, thus they soon quit. To me, having a more thoughtful orientation experience is meaningful, but that’s still not really the right answer in my mind. If institutions are going to expect faculty members to move into this kind of spaces, they need to have somebody on staff so as to help them. It’s a comforting idea to have somebody by your side, especially, if you feel a little uncomfortable with learning this new technology or maybe if you’ve never been in a 3D environment and you are a little intimidated. It’s always better to have somebody trained at the institution to help you migrate into the new space.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time make your lesson more effective and attractive?
I think it can. PowerPoint, for example, doesn’t necessarily make for a better lecture. I think it frequently makes for a worse lecture. It depends on the way this virtual tool is
used and that’s actually what it is, another tool that enables you to get at perhaps some experiences that other media are not very adept at, for instance. This is a specialized version of simulation of reality. So you can do things in 3 dimensions that you can’t do in any other kind of environment. Nevertheless, that being said, it still doesn’t necessarily mean that it’s better because its effectiveness is highly dependent on how thoughtfully it gets to be used by faculty members. I’m not a fan of technology for the sake of it. I am usually very critical of it and I always ask why the certain technology is being used.

2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?
Again it depends on how the technology is used, what kind of experiences are simulated, and how well this simulation is facilitated and organized. We’ve all had great teachers who could transform a lecture and a chock board into something pretty magical. Unless you have a really strong reason to go into a virtual space like Second Life and a very clear goal invite of why you are in there, you are better off sticking with the traditional methods. Otherwise it’s just a distraction, a novelty, something that, from the novelty perspective may make the students think of it as something cool and interesting but, unless you are doing it with clear intentions and clear goals that you can develop toward, it might not become much more than that. It might become just simply a diversion in something quite novel, instead of something that’s really substantive.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
It depends on how the virtual world is created and used but I do think that when it is well designed, it can be quite engaging. Probably one of my more successful projects with students has been working with the School of Nursing where personal nurses in teaching and learning have always understood the value of simulation, in general, since they use physical dummies and replicate doctors’ offices, hospital floors, and things like that. In fact instead of going there physically, they do almost everything in a classroom that resembles the actual type of environment where they will be administering care after graduation. They have already understood simulation in physical reality, hence getting them into an understanding of a simulation in virtual reality is quite easy. They make that leap very easily.

From the student perspective, one of the more successful projects was a role-play with the School of Nursing again where one student would pretend to be the patient and another student would pretend to be the nurse and the person who played the role of the patient would be given a medical history that would tell them what’s wrong with them. The avatar would look like an older woman or a young man for example, so the avatar also connects to that kind of medical history in some way. During the course of the interview the practice nurse would probably be able to theoretically decipher what’s wrong with the person through their health history. To facilitate this, the nursing faculty were very good about keeping the data on all this, and conducting exit surveys and the like. They did a case study on this virtual project and at the end of the program with us the students were saying that the virtual experience, especially the interview simulator, was about 95% effective for them. So, 90%-100% of the students were in favor of almost all aspects of using the virtual simulation instead of just doing a face-to-face kind of practice interview. For the most part, some of the reasons that can explain the popularity of this virtual
experience is the anonymity of the avatar and also the fact that role-playing is more possible in the virtual space mainly because somebody can play a character without carrying all the inhibitions they usually feel in real life settings. So, it was quite effective.

4. When your virtual university was hosted on a private server, do you think the fact that your students didn’t have constantly the opportunity to interact with users who do not belong to your university’s community affected negatively their immersion?

I would say yes. When Linden Labs doubled the rates for non-profit education and government from 150$ a month to 300$, which is the commercial rate, a lot of institutions couldn’t afford that, and they were off to spaces like OpenSim. That in fact split the educational community across all sorts of different worlds because there is not one place that is OpenSim. OpenSim is probably 20 or more different worlds. So, education landed in all sorts of strange places, the whole community was fractured, and that was a disaster. I still think it’s a disaster because there has not been one place, really, where educators have come together as they did in Second Life. Some people went to InWorld, others moved to Craft, etc, and you had all those different accounts and credentials. I think this prevented all the nice collaborative and shared energy that we used to have in Second Life.

Part 4 (Second Life)

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account? What is your opinion? (2nd question)

This is not an issue for us because we have already replaced it.

3. Are you concerned about Second Life’s closure?

No. I think that they have open sourced the client so now there are all sorts of different client projects. As a result, it will continue. Besides, they obviously did the whole OpenSim Grid experiment in order to figure out a reverse engineered way to do the server side of what Linden Lab did. Now, that’s what OpenSim is. It’s a full replica of almost all of what Second Life can do and there are a lot of options there so I don’t see that going away.

4. Does this possibility affect your decision to use Second Life?

Not at all. We rarely develop any projects for Second Life or OpenSim anymore. We are pretty much in other environments and we use game engines to create the content that we want. Primarily, we are working in Unity 3D and Blue Mars but we still support what we did make in Second Life and we help other faculty at our institution if they want to work in Second Life. We still keep a public island there, too. Nevertheless, we no longer develop content for Second Life or OpenSim.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)

In fact, we have already done that – we have replaced Second Life and OpenSim with Unity 3D and Blue Mars.
Part 4 (OpenSim)

OpenSim is new technology used for the development of virtual environments.

1. How stable do you expect this technology to be?
I think it depends on the grid you are on within OpenSim. Some worlds are more stable than others. I like to work with Reaction Grid and I would highly recommend anyone to work there. To me it is the most professional. Unfortunately, when Linden Labs raised the pricing, they created a vacuum that made people search for a replacement in more or less the same price they were paying for Second Life and there is a really good value in OpenSim. You can get a sim for as low as 20$ a month; however, it is usually not very stable and there are a lot of problems. So, you just have to find a good render and Reaction Grid is, in my mind, the best one. Anyway, there are so many worlds but I think that the larger OpenSim project is getting more and more advanced all the time. So, to me it’s not a problem. You just need to find a good solution provider.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
I think it’s great! There is more control; you certainly can download a world file, basically a resource file, with everything that’s there and you can install it on other grids, as well, as long as everything has clear ownership. I think it’s a good advantage for some people, whereas other people may not know how to exploit it. It just depends on your level of technology understanding.

3. OpenSim grids have the potential of “hypergridding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
Having a common login and being able to get from one world to another is really important, especially since the educational community was split between all these variations of OpenSim. Also, ideally, a common inventory would be useful so that everything in your inventory can travel from one world to another. That surely can be a double-edged sword and can cause problems as well because some worlds have their own currency system which is different and not compatible with other worlds’ currency systems. That is a complication. Additionally, with permissions on the objects you can very quickly get into some intellectual property issues. It seems that it’s a little messy but I think that’s the ideal, theoretically, like in the web where you have OpenID that allows you to log in without anybody knowing who you are, no matter what web service or software environment you are in. It would be great if there were some kind of OpenID, a kind of login notion and a common inventory that travels with you as you go through the grids.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?
No, because OpenSim comes out of Second Life which is the parent. They have open sourced the client, so OpenSim comes out of that. Yes, it’s competition in a sense, of course, but it’s the child of Second Life. I think there are a lot of educational institutions that are concerned about issues of ownership and backup and want more control over who can come into their sim. OpenSim is a great solution in their case. So, you are going to have either these people who really understand the technology deeply and maybe a
person or two who really want to create in-world or an institutional effort where there is a group of IT specialists that can help, or if you don’t want to do that yourself throughout, you can contract with one of those solution providers, like Reaction Grid, for instance, who pretty much do it all for you. So, the market is free and that gives you more choices, which is positive. There were a lot of virtual worlds other than Second Life, but a lot of these have also disappeared. There used to be quite a few virtual worlds, and they are getting less and less on the commercial side, so it is good to have some alternative on the open side.

Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?
We used to have nine full sims and we were paying 150$ for each, that is 1350$ per month in total. Now we have only four and we pay 600$ per month for all of them.

2. Who usually funds your in-world projects?
We are funded by different offices within our university. We had support from the office of the Provost at one point, and our own unit used to support one of the sims. Right now, I believe, we are supported by the office of Information Technology.

3. How affordable do you consider it?
It’s not very affordable. Whether it is worth paying for it actually depends on the purpose a virtual world needs to serve. If your goal is to join or reach the greatest possible number of people, the widest community, that is, on a certain type of sim, like a public island, you are better off being in Second Life. If it’s a classroom space that’s more closed down and you don’t like people just showing up in a secure instructional space, then OpenSim is perfectly fine. So, I think you just have to spread it around. If you want to reach the greatest amount of people, you can put your academic sim in Second Life or on a public campus island. For classroom spaces I would strongly suggest people to use OpenSim because it offers much more control.

4. Have you used the discount offered by Linden Lab to academic institutions?
Yes, we were using it in the past and we still do. We had a deal with Linden Labs according to which we were given a two-year extension to our 150$ a month per sim. That is why we are keeping as many sims as we currently have. When that’s about to expire and changes into 300$ a month per sim, we will probably reduce them to just one or two and do everything else in OpenSim.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
To me it was bizarre. Second Life has such a crazy reputation, anyway, and if you want legitimacy and serious development, you want academic institutions that are committed to that platform to remain in there. So, doubling the price in them at a time when the economy is down and there is less funding available especially for academic institutions is crazy. Not everybody left, but some people left completely, while others like us cut down quite a bit. Overall, Linden Lab’s decision sends the wrong message. To me it was a terrible mistake. I was completely against that and I was very outspoken about it at the time as well.
6. How do you intend to deal with this?
   At first when Second Life came online, it was really interesting to explore what was possible there. Once we figured that out and we worked with the environment, we were ready for the next challenge. So, one of the reasons we abandoned Second Life was just that and it coincided, I could say, with the increasing costs from Linden Labs. If we were to get back into Second Life type environments, more, in the future, we would invest in OpenSim and not Second Life so much. In fact, we will probably cut down our main islands to maybe two in Second Life and do everything else in OpenSim. That’s what we should do.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
   Creating virtual items is part of what my group does. We are the team of content creators.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
   We’ve done both. Initially, we were shelf-hosted but now a third party hosts our virtual projects. So, we pay somebody else to do it.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
   Not within OpenSim. My group creates everything there as well.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
   It’s not much. It’s about 50$ per month.

4. Who usually funds your in-world projects?
   Our institution pays for our projects within OpenSim. Sometimes it’s paid through a grant, but somehow it is through the institution.

5. How affordable do you consider it?
   OpenSim is very affordable! It’s a good value for money.

Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
   We used Second Life first, and then we decided to turn to OpenSim. Second Life’s high cost was one of the main reasons.

2. Which one of these two virtual environments do you consider more appropriate for educational use?
   I don’t think you can say that. It depends on the purposes of the project. So, if it’s something that really needs a public presence, I would look at Second Life. If it’s something that’s more closed down, like an instructional classroom, then I would look at OpenSim.
3. Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).
They are—more than fairly—comparable. At first, Second Life was ahead of OpenSim, but now OpenSim has caught up quite a bit. I guess, I have to say Second Life because it’s a commercial project and has more dedicated support. OpenSim initiative is always going to be a little bit behind because it is open source and it’s all volunteers so it takes them longer to accomplish what Second Life developers have already achieved.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?
Sure. Looking at it that way, OpenSim appears more attractive especially to an educational institution.

5. Which one of these two virtual environments offers best value for money?
In my opinion OpenSim.

6. Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities?
Yes, it did.

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**Interview 11**
Dr. Kristoffer Getchell — Infrastructure Manager at University of Bedfordshire (Ph.D. in using Virtual Worlds Second Life / OpenSim for course material delivering – University of St. Andrews, UK)

Part 1

1. Which virtual environments have you used for educational purposes?
I have used Second Life and OpenSim.

2. What were the reasons that led you to choose these virtual environments for educational issues?
One of the things that we wanted to look at was how you can present information to people. We were developing some course materials for archeology and we were looking at how we could recreate part of an archeological excavation, because there are some inherent problems regarding students’ access to excavation sites and it was important to show them some of the techniques and skills that they would need to develop. Therefore, we started looking at Second Life initially, because that was pretty much one of the most mature environments that we found. It also seemed to suit what we wanted to do quite well because we were looking to build an entire environment from scratch, and one of the fantastic things that Second Life provides you with is basically a blank campus—if you can imagine it, you can build it. But we wanted to put students into an environment that was grounded in reality so, we didn’t want to use game engines, although we did look at them and we did find they supported a lot of the things that we wanted to do. However, we wanted a sense of realism and quite often in game engines it’s difficult to get that, because things like perspective and scale don’t really map very well to the real world in a lot of cases. Second Life was great because we could create the environment that we were looking for, and it also gave us the ability to present information in a standard way. A lot
of the course materials in the archeology module would be delivered through web pages such as WebCT, Blackboard etc. In other words, we could integrate the existing resources with the virtual environment. We very quickly found that there were some limits to Second Life. That is why we decided to move to OpenSim which was essentially a functional replacement for Second Life, had no such issues, not to mention the fact that we had a significant cost benefit, as well.

3. For how long have you used these virtual environments for educational issues?
We used Second Life for about 18 months and we had an island in Second Life for 3 years. For about the first 6 months, we were basically experimenting. Then we started developing the Basilica that we were working on, which formed one of the big case studies of the work I did, and it took us about nine months to build. It took us about 1 ½ years before we started using Second Life in the classroom. At the tail end of 2006 we had the first cohort that looked at it consisted of 30 archeology students, which was a quite small group actually. In the following academic year, we used Second Life again for two semesters. In each we had about 25 to 30 students, so they weren’t huge cohorts. We started using OpenSim towards the end of the second year. Thus, in the case of the third cohort of students that we started transitioning into Second Life we were using Second Life and OpenSim simultaneously. We used OpenSim –personally I used it for two academic years– but certainly the research group I left in St. Andrews are still using OpenSim now.

4. In what academic levels have you used these virtual environments?
All of the archeology students were undergraduates, so the majority of the students that we delivered courses in Second Life for the archeology were undergraduates.

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
With the archeology students, the way the course was structured prior to the work that we did was that they would first have lecture-sessions and then two coursework exercises, the first of which was to write an excavation proposal, and the second was to write an excavation report. In other words, in the first exercise they would say “this is the excavation we are going to carry out”, and in the second one they would pretend they had carried out the excavation and then summarise the work that they did. What we were doing with these virtual environments is that we were supporting the existing delivery of the course which didn’t really change; we still had real world lectures in seated theatres, so what we basically did was to replace the course-sessions with lab-sessions. Therefore, the virtual world was used to support existing approaches to teaching. We didn’t use the virtual environment to actually deliver course materials because the students had already been lectured on the course materials before, but we did use the virtual environment to highlight in practice some of the already given theoretical material. I would say that these simulations help students to know what they need to focus on and what they don’t need to focus on from an archeological perspective, and what the virtual environment allowed us to do is actually show all that to the students in practice.
6. How many educational projects have you carried out using this alternative teaching method?
I was primarily involved as the person responsible for developing a lot of the materials for the archeology project in Second Life and also in the network simulation that my officemate Thomas Sturgeon did helping him get the information from the NS2 simulator we were using into Second Life. Moreover, he used some of the techniques that I developed, since I started my work a year before him to present information and allow students to have some form of communication with the materials. Therefore, I would say two projects.

7. How successful were these projects?
To be honest, we had mixed results. Two of the three groups with which we did the archeological project responded well, whereas one group didn’t succeed in achieving the simulation’s goal, which is a bit disappointing.

8. What are your current projects (if any)?
I don’t have any projects at the moment.

Part 2

1. What does a typical sessions/class of yours look like in Second Life’s/OpenSim’s virtual environment?
We used them both in the same way. The class generally congregated in an open-access lab in the School of Classics. First, the lecturer (the course tutor) would give a very brief introduction about what the expected outcomes of the practical session were, and the students would then log on. There was of course some technical staff available from the School of Computer Science but only in order to solve problems. Essentially, the students were prepared before they went in, they were taught what they were expected to do during the session at the beginning, they then logged on and they were given some in-world pointers as to what they needed to do. The technical staff made sure that prior to every session the world was set up and ready for them to use. In OpenSim this was quite a trivial thing to do, because obviously we just downloaded the database dump we wanted to run for that session, whereas in Second Life, there was a bit more prior preparation, but it was basically the same thing in both cases.

2. Why do you use Second Life/OpenSim in your teaching? In your opinion, what are the advantages of this teaching method?
One of the big advantages for me is the inherent interest the environment brings. It was a little bit unusual and we found that that was the motivator for the archeology students itself, because it was something they hadn’t seen before, so there was a natural level of inquisitiveness. We also found that, when you are doing a archaeological reconstruction, it is a more natural environment to operate in. To sum up, these are the two things that we consider as advantages. In choosing to use these environments, what we were actually trying to do is harness some of the intrinsic interest that games provide and see if we can use that as a way to engage learners, because usually we don’t see the same high levels of engagement with academic materials. What we were trying to find is if there is a way we can use a game in a pseudo way to deliver the materials. However, what we didn’t want to do is what edutainment does in the form of “answer these five questions right and then
you can shoot some bad guys”. On the contrary, we wanted to have a delivery that actually used and not just set the environment. To be honest, that’s what we did when we started using Second Life, but over time, instead of presenting an image of an artifact, we wanted to represent existing materials in the context of a 3D environment as a 3D object.

3. Respectively, are there any disadvantages?
Yes, there are quite a few disadvantages. The same thing that is an advantage is also a disadvantage, so you have got this element of the unknown which can pose problems. It is also not an environment where there are a lot of preexisting materials, especially if you look at OpenSim. Therefore, there is a relatively high cost associated with using the environment to start with, in terms of staffed time, to develop materials, and there is also a changing mindset that the staff that deliver these modules need to be aware of and need to embrace. From the student perspective the situation is pretty much the same, you have got a familiar environment but there is also a different mindset that the students need to go in with because they need to look at the environment differently. Instead of a place where they are just having fun, they need to appreciate that actually it’s their workspace; it could be seen a bit of fun but actually there is a serious message, as well. In other words, we need some balance between getting them engaged and just thinking it as a joke. But we found that that was quite difficult to do within the virtual world, which is why in the lab sessions we started off with “this is what we expect to come out of this lab session”. We did this during the introduction so that the students knew what to do, because the first time they started going to the 3D world, within 10 minutes they disappeared from the island we wanted them to be on. This problem of easily losing control of your class is mainly faced in Second Life. One of the good things with OpenSim is that you’ve got a walled garden environment if you want it to be that way.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
That’s a difficult question to answer because there are so many variables. From what we saw, the students were more engaged during the academic semester when we were delivering the practicals through Second Life. We may say that the quality of the reports that were written at the end of the virtual excavation project, which were the same as the reports they would have to write prior to doing the 3D environment stuff, had a better standard after the course was changed. They were more believable, possibly because we were giving the students actual real things they could answer to and say for example “I did this or that”, whereas previously they had to think of these things themselves. Therefore, it is difficult to say, but we thought it was worthwhile and certainly the Department of Archeology is still using the resources and they are still developing these resources, so clearly the academics within the subject area also believe that it was a useful thing to do.

5. Some of the interviewees have mentioned that their first educational projects within virtual worlds have failed due to lack of orientation. Have you faced a similar problem? What do you do to orient your students?
Orientation was quite an important part of getting the students familiar with the environment. We were dealing with students in the School of Classics which aren’t particularly technically savvy from the point of view of a computer scientist. Obviously, they were aware of the internet, like everyone else is, but they weren’t necessarily
familiar with the Second Life or OpenSim. Because of that, we did orientation right at the beginning. We got students into the world and we spent an hour with them during one session basically showing them how to walk around, how they can fly, open doors, communicate in the world, pick things up, interact with objects and so on. We did all that because certainly when I start using Second Life I obviously need to learn all these things. Thus, we made the assumption that the students that we would be delivering to wouldn’t have these skills by heart and so we prompted them to develop them. As it turned out, most of the students picked everything up very quickly, and within 10-15 minutes of the lab session, they were wandering around various worlds within Second Life, generally forming groups within it. Overall, we didn’t find that it was a challenge meaning that we had to orientate them, but we did feel that it was important to at least give them the opportunity, because we didn’t know what level they were at, and so we felt that it would be important not to make any assumptions as to the level of the students’ computer competence in the use of virtual worlds.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time make your lesson more effective and attractive?

Yes, I think so. If students have a level of familiarity with this kind of environment, then they can focus on the course materials that you are delivering. In one respect, obviously there is a bit of a negative aspect in that; if they know about these environments they are more likely to go off and explore areas that are outside of the area you are in control of but that’s the same as in the real world. Trying to make people come to lectures physically is something that the academics have to deal with in the real world, and so there isn’t any difference with Second Life. Although familiarity does mean that they are more likely to wander off and go to other places, I think that’s part and parcel of the environment and I think the benefit of students being familiar with the environment outweighs any negatives of familiarity.

2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?

To be honest, with the amount of views that I have had delivering courses to students within Second Life, it’s quite difficult to agree or disagree with that statement because certainly, from what we have seen, we have been delivering environments that students wouldn’t be able to access in the real world. In other words, they can’t access the environment in the real world, so it makes it a little bit different. However, in the courses that I have delivered, as the students have been identifiable as themselves, the virtual world has acted as a proxy to the real world. So, any kind of insecurities or confidence issues that have been so apparent in the real world, to a certain extent have manifested themselves in the virtual world as well, because everybody knows who each other is in real life and therefore the avatars don’t provide a sense of anonymity in particular. Moreover, because by large in the lessons that we have delivered the students have actually been physically located in the same room, again you don’t have this level of detachment. Thus, I can’t say that we have seen the students be more responsive because they have been more comforted to have you in the virtual world. What I can say is that
some students have found the material more believable and more engaging on that level because of the high level of the interactivity that is demanded from the virtual world, and in order for the students to participate they necessarily have to interact with the world to a certain extent.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

It is difficult to say whether the use of the virtual world created a better scenario, but certainly the delivery of an environment that prompted the students to think and explore was helpful. I am not convinced, however, that that was purely because it was delivered in a virtual environment. I think if we had created some kind of game, we would have been able to achieve some of the same objectives. Obviously from a realism point of view, the virtual world was far better than a series of web pages. So, in that sense I think the way we changed the course definitely had some positives but I’m not entirely sure as to how many of those can be attributed to the fact that we were using a virtual environment.

4. What do you think about the fact that the wide network of interactions, contrary to Second Life, may not apply within a private hosted OpenSim server?

I think it can have an impact. One of the key parts of the virtual environment that is very nice or very beneficial to my mind is the social aspect. Obviously in Second Life you have a world full of people that know about commercial products. So, the chance of people connecting to it as well as the diversity of people connecting to it is much higher. Whereas our privately hosted island was part of a grid, but it was a much smaller grid, much smaller kind of scope and scale and also much smaller marketing budget. All that means necessarily that you are going to end up with all institutional users because of some of the log on policies too—you had to be a member of the institution that was hosting an island on the grid to be able to connect. So, there was definitely a negative downside to the OpenSim approach in that the students didn’t get the diversity of people that they would have got in Second Life. But given some of the people in Second Life it is not necessarily a bad thing all the time!

Part 4 (Second Life)

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account?

Yes, we did consider persistence and that was something that we knew we had to be aware of, but the long term objective for us was always to use Second Life as an intermediate step towards using some kind of open source like OpenSim Grid. Ultimately, that’s what happened following my departure from St. Andrews, and they have now got a much bigger presence using OpenSim that they have had in Second Life.

2. What is your opinion?

When we were using Second Life, my concern actually was never that Second Life was going to close. My concern was that we were spending a lot of time developing a lot of the proprietary resources that we couldn’t use elsewhere. You spend all that time, but if institutions stop using them then you are out of luck. Nevertheless, as long as universities are paying for their virtual environments we will keep having access to them.
3. Are you concerned about Second Life’s closure?
We weren’t particularly concerned that Second Life was going to close, I was more aware that the university would decide that paying the fees didn’t offer value for money. Although we weren’t so concerned necessarily that Linden Lab would disappear, we were concerned, however, that we may end up homeless because we haven’t paid for our island to be renewed, and so in that sense we were looking at other things. From the outset we knew that Second Life wasn’t going to be a long term thing and we thought we would be in Second Life maybe for 18 months or 2 years, but the open source alternatives matured and as it turned out we were in Second Life for about 3 ½ years. I think there might still be a very small presence but it is not the focus of development.

4. Does this possibility affect your decision to use Second Life?
Yes, if I thought Second Life was going to close, I wouldn’t invest all the time building an environment up in it because it is obviously a waste of time. But the bigger motivator from my perspective is the fact that there are open source, i.e. free or lower cost, alternatives that provide you with the same level of functionality like ReactionGrid, not to mention that there are also lots of other open grid federations popping up that you can link in to. So, unless I have a specific need to connect to a massive global environment like the one Second Life provides, then I will probably look to use one of the smaller open source grids.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
Certainly! OpenSim Grid is one of them. There is an archipelago of islands that St. Andrews is creating with some other Scottish universities that are part of the SISCA network. Thus, I would look to join one of these preexisting solutions, mainly academic ones to be fair but the open source community are driving a lot of them as well. One such solution is the grids that give you the same kind of functionality of being able to explore a wider environment than Second Life does.

Part 4 (OpenSim)
OpenSim is new technology used for the development of virtual environments.
1. How stable do you expect this technology to be?
When I started using it, it was somewhat inadequate. We could build buildings using prims but the scripting was rather poor and we also had issues in anything that we would bring in Second Life; obviously, we couldn’t transfer much to OpenSim. I knew that the software was written in Mono and the project was quite young at that point, but it delivered a functional equivalent that provided us with what we needed. We knew, however, that there were significant limitations, and so we were aware that these limitations existed and we basically worked with them in mind. Therefore, we used the hybrid of Second Life for some of the collaborative exploratory work that all of the groups needed to do together, but then we used OpenSim when we wanted the groups to work independently.
2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?

Extremely useful. That was one of the most important reasons that we used OpenSim for. Because we could build the same start environment, we could then clone that environment across multiple islands that weren’t connected in any way they just happened to be running on the same server, but they could have easily be running on different servers. By having this ability to clone our settings and our environment, it allowed us to basically provide fixed scenarios to students. What was initially quite an arduous task in Second Life turned into a set of scripts that we would run routinely before and after each session, and that was massively time-saving from our perspective. To sum up, that was a key motivator for using OpenSim, other than the ability to have these multiple disconnected worlds.

3. OpenSim grids have the potential of “hypergridding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?

It is useful. We have used hypergridding, in a way, when we connected our OpenSim islands into a wider federation and so we moved from a server that we were controlling to a server of the University of Edinburgh was controlling, to servers that other institutions were controlling, but we haven’t really focused on hypergridding as such. The only other time we have done something similar was when we were setting up the multiple simultaneous islands and we would copy from the database the state across multiple instantiations.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?

No, not really. OpenSim is a software product, so it is not a service; it can be packaged as a service, but it is developed by the open source community, because there is a strong desire presently due to Second Life’s success to develop a functional equivalent. So, in that sense, all the time Second Life is in the limelight, and is developing that way. I think all that is good for OpenSim because it will encourage the open source community to continue to develop the software.

Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?

I think we used to pay about 1700$ a year for Second Life and we continued doing that for 3-4 years, but then the cost went up to about 3,000$. I believe the reason that the cost changed was because they took away some of the educational discount they used to provided.

2. Who usually funds your in-world projects?

That was generally funded through research grants. We would apply for a grant to develop a new bit of functionality in Second Life and we would get some money for that. Overall, I would say that we developed our environment piece by piece. The first year the School of Computer Science just funded it so as to see what it’s like, the second year it was funded because Archeology was delivering classes in there, the third year was funded by the Central University because they got a bit of marketing involved, and the fourth
year it was funded by the Computer Science Department again and that was the year, as far as I’m aware, when we came to an end with that.

3. How affordable do you consider it?
For an institution I think it is reasonably affordable. Paying 3000$ a year for a university that is charging students £10.000 fees makes sense as long as you can justify it. You can do the math and check it. It is not a huge cost, but I don’t really think it offers good value for money, because there are lots of open source alternatives that for some investment in hardware you can run almost for free.

4. Have you used the discount offered by Linden Lab to academic institutions? If yes, how do you consider the decision of Linden Lab to discontinue this offer? (5th question)
Yes and that was one of the key motivators in St. Andrews getting rid of their island. I think they have obviously made it for a business reason and that’s fair enough, but from our perspective when I was in St. Andrews, the non-discounted cost did not offer sufficient value for money for us to continue with the environment. Moreover, given that the competition is certainly getting better and stronger, I also think Second Life should be looking to lower their costs, because certainly, at this point of time, what they offer—an annual license fee basis we could say—does not offer good value for money.

6. How do you intend to deal with this?
In St. Andrews they don’t use Second Life now. People would still log into Second Life because they have got islands and spaces and areas there, but the focuses are shifted pretty much entirely towards OpenSim.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, but we have bought some items for more or less £30 which is not a huge amount of money. So, yes, we spent small amounts to buy things like plants which are easier to buy than to find the textures and map them, but no, we haven’t paid for any personnel, like a consultant for example, to come in and build these.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
By the university itself.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
We haven’t paid a consultant but we have employed part time temporary staff to do things in the virtual world such as build buildings or for other plans that we have laid out. We have employed people to spread the word in a way, as we did when I was in St. Andrews, but we didn’t employ somebody to come in and be in charge of the project management and build from scratch. We knew what we wanted to do and so basically we hired a pair of hands to make that process quicker.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
That is extremely difficult to quantify because the server already existed. We didn’t build a server to specifically host OpenSim. We had the network infrastructure in place so,
again we didn’t incur any direct costs but since we had a server plugged in using electricity that meant an additional cooling or heating cost. There was obviously the server cost as well, but when I was in St. Andrews we used old hardware that had been used for something else and it was no longer required. Therefore, in that sense it was a fairly tight budget. In terms of direct cost there was none, but in terms of indirect cost we need to take into account whatever the university paid for the heating and power. Nevertheless, I would assert that it is probably significantly less than the cost of Second Life. The same applies to the cost that doesn’t have to do just with money but also with the effort we have put in to build all these things from scratch. More specifically, there was a lot of effort but then we also spent that effort in Second Life because we built most of our resources in Second Life anyway, which of course is very difficult. Considering that at the end of the day academics acknowledge that it is their responsibility to develop educational materials, we looked at the development of the OpenSim environment as part and parcel of that academics’ expectation. In other words, it wasn’t a direct case of “we need to do this or we need to do that”, it was rather a case where we got all these materials that we needed to develop. We did employ staff to work on the projects and the project budgets, and over the course of 2 or 3 years we probably spent £10.000–£15.000 on part-time ad-hoc hourly-paid staff. But then we put in big proposals for that money to be spent and that is why we were expecting to employ somebody to develop those learning materials.

4. Who usually funds your in-world projects?
When I was in St. Andrews there was an internal development part of the university called Saltire which is a kind of excellence and teaching and learning group within the university. They funded quite a few of the projects. My Ph.D. also funded some of that work since it was funded by the department and thus I had a budget to spend on some of my Ph.D. stuff. In addition, the University centrally funded some of the later work with the reconstruction of St. Andrews Cathedral, not to mention historic Scotland which funded parts of it too. Finally, the Higher Education academy funded some, as well. Overall, it was a mixture of internal seed funding and external funding. As you can see there were a few sources, and generally the amount of money we would get totaled to £4.000–£6.000 for different things each time such as the purchase of hardware or workstations.

5. How affordable do you consider it?
If you compare it to how much the license of Blackboard costs, running an OpenSim island is pretty reasonably priced, so I think it is very affordable. But you have to have expertise; if you don’t have in-house expertise then it could very quickly become quite expensive.

Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
When we were looking for an environment where we could simulate archeological excavation sights, we initially looked at Second Life because that was one of the most mature environments that we found and it also seemed to suit what we wanted to do quite well. Nevertheless, we very quickly found that there were some limits to Second Life. We
wanted to have our student groups working simultaneously, isolated, without co-existing in the same environment and without bumping into each other, but we couldn’t achieve that in Second Life. OpenSim enabled us to do that, i.e. to set up separate instances. So, group 1 would log into instance 1, group 2 into instance 2 and so on. Moreover, it allowed us, as a clone of Second Life, to essentially use the same client. In other words, the environment on the machine was the same, the same software. The back end, obviously, is functionally a replica of a lot of what Second Life does now; even when we started using it, it was a bit inadequate but allowed us the ability to have these multiple instances of the same environment. We could have simultaneous yet isolated exploration of the environments that we were creating by different student groups and there was no possibility that anyone from student group 1 could cross and see what student group 2 was doing. From that perspective, it actually suited the teaching objectives that we had set out. Given that we were developing course materials, the other fantastic thing that OpenSim did and Second Life wasn’t good at, was that it allowed us to save the state of the world because it was all just powered by a MySQL database. We could save the database site, dump it down as a SQL dump and then as a backup we had our course materials which can then be archived. Of course, as an educational organization you are obviously investing time building these resources. In Second Life, as it was then, because they didn’t like you pulling things in or out of the environment, there weren’t very many import/export filters. There were some hacks that you could use to do these things but they weren’t very good. Overall, because of these issues that Second Life had, we moved towards OpenSim, not to mention the significant cost benefit to OpenSim, as well. As I was working in a computing department, we had certain equipment available to use and so, there was no capital cost involved. That’s why we moved to OpenSim, because essentially it is a functional replacement for Second Life. It allows you to build an unending world by joining into grids. For example, in St. Andrews we joined up to grids with Edinburgh, Bristol, Bath and some other universities, so we could build this kind of “metaverse”. But it also allowed us to control our resources by importing and exporting them, that is we could version control them. If we wanted to roll back to a previous version, we just installed the database and the previous version was there. However, the key point for us was the idea of instances mentioned before.

2. Which one of these two virtual environments do you consider more appropriate for educational use?

Neither. I think they are both similarly useful because we used each of them to serve different requirements. Second Life was good when you wanted to send students off to search the world for different elements. Conversely, Second Life was also quite poor when we wanted to direct students towards a certain area and get them to focus and work on a certain thing. That was what OpenSim was exceptionally good at because you could build a dedicated isolated island and have students on there. If I was forced to choose just one, I would say that OpenSim would be my choice because it is a hybrid; you can have this isolated little island on its own or you can have a larger or wider grid where students can roam and walk freely. Nevertheless, when I was looking at Second Life first its grid was far more mature than anything from OpenSim. So, Second Life tipped the balance but that was purely a numbers thing, i.e. it had to do with numbers only. As soon as you end up with a certain amount of people on the OpenSim type grids, then you are going to
get to a tipping point when all of a sudden there is nothing to differentiate the two
technologies or distinct software from.

3. Based on your experience, in which virtual environment were the educational activities
more effective and attractive? (Please indicate only one virtual environment).

We used OpenSim more widely than Second Life and the reason we did that was because
we had more control of the environment, and we also found it easier to monitor what
students should be doing. Therefore, from a delivery of materials perspective, I think
OpenSim was probably a better environment but it’s a close thing, I can’t say that
OpenSim was significantly better than Second Life.

4. Since OpenSim technology is recent and promising, it seems that it can provide long
term persistence in comparison to other virtual environments or Second Life. Was this the
reason which led you to utilize this technology instead of Second Life?
No, that was just a happy byproduct of our decision. The main decision was in fact that
we wanted to create this environment where we could isolate our students in a familiar
3D environment.

5. Which one of these two virtual environments offers best value for money?
If you have the expertise to maintain an OpenSim installation then undoubtedly it is
OpenSim because you can buy a server, and for the lifetime of that server you don’t
spend any money developing your environment, it’s a longer-term cost. Certainly it’s a
relatively high cost, maybe £2,000-£3,000 up-front, but for academic institutions that
already have a network infrastructure and the kind of server environments needed, then
little mental effort is required really. If such an institution can afford the £2,000 or £4,000
up-front cost for a small OpenSim server and has the expertise to manage the software,
then within two years of the Second Life one they will have pretty much paid for the
OpenSim server that might last six. In that sense, my answer is once again OpenSim.

6. Did the high cost of Second Life lead you to choose the OpenSim technology for your
educational activities?
It didn’t fully force us to, but it was a significant motivator. We were already using
OpenSim for other things and, seeing how OpenSim was developing, there were two
things that played off against each other. OpenSim was becoming more desirable because
it was expanding, it was growing, and the software was being developed to support stuff
that Second Life wouldn’t. So, on one hand we had this “pulling” towards OpenSim, and
on the other hand we also had Second Life raising their prices pushing us in a way
towards OpenSim. Thus, the pricing itself didn’t make us leave. If OpenSim had been
rubbish, hadn’t been functionally equivalent and hadn’t had a lot of the grid
functionalities that we started to see, then we wouldn’t have given up our Second Life
island, because we would still have needed that kind of a collaborative social aspect that
Second Life brings. But because OpenSim was developing in all of these areas, it was
obvious that a migration would be beneficial. Also, given the Second Life costs it seemed
as though Linden Lab were pushing us towards the open source pathway as well,
emphasizing and highlighting the benefits of moving. So, indeed the high cost of Second
Life played a major part in us moving.
Interview 12
Mrs. Amrei Groß — Dep. of Media and Educational Technology (Digital media), University of Augsburg, DE

Part 1

1. Which virtual environments have you used for educational purposes?
We have used Second Life and OpenSim.

2. What were the reasons that led you to choose these virtual environments for educational issues?
Well, we chose Second Life because everyone was working within Second Life at that time, but we realised quite quickly that we couldn’t afford to pay the land lease in Second Life because it was several hundred euros per year. So, we chose to use OpenSim on a server of our own where we could have as much land as we wanted without the cost of Second Life.

3. For how long have you used these virtual environments for educational issues?
We started using Second Life in 2010 and have been using OpenSim since 2011.

4. In what academic levels have you used these virtual environments?
It was with bachelor and master students of media and communications.

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
Well, we are teaching within OpenSim and Second Life, but we do let the students become teachers themselves. They are allowed to create their own virtual learning environments within the virtual world in order to teach others.

6. How many educational projects have you carried out using this alternative teaching method?
We’ve had four courses within Second Life or OpenSim and have created about fifteen different teaching projects.

7. How successful were these projects?
I think they were very successful because we were working with students who had never ever created within virtual worlds before. So, we taught them how to do so within one semester and they created projects of their own that are absolutely amazing. We have got a virtual space station within OpenSim that is absolutely great and a large project done by students who had never even created in virtual worlds before. They didn’t know how to build, they didn’t know how to script but they learned how to do so within one semester.

8. What are your current projects (if any)?
We have five projects running at the moment. One of them is the space station; we also have virtual first aid training, a driving school, a disaster training site, and finally we have Monet’s garden where visitors can learn about this famous painter.
Part 2

1. What does a typical lesson of yours look like in Second Life's/OpenSim's virtual environment?
We start teaching the students how to script and how to build within Second Life or OpenSim and afterwards they are allowed to work on the projects on their own. So, a typical lesson, a typical class consists of the students working on the project and the tutor or professor being online supervising and supporting the students if there are any questions but, on the whole, they work quite on their own.

2. Why do you use Second Life/OpenSim in your teaching? In your opinion what are the advantages of this teaching method?
I think the main advantages are that the students are allowed to become teachers themselves, that they can create learning environments on their own and that they have to think about how to best teach others about things they know.

3. Respectively, are there any disadvantages?
Yes, there are. First of all it is the cost of Second Life land –we couldn’t afford it. In OpenSim there is a small disadvantage that it is still in alpha stage, I think, which means there are certain bugs, certain problems that we got around though, thus it is working quite well for us now.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
I think both the university classroom and the virtual classroom may have very good results depending on what you want to achieve. We are working to let the students become teachers, let the students become creators of learning environments and I think this is something you can’t achieve within a real university classroom.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?
We have never had any problems with orientation, I think. We are teaching media and communications, and the students are quite interested in digital and social media. Besides, they have worked with virtual worlds before –not as creators but as users, thus orientation is not an issue for us.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
Well, I think so. We have had students staying within the virtual world even after the end of the lesson and I had to say, “okay, I have to go now, you can continue”; nonetheless, they didn’t want to log out. They were working on the project they had created –an amazing project– spending far more time than we had them spend.

2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?
Yes, absolutely.
3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
   I think so and this becomes apparent by the fact that there are always many students taking part in the virtual world lessons. We have had about twenty to thirty students signing up for the virtual world classrooms, so we even had to organise two seminars within one semester because there were so many applications.

4. Do your students interact with users outside your university community and if yes, how does this affect their immersion?
   There are other users within our virtual world. It is hosted by a private organization named 3D Grid that’s working with other universities as well. So, there are other persons, other users walking around the virtual world. There are users of former classes using the virtual world, teachers and we have something called “arbeitskreis e-Learning” in Germany (“e-Learning working group” in English) where teachers, and educators of universities, schools, and everyone interested in virtual worlds meets once a month to discuss new technologies and new projects within virtual worlds and they use our region as well sometimes.

Part 4 (Second Life)

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account?
   We took this issue into account, hence we moved to OpenSim in 2011. We haven’t been using Second Life for seminars since then and with OpenSim, I think, we are quite independent. If Linden Lab chooses to close Second Life, we will simply continue with OpenSim.

2. What is your opinion?
   Well, since we are not using Second Life any more, it wouldn’t affect us if it closed down.

3. Are you concerned about Second Life’s closure?
   No, since we are concentrating on working within OpenSim.

4. Does this possibility affect your decision to use Second Life?
   No, it isn’t. We haven’t been using Second Life due to the high land lease rates for three semesters by now.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
   We have already done it with OpenSim.

Part 4 (OpenSim)

OpenSim is new technology used for the development of virtual environments.

1. How stable do you expect this technology to be?
   Well, it is quite stable right now. We have had a few issues and a few bugs but this has never affected the stability.
2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?

It is absolutely useful. We are doing backups every 24 hours and we really need those backups. In Second Life, if an inexperienced user creates a script that doesn’t work and that would cause the client/viewer to crash – the script simply doesn’t work because Second Life blocks the script. OpenSim doesn’t do this. We have had such a case when a student created a floating text with too many characters. Every time we went to the entrance of the region the script was running on, the viewer was crashing. So, we couldn’t get into the region any more. Unfortunately, there was absolutely no possibility to fix this but to use the backup. So, backups are absolutely important if you are working with OpenSim because it is still in its infancy and there are some issues that might ruin the work of the whole semester.

3. OpenSim grids have the potential of “hypergridding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?

I think it is quite useful. We are using hypergridding and we are having a hypergrid portal on our region to allow students to visit other grids and see what other institutions are working on. I consider it quite an inspiration for them to see what you can do, what you could do, what is possible to do.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?

I don’t think so. OpenSim is quite user friendly and even inexperienced users can create content and this is something that other virtual worlds don’t offer. It is easy within Second Life, it is easy within OpenSim, but difficult within something like Blue Mars. It is not easy for an educational environment to allow students to create content and I think this motivates students of media and communications the most, to be able to create content themselves.

Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?

I am not aware of the monthly cost but we were paying about 800€ a year for our leased island.

2. Who usually funds your in-world projects?

The university.

3. How affordable do you consider it?

Well, it wasn’t affordable at all because we had about 1000€ a year to spend and we had to devote almost 800€ to Second Life only – so we couldn’t afford it.

4. Have you used the discount offered by Linden Lab to academic institutions? If yes, how do you consider the decision of Linden Lab to discontinue this offer? (5th question)

Yes, we have. I think it makes it even more difficult for universities and academic institutions to work within Second Life because there is not much money to spend on virtual worlds within institutions, so if they have to pay even more, they are likely to be more reluctant to use Second Life.
6. How do you intend to deal with this?
We have moved from Second Life to OpenSim.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No we haven’t. We created all of our virtual items ourselves.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
It is hosted by a provider since our university couldn’t make any servers available for our project because, in the beginning, they thought, “well, they are trying something else now and tomorrow there is going to be a different project” so, we chose to use a provider rather than our own servers.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, we haven’t.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
At the moment we don’t have to pay at all for using this service because an individual chose to sponsor us which is absolutely great! However, we might have to pay for it in the future because it is about 50€ a month. Right now, though, we don’t have to pay for it.

4. Who usually funds your in-world projects?
At the moment we have a sponsor who pays for it. In the future, if we don’t have the sponsor any more, the university will pay the monthly fee for us.

5. How affordable do you consider it?
I think we can afford this because it is far cheaper than the 800€ we spent on Second Life before.

Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
We had initially used Second Life and then we decided to turn to OpenSim. The main reason was the cost but we also wanted to try out this new environment because nobody was really working productively with OpenSim at that point and we thought we would use it for some pilot work.

2. Which one of these two virtual environments do you consider more appropriate for educational use?
I think they are both fine for educational use. In Second Life though, I think it is easier for students to create content because Second Life has a build-in back up, so if students create scripts with bugs or something that just can’t work, Second Life blocks these scripts and nothing goes wrong. In OpenSim, the whole region crashes, and you have a lot of work to do in order to get it back up and running again. As a result, I think it is easier but far more expensive to be working within Second Life.
3. Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).
I think within OpenSim because in Second Life we had about 2000 prims for our students to work with and this was quite a limitation for them. In OpenSim, on the other hand, we have got a nearly unlimited amount of prims because we can just create new regions as we need them and we have got up to 30,000 per each so our students have far more possibilities to create content right now.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?
Well, I don’t think so. I think we wanted to try out OpenSim to see what our possibilities were and we needed to save money. Consequently, since we couldn’t afford Second Life, we were forced to find something new and we wanted to try it out.

5. Which one of these two virtual environments offers best value for money?
I think it is OpenSim, absolutely, because we would have to spend 50€ if we had to pay for it per month right now and we do have an unlimited amount of regions. We can create as many regions as we want to and I think this is the best value for money OpenSim can offer.

6. Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities?
Yes, absolutely.

Interview 13
Dr. Ning Gu — School of Architecture and Built Environment (Architecture), University of Newcastle, AU

Part 1

1. Which virtual environments have you used for educational purposes?
I have used Second Life and Active Worlds.

2. What were the reasons that led you to choose the virtual environment of Second Life for educational issues?
I think it came up as a natural process. We started using Active Worlds a little bit earlier than Second Life. Eventually, when we tried Second Life out, it appeared to have better graphic quality and we liked that. However, it is not perfect. In Active Worlds, for instance, you can actually own the server, so you can do a lot more things than in Second Life.

3. For how long have you used Second Life for educational issues?
I have used Second Life for about 6-7 years.

4. In what academic levels have you used this virtual environment?
I have used it both with undergraduates and postgraduates.
5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
   It is rather a blended learning approach. So, both face-to-face classes and virtual meetings accommodate my courses.

6. How many educational projects have you carried out using this alternative teaching method?
   I have taught at least 3 courses in that particular platform, over the last 6-7 years.

7. How successful were these projects?
   We have reached some of our expectations, but there have also been a lot of problems. For instance, one of the main issues encountered is that students are not familiar with the idea of working within a virtual setting. It is a novel experience for them, thus they need time to adjust and find a way to overcome the difficulties that arise in a virtual learning environment. For example, the communication methods employed in a virtual space are quite different from the ones students are accustomed to in real life settings. Also, in a collaborative setting the learners are coming from different locations, as a result there is difficulty in regards with collaboration because of the cultural issues that occur. These are the main problems we have come across.

8. What are your current projects (if any)?
   At the moment, I am not running any. We decided to use commercial CED (Cooperative Education) tools that enable collaborative projects instead of using virtual environments.

Part 2

1. What does a typical class of yours look like in Second Life’s virtual environment?
   For our classes we simply use Second Life as a tool for modeling. So, we still are in a laboratory environment, and the students actually manage to see the teaching staff in a face-to-face setting. We also lecture in-world. We get into Second Life, typically, when the students have to do a presentation, show case studies and do similar things so it is more or less like a group chatting situation.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
   There were two main reasons that led us to use Second Life. We were teaching a particular topic on designing virtual architecture and Second Life is typically a technical platform that facilitates virtual architecture. The second reason that we were using Second Life is that our courses focus on international collaboration and collaborative skills and Second Life enabled us to meet these particular objectives.

3. Respectively, are there any disadvantages?
   Students find it difficult both to communicate with each other in an online setting and to carry out group projects. I don’t know if this drawback applies only to Second Life but it’s definitely a weakness of online educational group projects worldwide.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
   It depends on the task you do. For instance, if your activities are based on international collaboration, then these can only be pursued in the virtual classroom. The university
classroom cannot support them. On the other hand, if you want to teach a technical exercise, I think the university classroom is preferable.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?

In the very beginning, when the students are not that familiar with online environments, you do need to induct them. Six or seven years ago, when we initially used Second Life, we actually organised a whole virtual online communication, so that the students could learn what they can do and what they shouldn’t do in a virtual environment. Also, you may be allowed to do things in a virtual environment that may be unacceptable in a virtual learning environment. So, you certainly have to induct them into the virtual world. Besides, if you are using Second Life not only as a communication tool but also as a design tool, then you need to teach them technical skills as well. There are a lot of online tutorials depending on what the focus of your course is.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time make your lesson more effective and attractive?
Certainly it will but nowadays there are plenty of other social spaces that they can use for socializing and communicating such as Facebook or Twitter so eventually they probably just use Second Life purely as a learning tool in the context of our university course.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?
We were not mainly using those environments for simulating laboratory procedures or any technical processes. So, I don’t think the students have experienced that.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
This is just my personal observation because we haven’t conducted any relevant survey to figure that out so according to my experience, they enjoy the university classroom more.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account?
Well, we have always thought that there are other alternatives.

2. What is your opinion?
I personally believe that one shouldn’t concentrate all their attention on one particular platform. Moreover, we mainly use it for its design tools unlike some institutes which develop a whole virtual campus in there, thus putting a lot of effort into that in-world project. I think for them this might be a considerable concern.

3. Are you concerned about Second Life’s closure?
Not really.
4. Does this possibility affect your decision to use Second Life?
Well, definitely if you are about to start a course and you realize that the tools you intended to make use of are to be discontinued, then it’s probably not a really good idea to keep considering their potential use any further.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
At the moment this issue is under discussion but in the future if we decide to run courses with the use of a virtual learning environment, then, we haven’t reached a conclusion yet, but we will probably switch to OpenSim.

Part 5
1. What is the monthly cost of using this virtual world?
I don’t quite remember the exact cost. We have agreed on paying the fees that are intended for universities and we renew this deal every year. So, I think you will probably find another price on the website because that’s the university rate that we pay.

2. Who usually funds your in-world projects?
The university.

3. How affordable do you consider it?
I think it is. If I remember well, it is only a few thousand dollars per year.

4. Have you used the discount offered by Linden Lab to academic institutions?
Yes, we have used the discount.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
To be honest, I wasn’t aware of this.

6. How do you intend to deal with this?
I think I will probably switch to OpenSim.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No. I think that sometimes I got help from my own students, but I have never paid any professionals.

Interview 14
Dr. Stylianos Hatzipanagos — Head of e-Learning (academic development unit), King’s College London, UK

Part 1
1. Which virtual environments have you used for educational purposes?
I have used Second Life, Open Wonderland, and I have also “played” with OpenSim a bit.

2. What were the reasons that led you to choose these virtual environments for educational issues?
One basic reason was that there was a European project called MUVEnation, for which we got funding back in 2007 and it concerned interactions encountered in virtual worlds.
So, my involvement with virtual worlds has been project-based. An additional reason for using virtual worlds in the context of King’s College London was that there was an internal project funded by the college, aiming to investigate the feasibility of using OpenWonderland for teaching in a multidisciplinary context. So, it is a collaboration from different schools and disciplines and this work is still in progress.

3. For how long have you used Second Life for educational issues?
I have used it since 2006 when we first started experimenting with it. However, we drifted away from Second Life because of an ideological reason, the highly commercialised aspect of this particular virtual environment, that we did not quite approve of. So, the widespread use of open source courseware urged us to explore other environments like Open Wonderland which was free to use and would also offer us the opportunity to benefit from the open community of developers it’s based on. Besides, because we didn’t have local expertise in terms of technical background, we wanted to investigate whether we could use the solution on the cloud. As a result, we ended up distancing ourselves from Second Life because, despite the fact that there were quite a lot of good projects in Second Life, we didn’t believe that the ethos of Second Life, its commercial aspect, in other words, was suitable for the purposes of higher education. In addition, we were very excited about the open source aspect of other environments like Open Wonderland. Furthermore, we wanted to explore the feasibility of running an instantiation of a virtual world in a cloud-based solution. That is the area we are exploring now.

4. In what academic level(s) have you used Second Life?
We used it with postgraduate students. However, it was an interesting set-up given that in the context of the MUVEnation project we were involved in, our target audience was teachers in primary and secondary education whose goal was motivating their students through the acquisition of virtual world skills. So, the immediate target audience was postgraduates studying to become teachers – they were doing teacher training. However, the indirect target audience was pupils in primary and secondary education, who would be involved with these teachers.

5. Are you using the virtual environment of Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
Our overall purpose was to support in-class teaching. However, we didn’t collect data from the MUVEnation project about the overall embedding of Second Life in the classroom. Our data were just drawn from the online virtual environment.

6. How many educational projects have you carried out using this alternative teaching method?
I was in the project team that was in charge of conducting a few project based activities based locally in King’s College. However, the main project I was involved in was this big European project called MUVEnation.

7. How successful was this project?
I think it was very successful because, methodologically speaking, it helped us to test and come up with a design patterns methodology. So, we encouraged the teachers who were involved to establish, via the virtual world, scenarios and case studies and come up with generalizations about particular problems in their practice. Consequently, a list of
scenarios in regards to problematic areas was composed that people could address using virtual worlds.

8. What are your current projects (if any)?
I don’t have any because we are a bit disillusioned about the commercial aspect of Second Life and also the multiple interference people get within its context hence we moved to an open source environment like Open Wonderland. In my view, a quite significant trend has occurred lately. I mean that quite a few people in higher education, at least in the UK, are moving away from commercial environments like Second Life towards open solutions like OpenSim and Open Wonderland.

Part 2

1. What does a typical class or session of yours look like in Second Life’s virtual environment?
In our big Second Life project there were people from all over the world that were trainee teachers or active teachers using the virtual world primarily in order to acquire skills related to Second Life since that was the virtual space they were using at the time to acquire skills that would help them to motivate their students in the context of primary or secondary education.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
I think a major advantage is that you can link up with people from different countries and thus different cultures. So, the aspect of intercultural learning is reinforced in Second Life. This, of course, is dependent on the particular situation. Another advantage is that it enables you to do things that would be impossible to do otherwise. For instance, you can allow people to simulate certain behaviours that would be impossible in a real face-to-face environment. Also, it encourages a kind of communication that is sometimes computer-mediated and is much stronger and much more robust because people are using their avatars to express their identity. Moreover, the level of computer-mediated communication is at times higher than the level of communication people would engage in within a face-to-face context.

3. Respectively, are there any disadvantages?
I think the major disadvantage of Second Life is digital literacies. It takes quite a lot of significant effort for people to acquire the skills and competences they need in order to use Second Life effectively. So, drawing from our experience with the project, people spent quite a significant amount of time learning new skills and new competences in order to be able to manipulate their avatar and do things in Second Life. This is quite often a problem with people that don’t know much about computers or their computer skills are quite superficial. As a matter of fact, an important conceptual leap is required of these people. Not only do they have to acquire computer skills in order to access the environments but they also need to get the kind of skills necessary for performing actions within Second Life. Especially for teachers this is even more significant and tougher.
4. Comparing the university classroom with the virtual classroom, which one may have better results?
I am not really sure that an exclusively in-world class would be 100% effective. If I had the choice, I would probably prefer a combination of face-to-face and in-world activities. In the beginning, a face-to-face context would allow me to induct my students, show them the affordances of the virtual world, and then send them away to engage in tasks in the virtual world. I realize that in some contexts like in distance learning this is not possible. So, quite often you have to rely on the kind of training induction can do in the online environment and then run the activity. Ideally it pays off when you have your students in a computer lab, familiarizing them with the basics of a virtual environment before assigning a task to them within it.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?
I think there are two things that should be taken into account at this point. The first one is induction. Good induction and good familiarization with the affordances of the environment is of decisive importance. Being aware of what an environment can do or can’t do is an important issue and then another factor of vital importance is what people call “learning design”, that is designing activities that are very clear and easy to understand in the sense that their outcome has been well defined. Determining in advance the objectives students are supposed to meet, the duration of the learning tasks, whether these will be open-ended or exploratory and the like is essential. Educators need to be very clear and prescriptive about what they want the students to achieve within the virtual space, helping them instead of just letting them totally on their own. There is an element of moderation in the virtual world where the teacher, when the students do a task on their own, steps back but also keeps a watchful eye over them while they are trying to complete the task, intervening only when this is necessary. So, it is the same as with any other teaching activity in online environments. In my view you need to have some moderating activity in every online environment and this applies to virtual worlds as well.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time make your lesson more effective and attractive?
It is a difficult question. Our experience has shown that frequent users, who employ social software applications including virtual worlds like Second Life in their private lives, are quite often reluctant to use such kind of environments for learning purposes. So, that is definitely a point worth reflecting upon. I can see the advantage because if people are familiar with Second Life, for instance, they will not probably need much help in case you ask them to use it for a learning purpose. Nevertheless, I think, a secret of the success in my view is managing to separate the private use altogether from the educational use and reassure them that there is no synergy, no overlap between these two. It would be a good idea to ease their anxieties letting them know that what they do in a private setting does not interfere nor has any implications for the educational activities they do in a learning set-up. In fact that is another reason we preferred Open Wonderland because it is used predominately for educational purposes rather than for personal gratification. We
actually moved away from Second Life because we wanted a virtual world which would be separated from what people did in their personal lives.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?
I think so because the students were exploring areas in the virtual world that were different from the ones in the real life classroom. There was no clear overlap between what they were doing in the face-to-face setting and the virtual world. However, the virtual world very nicely complemented or had the potential to complement what they were doing in the real life classroom.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
I think that they did but in the context of MUVEnation, for instance, the people that we experimented with during the project were not people that were converted meaning that they were already users of virtual worlds. So, they were enthusiasts of virtual worlds. It is a different situation when you try it out with a group of students that don’t know much about virtual worlds or, even, whose digital literacy is sometimes questionable. I think, overall, people enjoyed the activities in the virtual world. Nonetheless, it is up to the educators to guide this attitude of students by setting activities with clear outcomes, activities that are clearly designed and open-ended in a nice way, and provide students with very clear guidance about what they will be achieving. Bear in mind that it is very easy to get lost in a virtual world with ill-defined tasks where people just wander around without knowing exactly what to do and also where there are communication problems sometimes.

Part 4

If Second Life were to close, many educational institutions would be left “homeless”.
1. Have you taken this issue into account?
Yes, we have, hence we are exploring other environments as well, like Open Wonderland, OpenSim, etc. We wish to make sure that there is no reliance on one single environment which might fail, change, or become prohibitive in terms of costs and similar things so we want to have in our repertoire more than one environment in which we will be teaching.

2. What is your opinion?
To be honest, having moved to Open Wonderland, we don’t worry about Second Life that much. I think there are quite a lot of discussions about a potential transformation of the way Second Life is likely to operate in the future. Also, quite a lot of people are a bit critical of the fact that quite a lot of the virtual worlds and projects have been misused and the initial enthusiasm of educators about virtual worlds has declined a bit. Some people also consider Second Life as an environment that sometimes creates negative experiences for the users because of the prohibitive cost, the bad press it often gets, and the lack of differentiation between its private and its educational role. So, some other people want an environment which has purely educational purposes rather than a mixture of educational and private uses. As I said, quite often people don’t want to rely on one particular technology like Second Life but aim to explore other solutions as well just in
case there is a problem in the future. The move these days is towards open source environments that are appealing to educators because there is this substantive community of developers and users there to which you can resort if you have any problems. For instance, in Open Wonderland we go back to the community of the developers and users to ask questions, and share experiences, something that was not as easy in the context of Second Life, which was owned by a private company.

3. Are you concerned about Second Life’s closure?
No, not at all.

4. Would this possibility affect your decision to use Second Life?
Yes, of course it would. Besides, the decline of Second Life regarding its use by different institutions and different people internationally is something that led us to start thinking about using other environments as well. So, the potential closure of a technology or a company that is associated with that particular technology affects people’s attitude towards the technology itself.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment?
Yes, absolutely. We believe in virtual worlds and I think that this is an area we need to continue exploring. However, we don’t want to link this exploration exclusively to the affordances of a particular environment. So, simultaneously we are looking for a different kind of solution that would help us to achieve the things we want to accomplish with virtual worlds.

6. If yes, can you please name this alternative solution?
Yes, we have already replaced Second Life with Open Wonderland.

Part 5

1. What is the monthly cost of using this virtual world?
That is difficult to answer because I was more responsible for the educational rather than the technical aspect of the virtual world in question.

2. Who usually funds your in-world projects?
The MUVEnation project got European funding. So, it was a European initiative. Our current projects are internally funded. However, we had to bid for that through an online learning development fund.

3. How affordable do you consider it?
Not particularly. It is probably affordable by big universities who have a lot of money. It can also be affordable in the context of projects. Moreover, if you get funding from somewhere, it is affordable otherwise it is quite expensive. The acquisition of an island and the development costs are quite expensive because highly specialized people need to be employed for the design and maintenance of the learning environment in which you are going to operate. Quite often just throwing your users on an empty landscape is not a solution. You frequently need props, resources, and things like that increasing the total cost. Because it is a private environment, it operates on the base that people are going to pay money in order to get services so the cost can be quite prohibitive when educators consider it as an environment suitable to accommodate their learning activities.
4. Have you used the discount offered by Linden Lab to academic institutions?
No, I haven’t. However, I was aware of it. When we were trying to get funding for one of our projects, we looked at this initiative as well, but we didn’t take it forward after all. There is an element of distrust quite often in academia towards private organizations who offer any formal funding because there is an agenda behind that and because it can undermine the robustness of the outcomes, the perceptions, and the views that educators have about a particular environment. To say it very clearly, sometimes even if you have objections or doubts about a particular environment, it is quite difficult to air them, when the research has been funded by a particular private funder.

5. Even though you have never used the discount, would you like to comment on Linden Lab’s decision to discontinue that offer?
Well, I don’t really believe in Second Life anymore as a decent environment that enables you to run virtual world activities and that is actually one of the reasons we have moved to other open source solutions. That being said, I think that this decision will probably have a negative impact on quite a lot of institutions that are interested in using Second Life for educational purposes. However, it doesn’t affect us.

6. How do you intend to deal with this?
Not applicable

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Yes, we did.

Interview 15
Mr. Graham Hibbert — School of Art, Architecture and Design (Contemporary Art and Graphic Design), Leeds Metropolitan University, UK

Part 1

1. Which virtual environments have you used for educational purposes?
We used Second Life and OpenSim for the project that we did.

2. What were the reasons that led you to choose these virtual environments for educational issues?
Well, we had been using Second Life for a good few years, just outside of university, and we decided that it would be an interesting thing to proceed—some of the students had been doing stuff with it, thus it came as a natural thing to do. We used OpenSim so we could create our own kind of gateway into Second Life rather than using the supplied induction process. If I can say that, the project that we did was all about it, using OpenSim as an introduction to Second Life.

3. For how long have you used these virtual environments for educational issues?
I have been using Second Life since 2005, so that is around 7 years. I first used OpenSim in a project in 2008, so that is about 4 years.

4. In what academic level have you used these virtual environments?
It was undergraduate level, so bachelors.
5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
It is just support. It is just another environment that the students can use to create things.

6. How many educational projects have you carried out using this alternative teaching method?
Just one.

7. How successful was this project?
It depends on what you mean by “successful”. In terms of getting the students to make something and engage with the virtual space, it was very successful. I think they got a lot out of it. It didn’t actually lead to any further kind of activity. The point was just to provide an example of a way into the space. So, it was successful in terms of providing a lasting solution.

8. What are your current projects (if any)?
I don’t have any projects at the moment. They took a little bit of a back seat.

Part 2

1. What does a typical session of yours look like in the Second Life’s/OpenSim’s virtual environment?
It looks very much just like what normal people do in Second Life. It is just people running around and building things. There wasn’t any kind of set, structured deed. I think occasionally we did get people to sit around in a circle and talk, but on the whole it was more about people going off under their own steam, doing their own thing really.

2. Why do you use Second Life/OpenSim in your teaching? In your opinion what are the advantages of this teaching method?
I think we weren’t trying to compare it against the real life setting. We were just trying to see if we could provide a virtual environment as a space in which students could experiment, in the same way that we allow them to experiment and do different things through Photoshop or InDesign, for example. It was just another space to play around with. Thus, the advantage was that they could do pretty much what they wanted to do in there without having to learn too many things about how to navigate in that kind of space. If you compare it to virtual environments from like the late 1990s and early 2000s which were all about how to really learn the environment, the nice thing about Second Life was that you could just walk into without fears of messing around, you were pretty free about what you could really do in there.

3. Respectively, are there any disadvantages?
I think one of the disadvantages was that, at that particular point, it wasn’t taken seriously as a creative island. It was regarded as a toy. I think the other disadvantage is that we were much reliant on a third party provider, so you relied on Second Life actually being available and even though nowadays it is pretty stable and it is there all the time, you are still not necessarily able to use it in a way that you might particularly want to if you are teaching rather than just existing within it. So, it is the level of control, I am concerned about.
4. Comparing the university classroom with the virtual classroom, which one may have better results?

I think they are just two different versions of the same thing really. Once you’ve become adept at doing things in the virtual environment, it is pretty much the same. In our case, our studio environments where we are teaching are very similar to Second Life in that it is a big room where a lot of people are doing all sort of different things and there is no real kind of central structure to what is going on. It is a very individual approach. So, they are really not that dissimilar. I suppose, the only disadvantage is one of technical ability. If you walk into a room and there are a lot of things lying around, it is very easy to pick them up; however, within Second Life you have to learn how to pick something up first and even though that’s not hard, it’s still perhaps like a stumbling block. I don’t know if either one is better than the other.

5. Many academics have mentioned so far that they have faced many problems with their initial projects because of the lack of orientation. Thus, what is your strategy to orient your students within the virtual environment of Second Life/OpenSim?

Yes. Actually, that’s exactly what our project was all about, to provide the people who went into the space with orientation. We used OpenSim as an orientation tool before taking people into Second Life. First, we installed OpenSim on every computer, and we gave every single person in the room an island on their computer to play around with. We did a whole day in OpenSim first where they ran around and built things while we were looking over their shoulder. We were teaching very much in the same way that we would teach Photoshop, for instance. So, they all had it running on their computer and there were no distractions; they could just play around. I think one of the important things about it was that we could control that space and progress at our own pace throughout the day or throughout the orientation session. Another one was that the students didn’t feel intimidated by other people being there. That’s quite disorientating. When I joined Second Life for the first time in 2005, I spent a couple of hours in the orientation bit without anybody else being there, and it was really great. These days, when you log in for the first time, there are lots of other people around doing things, so we were able to introduce them to the idea of building—they could mess with the value of their land, they could play around with their appearance, etc. It was only half way through the day that we joined these islands together and paired people up, so that you have two people online altogether. As a result, they started getting aware of the idea of co-habiting this computer with somebody else which came as a kind of shift in the day actually when they realized that they could occupy this space with somebody else—it then became a social element. I think we had done that for the whole day, and then we played again with them and got them to pick names. We can preload it; we can route on all the kind of Second Life names that were available that day and got them to think about the names or what they might mean and things about identity. So, it was quite a gradual process and introduction, but by the time we got them to Second Life they had already worked on what they were going to be called, they were pretty good at building, they knew how to change their appearance, etc. So, when they actually logged into, the first time, two things happened when they “left the safety” of OpenSim and went into Second Life. The first thing was that we suddenly lost control of the session and they all started running off and doing different things. The second thing, which is really interesting, was that they started
to help other people on the orientation islands. So, they started helping other people doing things within the orientation set up since they were pretty good at doing this already. However, even then, it did take a while to gather them altogether onto our space within Second Life. It was a really interesting day, and I think it was the right way to do it. Nevertheless, even then there were problems which only appeared once we used Second Life rather than OpenSim.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?

   I don’t think that them communicating with other people within the lecture was a problem. They were all talking to each other and we did that anyway because it wasn’t a case of formal lecture where they all had to sit and listen to me talking. It was more like a group discussion, so that wasn’t a problem. I don’t think that had any bearing on the lecture really. The impression I got from them was they saw it more as a computer package, rather than a game.

2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?

   There was one particular student who wasn’t actually part of the project but she had been using Second Life beforehand and we got to know because we were people using it. She had started off feeling that what she was doing was quite irrelevant to her studies and she was quite nervous about the whole thing. Even though she was not doing badly at her work, she wasn’t very confident about what she was doing, but she realised that within Second Life it was a lot easier for her to adopt a role of self-confidence. When she started getting positive feedback about what she was doing, it really pushed her work on and got her passed that kind of blocking feeling that she wasn’t very good. I think she was very immersed in it, very keen to do things within it. I don’t think the project was long enough to get people really immersed in it. There were one or two who managed to experience immersion, and I think it helped them a lot. Nonetheless, I don’t know whether I would say it was better for them. I think, after a long period of time it might have been better for them. It might have opened up a new way of teaching with them rather than trying to fit that kind of teaching into what we do normally.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

   It was interesting actually. I think some of them considered it hilarious and funny and treated it almost like a game but one or two really got a lot out of it. I think it’s one of those things that suits a particular type of student, it suits somebody who is experimental and a bit hacker-like, a bit adept at doing interesting technical things. I also think it fits into the way that we teach in that we try not to get people to do things which don’t suit them, so we try to identify the things which people are very much kind of adept at doing and let them progress in that. So, it was nice to have an environment that some people took to, really enjoyed, and got a lot out of, but equally it was nice to be able to let the ones who didn’t enjoy it as much and didn’t take it seriously, let them drop off and go off and do other things. So, I think it depends on the student very much.
4. Since your virtual university was hosted in a private (institutional) server, do you think the fact that your students don’t have constantly the opportunity to interact with users who do not belong to your university community affects negatively their immersion?

I think it was very useful, to begin with, that they were in their own private space to start off with but I think it was incredibly important that, as they went on further, they realized that there was this large inter-connectivity of people. For me that’s one of the most important things about Second Life, that there are always people linked together, otherwise it just becomes a 3 dimensional (3D) toy. It is those interactions with other people outside of your own little sphere, making it what it is. So, while it was very useful to have them isolated in their own private space, it was totally important that they branched higher than it went off, I think.

Part 4 (Second Life)

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account? What is your opinion? (2nd question)

I don’t actually think it is going to close any time soon. I think there are more users than there have ever been; it’s a more vibrant community and it is very different than the one maybe in 2007 when a lot of the educators became involved, but, then, it was different in 2005, before that. I think now it’s sustainable, it’s got a vibrant economy, and there are people all the time doing very interesting things. I believe one of the things that educators tend to do is that they fail to see past their own bubble and, when Linden Lab increased the price, that, I think, put a lot of educators off. A lot of people, then, thought that obviously that was the end, but, I think, a lot of people in education didn’t really grasp that Second Life had been running a long time before they got involved with it and it would run a long time afterwards.

In our case we lost the funding for our particular islands, and I lost two very large and very good, frankly, buildings that I had made, and I think among the difficulties we faced was that the organization of it wasn’t necessary up to scratch. It was a little difficult sometimes to arrange the kind of funding for it all. The other difficulty was that there was no way of getting our stuff off of Second Life and being able to back it up was really difficult. When the island disappeared, I lost this structure. Even if we put the island back, the structure would be gone and it is now gone forever. So, that was a really difficult and unsolvable problem.

3. Are you concerned about Second Life’s closure?
Not at all.

4. Does this possibility affect your decision to use Second Life?
It’s more the case that I don’t use it formally as a taught thing. I must admit that I hardly ever use it at the moment among all the other things I have been doing recently but it’s one of those things, I think, that, within the art education, should be set alongside pottery, painting, sculpture, etc. and it should be just another tool/medium to play with. If one of my students takes an interest in it, then, I’ll quite happily use it with them. However, as a thing to teach and get them all doing, I am not quite sure if I want to follow that route.
5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
Not applicable.

Part 4 (OpenSim)

OpenSim is new technology used for the development of virtual environments.

1. How stable do you expect this technology to be?
I am afraid, I don’t know. It’s tricky because it’s an open-source project which exists solely to mimic, a closed-source project. It is something like OpenOffice or I think the biggest parallel you can draw with other software is Apache where you take the idea of a commercial web server and its open source download where people contributed and you get a great stable product out of it. The problem with OpenSim is that there aren’t enough developers who know what they are doing and have invested interest in doing it. Everybody wants to run a web server but not everybody wants to run an OpenSim. I think a lot of people just expect it to work and get better without contemplating the idea that it will need people to work on it. I don’t necessarily expect it to be hugely stable because I don’t think Second Life is awfully stable. When something is forever copying something which already exists, it can never be more stable than it, I think, but it is stable enough to do things in. Besides, I don’t think it’s ever going to take over and become the standard of 3D web browsing which is what Second Life was intended to be. I think, as an experimental space, it is more than stable enough to do things.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
I think it is absolutely essential. I think backing up your stuff is the one thing that Second Life doesn’t allow you to do and I regard this as a huge failing. I think especially when you are paying for a space in which you can put things, if you can’t take a backup of those things, then it’s not a great space to work in. I think it’s one of the things that I found when I was using OpenSim in quite a commercial way. It was really great; I was doing large-scale architectural buildings and with OpenSim I could create something within it, I could take a backup of that sim and send it to a client and the client could open up that sim and walk around that themselves and that was fantastic. I wish I could do that in Second Life, I think it’s hugely important.

3. OpenSim grids have the potential of “hypergriding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
I think it is really important in terms of what we do within our education. I think it’s related to the audience. If you build something, you generally want people to come and see it and there are ways in which you can get people seeing things but there is no better way than just inviting people to your island. If you think about it, it is being very much like the web. It would be like making a web page that it sits on your computer and in order for people to come and look at the work, you don’t allow the web page to have to actually come down into your office. Getting people to link in is essential. It is phenomenally difficult I think. This idea of your identity teleporting into somebody else’s computer to see what they have made is a huge technical challenge but then, I think we are starting to see that idea of identity following you around on the web with things like Facebook logins or Twitter logins and all those kind of open eyes. I think the same thing
can exist quite happily within Second Life. I think it is really useful to be able to do that, but it’s equally useful to be able to do stuff and not have people come in as well.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?

I don’t think so. I think as long as it runs on a machine, it is fine. I think there is no reason why a lot of these things can’t exist side by side. I am not sure and I agree with you that being other virtual worlds has been a challenge to OpenSim. A lot of the things that sprang up around the time that Second Life was going, have really gone by the wayside, but equally a lot of the other ones are very different things, they exist for different reasons, and they do different stuff, so I don’t think there is a problem with that. I think, one of the things which would be wonderful is if you could link your Open Grid to Second Life itself. That would be fantastic. However, I am not entirely sure that will ever happen, but it would be great. I don’t think there is a problem with competition. I believe there will always be people who want to experiment with this kind of stuff and it’s not like Second Life in that it needs somebody else running it on their server, continuously, for it to exist. If you can run it on your home computer, then it is always there.

Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?

At the time we had three islands, at one point, but I can’t remember exactly what the cost was. It was something like £200-£300/month (for all of them) – it wasn’t cheap at all – but we did have three islands…

2. Who usually funds your in-world projects?

It was the university. There were different departments funding each different island – each one had a different thing – but the funding definitely came from the university.

3. How affordable do you consider it?

In terms of it being pretty much similar to server hosting, it was pretty affordable in that sense. I don’t think we had necessarily a problem with that, I mean we were spending a similar amount on a web server at the same time, an experimental one. It is not that different in terms of pricing. I think the problem came when the educational discount ceased. As a result Second Life became far too expensive for a lot of people but, to be honest, I think the project that we were running had run its course and the islands were a kind of a pleasant luxury rather than something that we needed. So, it was more a case of us not needing the space rather than us not being able to afford it. I don’t think we could have afforded it anyway, but we didn’t need it either.

4. Have you used the discount offered by Linden Lab to academic institutions? If yes, how do you consider the decision of Linden Lab to discontinue this offer? (5th question)

Yes, we did. It seemed very short-sighted at the time, it also seemed like an ill-considered way of making a little bit of extra money. I think that rather than increasing the amount of money they were getting every month, a lot of people just closed their island, so they possibly lost some money on that. Obviously, there was probably some reason for them doing that; I don’t think they just decided to be greedy at some point. It seemed at the time short-sighted, but I don’t know what effected that decision, so I wouldn’t like to say
whether it is bad or not. I think, it did have the result of a lot of people leaving Second Life. However, they probably have their reasons for that.

6. Was Second Life's high cost one of the reasons that led you to stop using it?
It had some impact but it wasn’t the only thing. We did our projects and we had the outcomes that we wanted and we had planned some things to do which perhaps weren’t commercially viable, though. We are quite used to having a lot of space to play around and messing with things. We are teachers, so we get to do that a lot. I don’t think we could afford it to do what we wanted to do but even if they continued the discount, we wouldn’t be able to afford it, so I don’t think it was just that the reason we stopped using it.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, because I did them all. That’s what I do; people pay me to do that kind of things. So, no, we didn’t pay outside people. I wasn’t paid to do any of these. I just did it because I wanted to.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
It was all internal.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, of course not.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
It doesn’t cost us anything. For the ones we did –we have another one running for a little while– we used old machines. We had decommissioned some computers a while back and decided to use them, so we had it running on those. We don’t hook it up externally, thus I can’t access it from outside of the university unless I am connected to their network. Within our lab, we had four machines linked together with all four islands which was running fine. So, it didn’t cost us anything. Besides, that was part of the fun, that it was experimental and free.

4. Who usually funds your in-world projects?
The university, in as much as it was all the equipment that the university was throwing out. However, there is no funding involved. It’s part of research, so it just comes out of general research funds.

5. How affordable do you consider it?
Very. It is free, so it is very affordable.

Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
Personally, I used Second Life the first time. As an educator, in that particular project, I used OpenSim first, and then I turned to Second Life, but I think that was driven by
experience of trying to do Second Life only. In the past, we had tried a couple of times to give people induction and orientation in Second Life straight into it. Nevertheless, that never really worked, thus we tried to use OpenSim. So, I think in that project we started using OpenSim and then went to Second Life but overall we used Second Life first and as a result of not having too much success, then we used OpenSim. The main reason that led us to move from Second Life to OpenSim was a lack of control of the orientation aspect of it.

2. Which one of these two virtual environments do you consider more appropriate for educational use?
I think it depends on what exactly you are teaching. If you are teaching in a way that requires privacy and space and you need students to be able to find their feet to doing things, OpenSim is quite good for that. However, if your objective is interaction with the outside world, then Second Life is better for that. I am looking at these two things in terms of OpenSim being a private and closed space and Second Life an open, free for all, “talk to the whole world” kind of space. So, I think they have different values depending on what subject or what aspect of that subject you are teaching.

3. Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).
I think in the overall outcome, Second Life, just because of the audience. I think the combination of the two was great, but if I have to pick one, then finishing up with an audience within Second Life is much better than having something sitting on your desktop that only you can see.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?
No, it was literally the amount of control you can have over it and then what you can make it do rather than it being somebody else’s machine. It was the fact that you can run it your own away, do various bits and pieces in it and link it up in the way that you want to. That was important for us. I don’t know how promising it is, but I know that it needs a group of dedicated, able developers to do something with it. I haven’t actually looked for a few months on what level it is up at the moment, but unless it has quite of a core developer community around it who really want to push it forward, there is a danger of it just holding. It will still be there and it will still work, but, as computer’s progressing, other things take over. I don’t think it is a fault of the idea itself, it’s more related to the attention span of the people who might want to look after it. Take Minecraft for example, which has exploded recently and is something everybody is excited about and everybody is planning to do things with. The only danger for something like OpenSim is that people get sidetracked by other more exciting projects and if you are not being paid to do a particular project, then destruction is a big factor. I know myself; some people have relied on some of the work I have done in the past for bits and pieces of their teaching but because I’ve got distracted and gone off doing shinier and more fun things, it’s gone by the wayside and it doesn’t necessarily work anymore. That’s the problem with it, I think.
5. Which one of these two virtual environments offers best value for money?
That is tricky, because, on the one hand, for us OpenSim was completely free, so it would seem like it was the best value for money. On the other hand, the value of the audience, I think, was worth every penny we paid for it. Therefore, being able to put on a show from our students, collect the stuff they did together, put all these on a show, and invite people to it, is infinitely more valuable to us, as we are educators, than having something for free, thus I think Second Life was better value for money.

6. Since you are not using Second Life any more, if Linden Lab were about to reduce the annual cost of using Second Life, would you go back to it?
I, personally, would, if we were able to have a space within it that we could use in whatever way we wanted. It was a very nice luxury to have. It was like having another studio, another space in which we could let the students do whatever they wanted. Ironically, in the real world, at the same time as we lost the island in Second Life, we actually lost several buildings in real life, so we downsized our real studios. At exactly the same time, it would be lovely to have a virtual studio in which people could do stuff that they wanted. I think if we had enough time, we could develop our OpenSim space and get it going again. I could rebuild what I have built before and we could have that there but I think our focus has gone in different directions since then; yet it would be very nice to rebuild it and have as a space. I think, if the cost went back down, we might be able to have that space again.

7. At the moment you are not using any virtual environment in your teaching, but you have used both Second Life and OpenSim. Thus, if you were about to get a decision to start using virtual worlds again, which one of these two would you probably choose to go with?
That’s tricky because, on the one hand, I think the advantage of using OpenSim is that you can really experiment with it in a way that you can’t in Second Life because you can’t control the server itself and you can’t do all sort of things, such as backing up your island but you miss the social aspect, the inter-connectivity. Besides, you miss doing things for an audience which is really important for our students. When you are using OpenSim just on your own private server, the audience doesn’t exist as such. I think, I would rather use Second Life but I would use OpenSim as a kind of a test base.

Interview 16
Prof. Clinton Jeffery — Department of Computer Science (Computer Science), University of Idaho, USA

Part 1
1. Which virtual environments have you used for educational purposes?
I have used Second Life and CVE (Collaborative Virtual Environment).

2. What were the reasons that led you to choose Second Life for educational issues?
Second Life was a major fad several years ago.

3. For how long have you used Second Life for educational issues?
Only rarely over a period of about 8 years.
4. In what academic level(s) have you used Second Life?
From about 11th grade high school summer camps through graduate level research courses.

5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
In class with supporting exercises.

6. How many educational projects have you carried out using this alternative teaching method?
Approximately 12 – mostly short-duration projects.

7. How successful were these projects?
Not very successful.

8. What are your current projects (if any)?
I am inventing tools that reduce the cost of developing virtual environments, and developing virtual environments for teaching computer science technical domain content.

Part 2

1. What does a typical lecture of yours look like in the Second Life’s virtual environment?
It is not a lecture. It is more of a guided tour and/or structured exploratory laboratory exercise.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
Second Life has the advantage of being well-known and having public, supported servers.

3. Respectively, are there any disadvantages?
Second Life is much too limited in terms of number of primitives supported on purchased land. It is too hard to create activities.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
Both have advantages. At present, university classrooms and face-to-face interactions have strong advantages for everything except teaching about virtual environments.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
It makes certain topics easy to grasp from first-hand experience, but for most regular academic subjects it provides to benefit.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?
Only for lessons on virtual environments. It is at present too difficult to construct high quality virtual activities.
3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
There is great enjoyment at the novelty after which it has enjoyment only in limited educational applications.

Part 4
If Second Life were to close many educational institutions would be left “homeless”.
1. Have you taken this issue into account?
I have not chosen to depend on Second Life.
2. What is your opinion?
I think open standards and free platforms are better.
3. Are you concerned about Second Life’s closure?
Not very.
4. Does this possibility affect your decision to use Second Life?
It is one of many reasons.
5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment?
More literally than you can realize.
6. If yes, can you please name this alternative solution?
CVE, along with many others.

Part 5
1. What is the monthly cost of using Second Life?
I get by on 20$/month.
2. Who usually funds your in-world projects?
Personal funds.
3. How affordable do you consider it?
It constrains my level of interest and time investment.
4. Have you used the discount offered by Linden Lab to academic institutions? If yes, how do you consider the decision of Linden Lab to discontinue this offer? (5th question).
Not applicable
6. How do you intend to deal with this?
I don’t intend to spend more on Second Life.
7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No. I have bought things in Second Life.
Interview 17
Dr. Ioannis Kazanidis — Department of Computer Science and Informatics (Distance learning and teaching Informatics), Technical Educational Institute of Kavala, GR

Part 1

1. Which virtual environments have you used for educational purposes?
   So far, we have only used Second Life. Of course, our goal is to host our own OpenSim server, but we have not completed the process yet.

2. What were the reasons that led you to choose Second Life for educational issues?
   Our aim was to look at the advantages offered by such a virtual world, which gives the illusion of the real world, and how a virtual world like that could help especially remote users to feel less isolated. So, we are trying to identify what happens in these cases and in what way we can help remote users. Beyond that, of course, we wanted to take advantage of the tools available in Second Life.

3. For how long have you used Second Life for educational purposes?
   We carried out some sessions for about 2-3 months.

4. In what academic level(s) have you used Second Life?
   For the time being, we are using it only with undergraduate students.

5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
   At present, we are using it additionally in order to explore what features it can offer us. Since the subject of the lesson is distant learning, we show our students how to use the tools offered in Second Life for remote sessions. Our goal is to develop in the future the possibility for our students to attend the theoretical part of the course both in the classroom and through Second Life without having to come to the classroom. That is what we are planning to implement next year.

6. How many educational projects have you carried out using this alternative teaching method?
   Since we started very recently, we have run to date only 2-3 projects, because we didn’t know several things and we were taking a further look at them.

7. How successful were these projects?
   I think they were pretty successful. Considering that our projects were supplementary to the lectures we carried out in-class, we achieved the objectives we had set to a great extent. Nevertheless, there is a risk: students can easily be distracted. We noticed that our students quite often did not concentrate on the achievement of their educational objectives. They viewed the virtual world as a game and preferred to wander around and explore the virtual spaces. Thus, I think that careful setting the boundaries of the area in which students are allowed to act is necessary, in order to remain focused on their activities.

8. What are your current projects (if any)?
   For the time being we are completing our projects on distance education and teaching Informatics.
Part 2

1. What does a typical class of yours look like in Second Life’s virtual environment?
We have carried out three different types of sessions within Second Life. The first ones are orientation sessions and are aimed to help students learn how to use the tools of the virtual world and bring them in touch with its functionalities, since most of them have their first contact with the virtual world through our lesson. From then on, the majority of our sessions are like “treasure hunts”. Our students learn through visiting various in-world sites related to the subject taught. That is where they seek information on the objects comprising the spaces, and afterwards, working either individually or in groups, they write on notecards brief reports about the information they gathered and they send them to us. Finally, we have held some lectures in-world, but their subject wasn’t always relevant to the virtual world.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
There are several advantages. The most important, in my opinion, is that the virtual world can help the distant user mitigate the sense of isolation. It contributes to the development of collaborative activities among remote users who have the opportunity to “meet” in the virtual world, exchange information and collaborate with each other.

3. Respectively, are there any disadvantages?
A key disadvantage is that the orientation sessions are necessary for the students to learn how to use Second Life, since most of them get in touch with the virtual world for the first time through our sessions. Orientation takes time, but without orientation our projects will not be successful. Furthermore, we have noticed that very often our students are distracted from their activities, since the world is too appealing and the contact with the tutor less direct than in the traditional classroom. However, no one should forget that Second Life was not developed for educational use, and thus it falls short in providing educational tools—which makes sense after all—but it would be useful if some were developed. I also have to note as a disadvantage that for the use of Second Life a very good internet connection is required. Some of our students don’t have a connection that is good enough, and as a result they face various problems with latencies, not to mention that sometimes they get disconnected from the server during our sessions. Finally, as a very important disadvantage I have to mention the high cost of using Second Life both in terms of time and effort for the creation of the spaces needed for the lesson, and in terms of money for the maintenance of the creations. Besides, this is the reason why we are planning to transfer our activities in OpenSim.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
I think that in the traditional university classroom we have slightly better results than in the virtual space. In the university classroom the communication between the tutors and the students is more direct. That way tutors can provide their students who face any difficulty with more direct and comprehensive assistance. With respect to the educational objectives that we set, they are achieved in a significant extent in Second Life, as well.
5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?

We had made provision about that and we did induction sessions for our students in order to help them learn how to use the virtual world. I consider necessary such sessions in which students get informed about the basic functionalities and the tools of the world. Alternatively, educational material with instructions, images or even video-tutorials can be provided to the students. Nevertheless, all these must be targeted to the activities we want to carry out aimed to the acquisition of specifically those skills that are necessary for the achievement of our educational objectives, and not burden the students with information that will be of no use. Besides, Second Life is an educational tool for us and not the educational subject itself.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?

Yes, of course. We noticed that the students who were using Second Life or other similar virtual worlds to spend their leisure time were more familiar with it, and consequently our learning activities were more interesting and effective for them.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?

Certainly the students experience the lesson within Second Life much more than in other distance learning environments, such as BigBlueButton which is an environment for holding presentations, but not in comparison to the real world classroom.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

Yes, I think so. Our students think of Second Life as a game and as a novelty in general, enjoying thus our lessons more within the virtual world than in the university classroom.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account?

Undoubtedly, if Second Life terminates, that will be very unpleasant for those who have created a space within it. We are temporarily using Second Life hosted in the spaces of other educational institutions, and we are planning to move to OpenSim soon. Besides, the fact that OpenSim is open-source software guarantees that it will last longer, especially if its community remains active.

2. What is your opinion?

The potential closure is extremely negative and blocks any further evolution and enhancement of the world. That deters educators from investing in it and leads them to invest in other virtual worlds. I also believe that if Second Life terminates, that will be a serious blow to all virtual worlds, since Second Life is the most popular among them.
3. Are you concerned about Second Life’s closure?
We are concerned, but not much, as we have not invested time, effort and money on
Second Life and we are only temporarily hosted in it. However, if we had created our
own space within it, then certainly we would be extremely concerned about that
possibility.

4. Does this possibility affect your decision to use Second Life?
Absolutely! This is why we are temporarily within Second Life and we are planning to
move to OpenSim soon.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual
environment? If yes, can you please name this alternative solution? (6th question)
Of course we will and that will be OpenSim.

Part 5

1. What is the monthly cost of using this virtual world?
Currently we are not maintaining our own space within Second Life, but, as I mentioned
before, we are hosted in the spaces of other educational institutions, and thus we don’t
have to pay a monthly fee. For as long as we had our own space, I remember that we
were paying a great amount of money, but I cannot precisely determine it. Especially,
when the discount to the academic institutions stopped being offered, we couldn’t afford
paying for it and we decided to leave the space we had.

2. Who usually funds your in-world projects?
Our university.

3. How affordable do you consider it?
Actually now that the educational discount stopped being offered, I think that it is not
affordable at all, even more for small institutions like ours.

4. Have you used the discount offered by Linden Lab to academic institutions?
Yes. However, when we decided to expand our in-world activities, the discount stopped
being offered and that is why we decided to stop using Second Life.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
I think that it wasn’t a good decision at all. That discount enhanced the educational and
research efforts of the academic institutions, for which the use of Second Life is now
deterrent. Numerous academic institutions, and not only, are now forced to leave this
world and turn to others.

6. How do you intend to deal with this?
We have decided to use OpenSim. Until then we are using the virtual spaces that other
institutions have granted us.

7. Have you ever paid qualified personnel to create virtual items for your virtual space
(buildings, items etc.)?
Yes, we had hired a company to create for us an initial space and some objects.
Interview 18
Dr. Andreas Konstantinidis — Technology Enhanced Learning Officer, King’s College London, UK (Ph.D. on virtual worlds, Aristotle University of Thessaloniki, GR)

Part 1

1. Which virtual environments have you used for educational purposes?
Initially, we were using Open Croquet which was then renamed Open Cobalt. Later, we tried out OpenSim and, more recently, Second Life. We also had a very brief experience within Open Wonderland.

2. What were the reasons that led you to choose these virtual environments for educational issues?
The main reason why we used OpenSim was financial; the use of OpenSim is absolutely free of charge. Of course, Second Life doesn’t cost much either compared to the services it offers. Another reason for using OpenSim was that it is open source software. So, we could develop ourselves whatever we needed and, in general, it offered us great freedom. We could host it on our own server and have complete control and supervision of it. Even though OpenSim was pretty satisfactory, we faced some problems because of its technology’s immaturity, and that led us to move to Second Life which is more stable. Unfortunately, we lost the independence and autonomy we had within our own OpenSim server, but Second Life is much more stable and our students enjoyed the activities there more.

3. For how long have you used these virtual environments for educational purposes?
At first we used OpenSim for two years and then Second Life for another two years, as well.

4. In what academic level(s) have you used these virtual environments?
The students that participated in our activities were undergraduates.

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
Basically, we were using it, as an additional tool for our students, but also in order to evaluate the environments ourselves and try out their features. So, we had both research and educational objectives at the same time. Thus, we weren’t carrying out the courses entirely within the virtual worlds, but we were also using them to conduct some collaborative learning activities.

6. How many educational projects have you carried out using this alternative teaching method?
Approximately six or seven activities – it may even be a couple more.

7. How successful were these projects?
The activities were pretty successful. The students really liked that novel collaborative approach they had with their fellow students and their tutor and we actually received some very encouraging feedback from them. In the questionnaires we used at the end of all the activities, most of the students stated that they would like to have more sessions within Second Life and OpenSim. They even said that they would like some courses to be held entirely through virtual worlds.
8. What are your current projects (if any)?
We have no educational projects running at the moment. Here, at King’s College, we are preparing one, but we are still at a very early stage.

Part 2

1. What does a typical class/session of yours look like in Second Life’s/OpenSim’s virtual environment?
Through the activities we carried out we were mainly aiming to evaluate the virtual worlds on their potential to support collaborative learning. Thus, we used some standardized collaborative learning techniques, such as “Jigsaw” and “Fishbowl”. What we were basically looking at through the virtual classes we were holding, was how and to what extent the virtual space we had created embrace these specific educational techniques. For instance, for the implementation of the “Jigsaw” technique each student group had its own room where the group members were collaborating without coming into contact with the other groups, apart from when they came out of their room to present their project. Likewise, for the “Fishbowl” technique where some of the students were holding a presentation and the rest were watching and commenting, we had placed chairs in two concentric circles; the students who were watching the presentation were seated at the outer circle and the ones who were holding the presentation, at the inner one. Before any of these activities started, however, one of the tutors was holding a 5-10 minute lecture in a virtual amphitheater, which didn’t differ significantly from a real one in its architecture.

2. Why do you use Second Life/OpenSim in your teaching? In your opinion what are the advantages of this teaching method?
The main advantage of OpenSim is that it is open source software that becomes a very useful tool in the hands of a group of competent programmers who can create anything to cover multiple needs. Another significant OpenSim technology’s advantage is that it can be used by anyone. So, we were able to use our own equipment to host our own OpenSim server, a fact that left upon us the full control over all the functions and procedures and gave us a great degree of independence. Besides, it's free. On the other hand, Second Life is much more stable in terms of functionality. VoIP and all the communication methods, in general, work better there. Moreover, it was easier for us to add some extra functions to its system, such as the collaborative browser for the students or a collaborative text editor.

Certainly, the fact that the tutor’s or any user’s imagination is the only limit when they create in both virtual worlds, is a major advantage of them. Both Second Life and OpenSim offer a great variety of tools, through the use of which almost anything can be created. The reality or the laws of physics pose no restrictions. In fact, the opportunities offered by virtual worlds for breaking the laws of physics and controlling the time flow, are ideal tools for many simulations.

3. Respectively, are there any disadvantages?
Although the great freedom that virtual worlds offer their users to create anything they can imagine is a big advantage, they don’t provide an interface that is friendly to teachers who don’t have highly developed knowledge on designing and programming. For
example, a Physics tutor, who has no programming knowledge, will find it hard to create a learning space within a virtual world. He may need to spend a lot of time to search and learn how to create something and it will also be difficult for him to find items that will serve his needs ready for sale. He may even be forced to hire a specialist to create whatever needed. This limitation of technical knowledge needed for the use of virtual worlds is a disadvantage. In my opinion, another drawback is that the technology is still fairly immature when it comes to the graphics, the artificial intelligence, the simulation of laws of physics—when needed—and the way the users’ interaction with the virtual world takes place; that is through the use of mouse and keyboard which is not at all intuitive and, perhaps in many cases, can even be an obstacle.

4. Comparing the university classroom with the virtual classroom, which one may have better results?

At this point and considering the level of technology, as shown through the research we carried out, the best choice is a combination of both; that is a traditional classroom, coupled with a virtual environment. So, on the one hand there may be interaction between the students and the tutor and on the other, in the virtual environment, students can enjoy the freedom it provides them with to network, to communicate with others and come into contact with the educational material through the activities they perform.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?

I think so, especially during the first times of using a virtual world when there is the element of novelty of the approach. Nevertheless, they rather tend to get used to it at a certain extent along the way, but I think it still raises their interest with the potentials it offers. The fact that they may also use it for entertainment purposes means that special attention has to be paid to the way the activities are structured, in order to maintain their educational context.

2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?

Yes, of course. Our students were always enthusiastic about our lessons and said that they would like to have more educational activities within the virtual worlds. Once again, I have to make note of the fact that approaching, as we do, the virtual worlds using a keyboard and mouse, keeps our students, to some extent, away from actually “living” the activities. In a few years’ time when the technology is a bit more developed, then yes, the lessons through virtual worlds will be an experience truly and intensely “lived” by all of us.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

Certainly. Especially compared to a traditional educational method, the lecture, where the tutor just holds a presentation and his interaction with the students is limited, surely the conduction of educational activities within a virtual world is very different and much more enjoyable for students. During the in-world activities, students have the sense of
actually interacting with their fellow students, their tutors and the virtual world, and they also have the sense of participating in what is happening. Moreover, because of the graphics and the interface in general, they see it as a game and enjoy it more. In fact, when we were to carry out an activity, the students logged in the virtual environment a lot earlier than the time we had asked them to, and stayed logged in-world after the end of our session too. This would, definitely, not be easily observed in a lecture.

4. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?

After carrying out two or three activities, we also noticed the difficulty students were facing with adapting to the new virtual environment, the ways of interacting with it, as well as the ways of navigating through it. Therefore, we have incorporated in our activities sessions that facilitate students’ familiarization with the world. The orientation session took place in a computer lab, face-to-face with our students in order to interact directly with them, whenever needed, and consisted of activities to familiarize students with the tools of the world and its navigation system. Practically, we had integrated it as a separate section of the overall activity. In the first session they were learning how to move their avatars and how to interact with the world, in the second one how to use the virtual world in order to communicate and co-operate with other users and from the third session and onwards, they started working on their projects within a collaborative scenario.

As shown, 60% of the students needed the orientation sessions, while the rest were able to learn easily how to use the world without the need of orientation, since they were familiar with such worlds, either through various games or through their previous in-world experiences.

5. Since your virtual university is hosted in a private (institutionally hosted) server, do you think that the fact that your students do not constantly have the opportunity to interact with users who do not belong to your university’s community will affect their immersion in a negative way?

I think it depends on the kind of activity that someone wants to carry out. Definitely, a more “open” world where the student would have wider access to both educational and human resources, with which they could come in contact, would be very useful. At the same time, an opening of the virtual world without any limits may lead to great problems, due to the intruders that may be involved in the educational process. So, most probably in this case, the middle ground is the ideal option. On the one hand, not everyone would be allowed to enter the university’s virtual space unrestrictedly, and on the other hand, the students would still be able to come into contact with experts, tutors and students outside their virtual university.

Part 4 (Second Life)

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account? What is your opinion? (2nd question)

Yes, we have. This possibility is definitely an issue that must be somehow resolved. Perhaps, it could be solved if users had the opportunity to keep backups of what they
create in Second Life and transfer them to other virtual worlds which can support that particular file format.

3. Are you concerned about Second Life’s closure?
Not really. Anyway, when we were using Second Life we weren’t conducting any lessons exclusively within Second Life, only some distinct activities, and thus we didn’t depend that much on it.

4. Does this possibility affect your decision to use Second Life?
No, it never did. These rumors are being spread for several years, but Second Life is still in operation.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
If we were using Second Life now and we wanted to carry out some educational activities through virtual worlds, we would, certainly, look for an alternative solution. Concerning the alternative solution I would probably choose OpenSim because it is similar to Second Life and, additionally, it is open source software.

Part 4 (OpenSim)

OpenSim is new technology used for the development of virtual environments.

1. How stable do you expect this technology to be?
Up until last year when we were using it, we had several issues regarding its stability. I think, however, that it may become more stable over time.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
Being able to save our work, or whatever we have created within the virtual environment, is extremely useful. That way, if anything goes wrong, we are able to bring the world back to its previous state, and do that fairly quickly. In fact, it would be even better if those backups were standardized so that we could use them in other virtual worlds.

3. OpenSim grids have the potential of “hypergriding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
It is extremely useful! It makes the interactions among virtual universities easier. Virtual universities become accessible by students of other universities. That way, an interuniversity network that will allow for interuniversity communication and cooperation may be created.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?
I don’t think so. OpenSim has a great advantage; it is free and open source software and thus, it can be modified according to our educational needs. On the contrary, this cannot be done with Second Life, where our freedom is more limited. So, I think that OpenSim will keep being used by several educators for a long time to come.
Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?
We rented our space in Second Life from another user for 10€ for two months, if I remember correctly. It wasn’t very expensive.

2. Who usually funds your in-world projects?
Since the cost was so low, the tutor in charge of our project was the one paying for it.

3. How affordable do you consider it?
It is fairly affordable, but considering that there are virtual worlds totally free of charge, then maybe paying for Second Life is a relatively unnecessary expense.

4. Have you used the discount offered by Linden Lab to academic institutions?
No, we have never used it.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
Certainly, Linden Lab had some business plan for doing so, but, in my opinion, that was a wrong move.

6. How do you intend to deal with this?
Not applicable.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No. In collaboration with a group of Masters students we examined Second Life and LSL and created ourselves whatever we needed for our activities.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
We hosted our own OpenSim server in our university.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No. We created everything ourselves.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
Apart from the maintenance and operation cost of the server, which I cannot estimate, we were paying nothing else.

4. Who usually funds your in-world projects?
Our university would pay for the maintenance and operation cost of the server.

5. How affordable do you consider it?
In financial terms, the use of OpenSim technology is very affordable. However, in terms of effort and time required for setup, maintenance and operation of an OpenSim server, especially when there is no qualified personnel for this purpose, the use of such technology is very demanding; it requires considerable time and effort.
Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
We used OpenSim first and then we decided to move to Second Life. OpenSim wasn’t as stable as we wanted it to be, especially in the case in which many avatars were gathered at the same place, and we were facing serious issues with VoIP too. Moreover, the collaborative applications which were necessary for our projects were not compatible with the OpenSim technology.

2. Which one of these two virtual environments do you consider more appropriate for educational use?
None of them, because neither Second Life nor OpenSim is created from the outset for educational use. Neither offers educational tools and thus educators themselves have to create them. Of course, there were some educational applications in Second Life, but they were very limited. So, if I had to choose one of them, I would say Second Life.

3. Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).
I would have to say in Second Life. Thanks to its stability, it offered students a more complete experience and they were very pleased by the fact that the server worked properly and didn’t crash all the time.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?
Not applicable

5. Which one of these two virtual environments offers best value for money?
That depends on many factors. If the team that is going to use a virtual world for educational purposes has the knowledge needed, then certainly OpenSim offers the best value for money. If that team hasn’t got the required expertise to create whatever needed, and needs to hire an expert for that reason, then OpenSim will end up being more expensive than Second Life.

6. Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities?
Not applicable.

Interview 19

Dr. Suzanne Lavelle — Department of Genetics (Genetics), University of Leicester, UK

Part 1

1. Which virtual environments have you used for educational purposes?
We have used Second Life.

2. What were the reasons that led you to choose Second Life for educational issues?
We chose Second Life because we had already had some money to do research and some other things in Second Life so it was already available to us. We already had the island
3. For how long have you used Second Life for educational issues?
We have been using Second Life, the space, for about 3 years now.

4. In what academic level(s) have you used Second Life?
We have used it with first and second year biological science undergraduates.

5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
We’ve used it as supporting our educational methods. It’s important to say that this isn’t a replacement for or instead of; it’s to support the work that we do with students. So, it enables them to do stuff that they can’t possibly do in real life laboratory situations. That’s why we are using it, it’s more of an add-on rather than an instead of.

6. How many educational projects have you carried out using this alternative teaching method?
It’s a project called SWIFT which stands for Second World Immersive Future Technology. There are 3 phases to it. So, there are 3 separate things that we have done in Second Life and then there is a fourth one which came along because another course wanted to use it as part of their educational degree program. Initially, we developed a health and safety lab for first year undergraduate students to introduce them to health and safety issues and the types of equipment that they would encounter during first year practicals, so it was familiarization. Then the following year, our first year medical students would use the lab to do genetic testing and see the theory behind performing particular genetic tests for inherited diseases. Finally, the third year, which we have just completed, we used it with second year biological students, who have got to produce a medically important protein (as a paper exercise), and we created a visual map of the mind map they would probably have to use. Besides, the lab has been used not just for the medical students, but also for the Interdisciplinary Science degree course, and we changed its set up and its uses for them to do parts of their biology module, for their course as well.

7. How successful were these projects?
Well, this is an interesting question but when you say successful it is difficult to measure it. They were successful inasmuch as the students have really enjoyed it, and technically for the most part they have worked. We are still researching the data and looking at it to see whether they were successful in terms of adding to the students learning compared to those students that chose not to do Second Life. So, it’s tricky really.

8. What are your current projects (if any)?
Well, we are still currently working on using these labs for distance learning. So, we have to actually trial them with students working from home to see if we can get them together and if they can get the same out of using these labs. Also, we are looking at putting in an automated chatbot into this lab so that people and students can use it as a standalone lab without a teaching fellow needing to be there to explain what needs to be done.
1. What does a typical lecture of yours look like in Second Life’s virtual environment?

Well, for example, in this lab here the students will all arrive in Second Life. They have previously done some self-directed training in Second Life in a separate session where they go through a maze to learn how to walk, focus on things, and manipulate stuff. Then they arrive here, and I am present as an avatar to help out with technical issues, but I am also physically present in the same room as the students because they are all in one computer lab and they actually do individual work on each bench so that they interact with the objects on the bench rather than with each other here because that’s the aim of this exercise. Afterwards, they work their way around all 3 exercises and when they finish, they just exit Second Life. The health and safety was different because we took them in, in groups of about 10, where I was actually conducting in essence a health and safety lecture. After showing them the items as I was talking and walking around with them, we set them some group work to do, and then had a session where we all got together and reported back the findings of the group work. For the third exercise, the wonderful thing is that they are making the protein while I am not present at all in Second Life as a teacher. I am only present in the same computer room, physically, so that we can help them with technical issues. This happens quite often where people get lost because there is some teleporting to do and also they need prompts for the science not for the Second Life stuff. So, again physically they are all present in one room, and they work together in groups of three to produce this medically important protein, and again they do that just in their groups. They don’t interact with other groups in Second Life.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?

We use Second Life because it enables us to do stuff that we can’t do in the real life labs. The exercises are all about laboratory work. That’s what we are using it for because it’s impractical and impossible to take 80 medical students into a lab and get them to do an experiment in about 2 ½ hours. It just isn’t going to work since we don’t have the time or the facilities. However, we can do this in Second Life because we don’t have to wait for things to finish, we don’t have to wait for experiments to run, so they get the instant experiment along with the instant results. Besides, we do the health and safety because it can be very boring in the real lab and they can’t see the consequences of doing things wrong, whereas they can in Second Life.

3. Respectively, are there any disadvantages?

Interestingly, the disadvantages are mostly of technical nature for us. For instance, getting IT support to run Second Life on the university campus computers for students has been a major issue and sometimes just hasn’t worked. Moreover, I suppose I should mention that discipline is a slight issue in that students sometimes are enjoying themselves too much to do the work that they should, but they do seem to eventually settle down and get on with. Thus, this made us think that maybe we need to allow them a play-session before we actually get them in here to do the work. So, it is something we might do at some point.
4. Comparing the university classroom with the virtual classroom, which one may have better results?

This is a tricky one because we are not able to compare directly the virtual labs with the real labs because they can’t do this work in the real labs. The health and safety, I think they learn more, and we have had a slightly improved confidence, but that’s tricky to measure because they feel like “oh, I have been there in the lab, I know what I am doing now” but that’s a very tricky thing to measure. They just don’t do this work in the real lab, and also the third exercise for making a protein is currently a paper exercise where they just use cards to make this protein rather than actually doing any work in a lab, which we get them to do in Second Life. So, I am afraid it is impossible to compare real and virtual classrooms in the type of work that we do.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?

Orientation is actually what we would like to do. I think we might introduce that to them. They already have a session where they come to learn how to use Second Life, how to walk, touch things, make things appear bigger, zoom, camera focus, and all the rest. Nevertheless, I think what we need to do is instead of saying, “that’s it now, you have learned how to use it; now go off and come back next week when we are doing the lab session”, we might need to build in a session where they learn how to walk, talk, etc. and then say, “now feel free to use it, go explore, travel, teleport, and then next week we will start the lab work”. That will just give them the extra time to play in a sense rather than do the work before they have chance to work out what this environment can do.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?

I think it does. I think they believe it is fun, and that makes it easier because when people are in a “fun” state of mind they are more receptive to learning. So, yes, they mess around and play a bit but actually that’s not detrimental to them doing the work. Thus, in my personal opinion using Second Life is a very good tool for education. I think the fact that they can play around is beneficial and it gives them a sense of anonymity so that they can misbehave without anybody knowing who they are. They quite like that because it makes them feel relaxed. Furthermore, because they don’t really know who each other is, they are more open to asking questions. Nobody knows that they are asking those questions, so they don’t feel stupid in front of their friends.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?

Good question. Well, for some students definitely because it creates a “real memory”, they feel like they have really been in a lab, and certainly we have had that response from some of the one to one interviews we have done with students afterwards. Others don’t interact with this at all. They can’t get to grips with it, they think it’s a waste of time, and they would rather just do the work and get on with it. They see this as a “play-thing” and a waste of time. So, I think it depends on the student; not all students will embrace it.
Those that do are likely to “live” it, they feel it’s happening but those that don’t think it is annoying.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
I think they do. Again, some students don’t but for the most part the students do enjoy the activities more using Second Life because they think it’s an imaginative way of doing it, they like the avatar thing, they enjoy the virtual world and they are not aware that they are learning. So, they just think that they are having fun and playing and I assume that’s when some of the misunderstanding comes in. However, I am pretty sure that those who think it’s a waste of time are learning something even though they are not aware that they are learning.

Part 4
If Second Life were to close many educational institutions would be left “homeless”.
1. Have you taken this issue into account?
Yes, we have and we have looked at alternative ways of doing this. We certainly have thought about hosting a virtual world only on campus computers and making it a closed world just for our students to be able to access –that’s what we’ve thought we could possibly do.

2. What is your opinion?
That’s tricky because at the moment we are paying the fees to rent this space in Second Life and it’s nice to enable students to travel and visit other places. Our work doesn’t depend on that, so we could be an isolated place just living on campus where just the University of Leicester students could use the labs because it wouldn’t affect their learning but it would affect the usefulness of this space, which at the moment we are pushing as an open educational resource for any other universities to use. In fact, we have had other universities come here from all over the world to use these facilities and it would be sad if that was to end, certainly.

3. Are you concerned about Second Life’s closure?
No, I am not. One reason really is that the funding for this research is actually running out this year anyway and we as an institution, although we would like to say we are committed to keeping the space open, we can’t guarantee that we will have funding to do that and if we can, then it would end anyway. If Second Life were to close, I don’t think it would be something we would be too worried about. We would just host it in-house, or it would just disappear, and that would be the end of the project. It would be sad but I am afraid that that happens from time to time…

4. Does this possibility affect your decision to use Second Life?
No, it doesn’t affect our decision to use Second Life. We happened upon using Second Life because it was available to us. Should it suddenly become unavailable, then we would have to choose an alternative way of doing this if we decided that this was what we needed to do for the future.
5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
Yes but I don’t know yet with which platform because we haven’t looked into it in any detail.

Part 5

1. What is the monthly cost of using this virtual world?
I don’t really know because we don’t pay it. It’s paid by a different department of the university. We are given funding for the space, and they are still paying this at the moment. So, I am not sure what the monthly cost is, I am afraid.

2. Who usually funds your in-world projects?
This is a HEFCE funded project. So, the funding at the moment for the labs and the space is coming from HEFCE, but this project ends in August after which I don’t know who will be funding this in-world project.

3. How affordable do you consider it?
At the moment because it is not costing us much, it’s very affordable, but after August I don’t know, really.

4. Have you used the discount offered by Linden Lab to academic institutions?
We used to have the academic discount, and it was very nice and very good because it gave us more money in the project budget to spend on other things but now it’s been stopped.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
Well, we are continuing because we have the funding in our budgets to carry on until the end of August. I think it is a very short-sighted decision of Linden Labs to discontinue it because they obviously didn’t realise how many educational institutions were using Second Life and now they are forcing a lot of them to leave because of this decision of theirs to cut the educational discount. It has not affected us for the time being; it would affect maybe the longevity of this project in the long run. I think Linden Labs are very short-sighted in this decision. I think they are now aiming more towards the adult gamer market, and they are really not interested in all the educational institutions that use it, which is a shame. You know, though, that if its profit they are after, then that’s what they are going to do, isn’t it?

6. How do you intend to deal with this?
It’s tricky. I mean, we are bearing the costs at the moment but I am not sure what will happen in the long term, and the fees will go up, so we will have to look at that and see if it is viable for us to continue. If it isn’t, then it isn’t, we just have to do something else.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Yes, we have, definitely! We have used companies to create and do scripting for some objects in Second Life, and we have used other companies to develop aspects of a database that sits behind Second Life and is used as an interface between us and Second Life. We haven’t really used them for large scale building; we have done most of that ourselves, but we certainly have paid for scripting and things.
Part 1

1. Which virtual environments have you used for educational purposes?

At the moment we are using Second Life. We are using it partly as a social media place and partly also as a seminar location, so we do actually convene some meetings in Second Life. At the University we have also “piloted” a virtual graduation through Second Life, that has been a prominent part of a real graduation ceremonial. The other thing I would observe is that our students often convene meetings in Second Life and that has been entirely in their hands so, whether they are academically or socially oriented, it is clear that the students do derive some benefit from working in that environment which they would not seem to derive from communication in other media. I know particular evidence about that. I have a course on digital game-based learning. So, we do actually use World of Warcraft as a vehicle there. The terms of free trial account access to World of Warcraft changed over last summer. So, we can actually play up to level 20 on a free account on time limited. So, as part of the games course, we are talking about the nature of games’ design. We are particularly using James Gee’s book (a book about what video games are up to teach us about learning and literacy) and I am using World of Warcraft as a good example of the sorts of things that Gee is talking about it in terms of learnability and challenge within video games.

So, for educational purposes I have used Second Life and World of Warcraft and possibly that’s the definition of “virtual environment” you are talking about, obviously one that kind of carries the virtual learning environment, one that kind of carries what we are doing at the moment as a virtual environment but I guess you are concentrating on media rich virtual environments.

2. What were the reasons that led you to choose Second Life for educational issues?

We have an MSc programme in e-Learning. We are interested in media that are used in educational settings or media that could be used in educational settings. So, I think my birthday in Second Life goes back to 2005. So, we were looking around about for media rich avatar-based virtual environments and at that point Second Life just stuck out of the rest and it was just coming online. It was a multiplatform; by this I really mean just Windows and Macintosh. We’ve got a great number of Windows and Macintosh users in the team, so we wanted something that would be multiplatformed in that sense –iTunes U platforms– and Second Life fit in that bill as well and we have taken it from there. We have looked at the ways in which it is relevant to be using an environment like that for our purposes in our online distance programme, so that the students will not meet in the flesh. Besides, some of the students convene meetings in Second Life for their own social purposes, like Saturday morning get-togethers and hangouts. So, there seems to be something about that environment which is conducive. That’s where we started from.

Fiona Littleton who supported this work in the early days had a lot of communication with Linden, so, in the first outing of this on our programme, we had space granted by Linden. Thereafter, we managed to persuade the university to support some space for us and there are quite a number of bits around and about the university who are using
Second Life in some way. Colleagues in the business school, vet school, Informatics, etc., such as Professor Austin Tate, are big users of Second Life initially but also OpenSim now. So, we have one island space within Second Life called Holyrood Park and we conduct meetings there. Again Fiona Littleton has terraformed Holyrood Park for us into spaces where we can divide up a group of students—I think there are 4 distinct separate bits or actually five if you come to skybox where we can separate the students, so that there isn’t linkage of the conversations from one place to another. So, that makes a rather strange geography but we have gardens, pavilions, coffee shops, and camp fires. We’ve seen no reason to reconstruct as if it were classrooms even though some people have gone that way but our meetings tend to be in their own scatter cushions, around a table or a camp fire and we meet to reconduct conversations in that way.

3. For how long have you used Second Life for educational issues?
For about 5 years.

4. In what academic level(s) have you used Second Life?
All of my teaching has been postgraduate, primarily on the MSc in e-Learning. The undergraduate vet programme is using Second Life. They have constructed a virtual room where the students meet, where the resources are placed, but I haven’t done any undergraduate teaching in Second Life.

5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
All of our students are at a distance and I think that’s a very important dimension. In fact, I think it is much easier to develop and convince students about various online media when they are looking for opportunities to meet with their peers, teachers, etc. There are situations in which one might be consciously trying to construct, for example, a role-play activity which going into Second Life would have a substantive purpose. So, I think in that context one might also be able to engage with campus-based students. However, our students use it for formal meetings as well as for informal meetings, and there is a strong desire to meet up when you are distanced from your peers. As a result, I think this aspect makes the online distance-situation different.

6. How many educational projects have you carried out using this alternative teaching method?
We use the virtual environment of Second Life on our foundation course called “An Introduction to Digital Environments for Learning”, so, that runs every semester, twice a year, that is. We have a significant engagement with Second Life twice a year over the last half a dozen years. I also use it in a course on game-based learning for all these reasons we’ve been talking about, such as the nature of avatars, the nature of virtual engagement and so on. So, students may use it for projects, but we convene at least two meetings with one outside speaker within Second Life and the game-based learning course. Others on our programme may also use Second Life. I know one of the most enthusiastic users of Second Life is one of my colleagues from the library, working within the Information Services division of our university, Marshall Dozier. She teaches a course on our programme called “Information Literacies for Online Learning”. So, we are quite frequently engaging with Second Life.
One of the reasons that we look at Second Life is because it is there in the information, communication, ecology, etc. If it were not there, we would be looking at something else. If something else comes along, it is perfectly possible that we might move on from Second Life or we might incorporate other virtual worlds into our practices. So far, it has been a fairly regular element of what we do, and that’s very much supported by our principal, Timothy O’Shea who is keen on this sort of thing. At the moment our graduation ceremony routine has been streamed to the web, so we have taken a feed into a virtual space in Second Life and virtual graduates, who have not been able to be present in the face-to-face graduation, have participated online. This year we had one person who managed through his iPhone to be both in the graduation hall and present in the Second Life graduation.

The hope is we will be bringing the Second Life venue projected into the graduation hall. In the past we were just taking the feed from the graduation hall into Second Life but I think the plan is that we will in the future come the other way and, at the point in the ceremony when we are receiving the virtual graduates, the people in the hall will be able to see what is going on on the screen as well. The university sees this as a place that it wants to inhabit, as a presence that it wants to make use of. If you are looking for other projects, the business studies folks have built a virtual factory. This was done on the undergraduate programme if I am not wrong. So, they are looking at supply chains and constraints on scheduling manufacturer and things like that. One of the ways in which they have done that is by modeling a factory within Second Life. The activity of the virtual production line is externalized through a website. So, the students are able to manipulate various aspects of the supply chain in order to change the way in which the virtual factory is working and producing. So, I think that is a very interesting use of Second Life.

7. How successful were these projects?

As I have already said, part of the reason that we engage with Second Life is because it is there, it is a phenomenon, and we are concerned with online learning, therefore we pay attention to it. I think we feel, in a sense, committed to it because there are interesting things coming out of the use of Second Life. My background is in psychology but I would say we haven’t done a lot of psychological research within Second Life. We did carry out one project with colleagues using Second Life as a vehicle/a venue for a virtual role-play of an appraisal interview. We thought this would be useful because we could make the situation more real by virtualizing it. When videoing a role-play in a commercial classroom, you know what is going on since you are talking to colleagues whom you recognize, they are dressed as they are usually dressed, etc., thus the environment doesn’t look remotely like the real context which a business board meeting or an appraisal interview might take place in.

In Second Life, on the other hand, you can dress everybody in parachutes, you can produce a very flashy looking office-environment, and the people don’t necessarily know who they are interacting with in terms of the name of the peer they are interacting with. They are just interacting with the virtual other within Second Life. So, I think there are lots of interesting things one can do with Second Life, and in terms of teaching, I believe, we are continually interested to experiment with that in an informal kind of way. Some of my colleagues who are more ethnographically concerned with the philosophy of
education, media studies, and so on have written about their experiences within the Second Life environment. So, I would say they are actively researching their practice, if you like, within Second Life, unlike me. I haven’t done much in that form of research even though we have a chapter published on that virtual appraisal work.

8. Do you have any other projects running at the moment?
I don’t think so. There is a lot going on around and about the university. From my perspective, there is an ongoing use of the environment. I think, in the context of our games course, comparisons between the nature and the experience of communicating in Second Life versus the nature and the experience of communicating within a game environment like World of Warcraft, provide a valuable stimulus to the students. So, the juxtaposition of Second Life and World of Warcraft is interestingly productive in that context.

This year Austin Tate’s work, a senior colleague in Informatics who has been taking our Masters programme, is particularly stimulating. He has been on the games course and he has been very productively involved with that. For example, he was aware of colleagues in the United States who were working with NASA and they have built a very elaborate moon surface exploration simulation in OpenSim, if I am not mistaken. Some of us went through that kind of exercise, a geology simulation exercise, which was very immersive.

Also, some of our students have used Second Life for building exhibition spaces about their work, for instance. Besides, we held a dissertation festival, so we got some of our graduates to talk to our present students about their research work and we did that in the medium of Second Life. Essentially, we built an auditorium and people came and spoke within that context. So, there are little things like that we are developing from time to time.

Part 2

1. What does a typical class of yours look like in the Second Life’s virtual environment?
One easy way to answer that would be to show you some screen images. We have a university consortium called VUE (Virtual University of Edinburgh) where there are a lot of images. Our classes tend to be seminar meetings or tutorials. Class conversations are mediated by a tutor and might be either text based or using the in-world audio. In fact, in our foundation course, “An Introduction to Digital Environments for Learning”, one of the threats within that course is to explore various means and levels of generating virtual presence. So, we have people interacting through text in Second Life, and towards the end of the course we return to Second Life where we conduct a seminar meeting, using audio and the students are asked to reflect on their experiences of the world and of the different sorts of communication that the text or the voice might support.

We wouldn’t recreate a classroom. We’ve considered running tutorials on the beach, as a theme that people have picked up on over the years. So, sitting around a campfire on a beach would be the way in which we would configure a classroom. It seems to us that there is no reason to recreate, virtually, a physical classroom arrangement because that isn’t what Second Life is about. Therefore, we would meet in a garden, beach, forest, etc. environment, just sitting around and talk. So, the parallel with the conventional real world setting, I guess, would be a classroom tutorial in which you have taken some steps to
remove the barriers of tables and hierarchy and you have arranged the classroom in such a way as to level the participation of all of the students involved. We don’t “set this up” in any way. In fact, some of my colleagues have avatar names that clearly indicate who they are but sometimes it is quite possible that people will not know who the tutor is, for example. That is not to say that we set out to be disingenuous about that but you just arrive, you have a conversation, and you go away again, so it’s practically possible that some of the students might not have noticed who their peers were or who the tutor was.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?

I think they are many. It depends on what you are doing. In the context of social psychology, for example, you might want to manipulate things like the gender of your interlocutor or how your interlocutor presents physically in-world. So, you might be systematically trying to play with those sort of things. What we are doing with our own student group is to ask them to think about issues of identity in relation to communication to the extend in which you can mess with that in Second Life. Some of our students will regard Second Life as a very bandwidth, intensive way of having a text chat. That is, they will not see the point of the avatar presence. What we are really concentrating on is what everybody is seeing. I can absolutely see that argument. However, it does seem clear that participants in a Second Life meeting do regard it differently and they do experience a presence within the Second Life environment which, I am not sure, if it could be recreated within a text on a chat. Take the virtual graduation for example; some of our students talk about their experiences in the virtual graduation in quite emotional terms. They could not come to the real graduation, but they have genuinely felt that they have been present at something important by participating through Second Life. So, again it is not something I would claim to have researched in a systematic way but there does seem to be value at it. Nonetheless, we shouldn’t forget that some students will find it particularly compelling, while for others it’s just extra bandwidth.

Coming back to your question, I can say that it is there in the world and as people are interested in online learning and communication, it is something that we would have to pay attention to. So, its existence is, primarily, its advantage, but I also think it does change things since participation in an environment of that sort gives the exchange that someone is having with a group of people a different tone.

3. Respectively, are there any disadvantages?

Some of our students are not able to participate in Second Life because they haven’t got the hardware to run it. This is less of a problem nowadays than it was a few years ago when not all of our students could run Second Life. Furthermore, some of our students are members of other, commercial, institutions or even other academic institutions and they are trying to participate with us through Second Life from inside their own institutions, yet some institutions don’t like the idea of running –as they would see it– trivial game-like, bandwidth, consumptive activities down their networks. So, there are places that wouldn’t allow Second Life and that is clearly a disadvantage. Anyhow, it is an interesting phenomenon; it has its strengths and weaknesses as any communication medium, but we, as people concerned with online learning, are substantively interested in both the strengths but also in the weaknesses as well.
Another technical downside, I can think of, is that there are people who can’t get at the virtual world for some reason or another. We have students all over the world, and some may live in “political” environments in which such things would not be condoned, and therefore would be blocked. Our desire is to expose our students to a whole range of different environments, but of course everybody can’t do everything, so we wouldn’t want to criticise our students if for whatever reason they did not want to or could not technically engage. As you know people in Second Life can manifest in all sorts of weird ways. Somebody appearing with an animal’s head is not neutral to somebody who is, for example, a Christian within anonymous culture. So, I think, alike anything else one does, one has to constantly be conscious of the sensitivities of other people. For example, we have recently had an “interesting” incident where somebody came to a tutorial thinking that his best analogue for what we were doing within Second Life was a game and the image was as a first person virtual reality tutor game. So, he came to a seminar packing a gun that is just a bit of fun for some people, it is possibly offensive or a threat to other. So, we do actually say quite explicitly in our documentation that guns are prohibited in class and somebody obviously had quite read our documentation and this was the way in which he thought about game environment, that you carry a very big gun without considering that this would be offensive. I find all of these things quite interesting, that these contraventions of etiquette are not perceived as anything significant by some, but are perceived as significant by others and this might be a cultural thing.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
Again, it’s a matter of what it is you are trying to achieve. We would not have the possibility of a classroom meeting, and a lot of what we do is asynchronous. On the other hand, when we do want to do something which is synchronous, there are a number of options that we could use, a simple text chat, for instance, a Skype call, an augmented communication with video or something like Second Life. We are obviously not very much about didactic presentation, we are much more about resource-based learning and discursive engagement with ideas, and Second Life is one possible place in which one could have those discussions. In that sense I wouldn’t particularly want to make any straight comparisons; you can do this face-to-face, you can do this online. We are all of us interested in pushing the boundaries. Of course, there might be some practical skills that are better dealt with in a classroom situation, therefore those of us who are online have to be particularly creative about how we engage with those issues. My point is, though, that I wouldn’t attempt to compare these two classrooms because they serve different purposes making each irreplaceable.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
Well, I think there are assumptions that students will be increasingly information-literate and therefore familiar with these sorts of environments. A basic concern about Second Life, I think, is that it is perceived as a game or as game-like. There are a lot of issues with game-based, game-informed approaches to learning in that students are suspicious of
them. They perhaps think that something which is a game is by definition less serious. It’s quite a common belief that “game equals play and education equals work”, so I think there are whole series of issues around and about that. Just because students are familiar with game-like environments does not necessarily mean that they will perceive those environments used in an educational context as attractive. Besides, even if they are quite into games, they may not necessarily think the games are part of serious work, so Second Life can suffer from some of that perception.

I believe it’s a double-edged sword. By and large, students are quite familiar with tools like Twitter, Skype, virtual discussion for Facebook, and so on, but Second Life isn’t something many of our students know about before they meet us. I think familiarity cuts both ways because it can lead to ungrounded assumptions that one has to self-question before one can move on. So, I don’t think familiarity just unequivocally helps because students may be familiar with the technologies, however, they may not be familiar with the ways in which we want to use them and therefore the assumptions that they make may result in negative consequences instead of positive consequences.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?

I guess this question is referring to immersion but, before answering that, I should clarify that our uses of Second Life have been really quite simple in level, confined to discussions, seminars, tutorials, and the like. I think it does have that impact, I think they do engage with one another in an embodied way, if you like, which perhaps will be different from the way in which they might engage asynchronously through a discussion forum. So, there are those sorts of issues of engagement and immersion. Again, I would say it’s a matter of what it is you are trying to do and why you are using Second Life. I would doubt that simply taking a class out of a classroom and putting it into a Second Life virtual classroom would, only by itself, contribute to greater engagement. There are interesting things about online communications, so, for example, traditionally it has been observed that perhaps the shyer individuals will be able to contribute more if their communication is virtualised —and I am sure that’s the case. On the other hand, there is some evidence that the more extrovert individuals benefit less from the virtualised communication probably because it is not stimulating enough for them. Also some people would simply see Second Life as a very bandwidth, expensive way of having a text chat. I guess that this view is more likely to be expressed by the more extrovert than introvert individuals. So, again I am registering here without any clear vision of why it is that you are using this particular environment as opposed to another particular environment.

Anyhow, I don’t think you are buying any special route to immersion. Coming back to the exercise I was telling you about, the virtual appraisal, I think it was interesting because by virtualising a role-play exercise you can make that role-play exercise more real, since you can set it in the fantasy context of a boardroom, you can set it with people dressed in a way which is consentient with the activity that you are engaging and so the fantasy makes for a more real experience. Another interesting point about that virtualised role-play is that you can be in the role-play and in the classroom at the same time. If you think about a conventional role-play situation, you play out the role, and it is quite disruptive for the tutor to pause the role-play and ask the students to come out of the role and discuss an incident. Whereas, if you are working in a laboratory situation with
students engaging virtually with one another in the role-play but also with the tutor in the room, then the students sitting at the council can turn away from the screen, turn to the tutor, ask a question, make an observation, and then turn back to the role-play without the role-play itself being paused or disrupted in any way. So, I think this is an interesting feature of the virtual role-play situation.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
I guess it is difficult to compare because we haven’t actually made those comparisons. Well, I would reply, “some do and some don’t”. I think it is conducive for some, while others are much more sceptical and less convinced. However, I do think that many of the students will throw themselves into these activities and will benefit.

4. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?
That is a very good point. I think orientation is very important. Taking it one step back, I think, orientation is always very important, but often we don’t give it enough attention. So, we certainly do spend a lot of time on orientation, particularly in the context of our foundation course where we have new students running the programme. I think too that if you compare campus-based compact programmes using online approaches with distance programmes using online approaches, you can realise that they are quite different. The motivation of our students to engage with one another is very high. It’s really not that the motivation of campus-based students to engage with one another is not high but they will see other ways of doing that; they will meet in class, they will meet outside class, whereas for our students, their virtual encounters are the only ways in which they will meet. They will convene such meetings themselves, and they will participate in asynchronous and synchronous activities that we will convene. The fact that they don’t have any alternative changes things. So, yes, orientation is always important, and that becomes very obvious in an online environment where people have technical problems or problems of etiquette or whatever. Those problems arise even in the classroom campus-based settings, but, there, students are probably expected to cope with them. I think a lot of us are beginning to think more about the agenda for orientation.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.
1. Have you taken this issue into account? What is your opinion? (2nd question)
The technology is constantly moving on, so I would say we will pay attention to those technologies which seemed to be relevant in the ascendancy at a given point. I think people have been predicting the demise of Second Life for a long time, but one of the things clearly happening at the moment is a move from Linden Second Life into custom-constructed servers using OpenSim. In that sense I am not seeing any sign that this sort of activity, be it Second Life or OpenSim, is to disappear in the foreseeable future. Clearly, things will move on and technologies will enhance. Besides, one does not know about the stability of any commercial enterprise online, but I think OpenSim is sort of cushioning us there, so if Second Life disappeared tomorrow, we could continue to do these sorts of things using OpenSim. Regarding OpenSim, one shouldn’t neglect to point out that large
organisations like universities could probably sustain something like that but a small player dependent entirely on Lindens provision possibly couldn’t. If Second Life were to disappear, then that by definition would imply a change in the information ecology which a programme like ours would have to pay attention to. So, yes, we are very aware that things might change. There have been a number of points in which people have predicted the demise of Second Life almost from the very head-set. Take Google, for example, one minute it was announcing us a virtual world, and the next minute it pulled back entirely. So, there possibly isn’t very much room for many players in this arena, I guess.

3. Are you concerned about Second Life’s closure?
I would say, yes. I think if you are involved in a programme that is concerned with technological affordances for supporting learning, you have to take that in your stride. If Second Life exists, it’s relevant to us to introduce our students to it and encourage them to think about whether or not Second Life is relevant to their own practices. If Second Life doesn’t exist, then that imperative goes away. We are not using Second Life in a way which would mean that a whole area of our practice would be undermined if it were to disappear. As I have said, we could go sideways into OpenSim – I suspect we would– but for us this would be a rethink of what it is we are trying to do through Second Life rather than a feeling that some fundamental part of our agenda was compromised because we couldn’t do it in this way.

4. Does this possibility affect your decision to use Second Life?
When we started work with Second Life –and that was really at the point in which our programme was just beginning– we were looking around at a number of different virtual worlds, trying to identify those that would be relevant to our practice in the future, and at that level stability and ubiquity were important considerations. We wanted to introduce people to things that would be persistent to some extend and relevant. So, yes, I think I would answer that question in a very general way which is to say yes. When thinking about deploying technologies in one’s teaching practice, one has to think about whether or not these technologies will be here tomorrow. I guess, everybody who is working with online technologies has been caught by this, in one form or another, so, for example, a lot of my colleagues used Delicious, and there was a point in which Delicious was about to disappear and that was a threat. We have made use of external services. In one case we were using a blog tool, and a few weeks before Christmas there was an announcement that this particular service would be ending in the New Year and we had a significant investment in the use of that service. I think that will make people reluctant perhaps to use external services, and it will make people keen to engage with their own internal information infrastructure to support things like wikis, blogs, and so on, internally to the institution rather than using external services. I think that’s a constant dilemma that everybody faces. “Virtual worlds? Yes.” That dilemma exists there as well. Again, you are always having to reflect on whether or not your practices are relevant to the context that exists in the outside world.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment?
Yes, that’s possible as long as it exists as a possibility for us. Here, in Edinburgh, we have some colleagues in Informatics who, I am sure, would give us a little bit of space if that is what we wanted to do. But, again, if the virtual environment was to disappear from
the information ecology of our students, we might then feel that we were less interested in Pursuing that as compared with pursuing some other sorts of online communicative tools. It is very difficult to speculate. Our decision would be driven much more by the relevance of the tool in the environment in which our students would be working and participating than it would be that we had certain sorts of things that we wanted to do which could not be done in any way other than through the virtual environment.

6. If yes, can you please name this alternative solution? This might probably be OpenSim.

Part 5

1. What is the monthly cost of using this virtual world? A sum in the order of £1,000 a year for an island. It is very expensive. We couldn’t have done that at a programme level. I don’t think there would have been the will within our school to do that for our programme. We were fortunate, however. We managed to persuade our information services and our vice principal, who looks after the information services, that the university should have some presence here. So, I am not exactly sure, I know Informatics invests in land, and the university as a whole invests in land which we use. I think there has been a will through our communications and marketing group within the institution that there should be a university presence within Second Life and I believe one of the things that was particularly influential here was the virtual graduation because it is something that got a lot of press attention when we first mounted it and it was good press for the institution. So, there is intention that we will continue and expand this practice of our virtual graduation for our students. Nevertheless, had our circumstances not been as favourable as they were, we might not have been able to afford it. As it is, if our information services withdrew their support tomorrow, that would cause significant problems for us. The cost of an individual course participating in the use of the VLE is on the one hand transparent and on the other hand marginal. If I choose to work within Blackboard or WebCT, for example, I don’t expect to have to pay for that. If on the other hand I choose to work within a less mainstream medium, then it’s not immediately obvious that the university owes me a living in that respect. I have made this decision, I want to do this, but “who is going to pay?”. You might then be told, “well, the programme can pay out of its running budget or the school must pay for the programme within it that wants to do this”. We were fortunate in that we managed to persuade the university to be interested, otherwise we would have probably come across difficulties.

2. Who usually funds your in-world projects? The university, to a modest degree, as it would be very expensive for an individual school or programme, whereas it is not that big for the university as a whole. However, they need not have done that. It might have been other. One cannot assume that just because one wants to do something innovative in their teaching that they would necessarily be able to persuade one’s institution to support that. That’s a constant problem. Let me give you an example; in the late 1980s-early 1990s, quite a number of us wanted to do this radical thing which was to give electronic mail to all of our undergraduates and we had to persuade the university to do that. Edinburgh was in the forefront of doing that, but it was
a cost that the university hadn’t previously carried and now they were being asked to carry it. So, I think there are always going to be epochs where you are looking forward and you are saying, “what we really need to do is this but it is going to cost”. The only way that one can really make it work is if we adopt it at an institution-wide level but that’s difficult.

3. How affordable do you consider it?
Well, I would say it is affordable for the university, but for your own programme cost is a problem. Is it worth what we pay for it? It is difficult to answer that. We are able to do what we do because the university spends about £1,000 a year – that seems to be the price. I was having this conversation with students about the cost of a subscription to World of Warcraft. To some, £8.89 is expensive, while to others if you spent a significant amount of time playing that game, it wouldn’t be very expensive at all. So, it really does depend on what it is you think you are getting for your money.

4. Have you used the discount offered by Linden Lab to academic institutions?
I am assuming that they do. I am not directly involved with paying bills.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
I haven’t heard that their decision to discontinue the offer is going to have a negative impact on our ongoing use but I am not the right person to answer that.

6. How do you intend to deal with this?
Not applicable.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Well, if, by that, you also mean the colleagues within our information services who have developed particular expertise in building and scripting, then yes, the university is paying the salaries of some of our colleagues who are very adept at Second Life building and scripting. So, in that sense, investment has been made. We would not go out the door looking for consultants who would develop anything for us, I think. That would be my viewpoint. Obviously, any individual within the institution might think quite differently.

Interview 21
E.M. (anonymous) — Department of Health Sciences (Nursing), N/A

Part 1

1. Which virtual environments have you used for educational purposes?
I have used Second Life.

2. What were the reasons that led you to choose this virtual environment for educational issues?
At the time I started to use Second Life, the university had already purchased two islands. Therefore, there was existing space in Second Life and a project team to develop any projects. However, that project team has now disbanded, but we still have the islands which are mainly used by the School of Health & Life Sciences.

3. For how long have you used this virtual environment for educational issues?
Three years.
4. In what academic level(s) have you used this virtual environment?
I have used it in post-registration. However, my colleagues have used it for undergraduate students in both psychology and nursing.

5. Are you using this virtual environment for universal conduction of the courses or just to support the usual educational methods (in class)?
I am using it to conduct problem-based learning scenarios for healthcare students at postgraduate level. So, they go into an area in Second Life that looks like a ward where they can interact and take patient histories via three methods. One is the use of an AIML bot which responds automatically to a set of questions both in voice and text. The other way is to take the history from a simulated patient, that is, someone who has been taught how to deliver a particular health history. Moreover, I have recruited volunteers and that is the third method used. In other words, members of the public log in—obviously through an anonymous avatar—and then my students take their real life health history. The next stage of this problem-based learning scenario is deciding what they think is going on with the patient, what the diagnosis or differential diagnosis is and then what investigation will be required etc. The results of the investigations are then delivered via Second Life, so my students are able to discuss them. During this scenario they also do things like write up a note card, as if they were writing it into the clinical notes, deliver it to me for feedback, and share it with their group again for feedback. After I have given feedback, they can reflect on it, they can also cut and paste their discussions in order to reflect on them, and look at how each and every one of them make their clinical decisions. That also helps me to see how they are formalizing their ideas of what is going on with the patient.

6. How many educational projects have you carried out using this alternative teaching method?
The students are only in one semester a year because this educational project is a part of a Masters programme. So, I have had three classes through it.

7. How successful were these projects?
Well, I did an action research project and the majority of the comments were positive. I also did a self-assessment of their group-work before the end of the module and it became apparent that they thought this in-world project helped them improve. Unfortunately, there were some technical issues. However, these were fairly quickly overcome either by my help or by the students helping each other. In fact, they created their own etiquette within Second Life of what they believed was acceptable or not as the students expected each other to turn up on time, do their part of the group work etc. So, there were some technical problems, and some initial fear, and a little bit of confusion about what this is all about but, overall, it was positive. Not everyone was positive but I don’t think that everyone is positive in any virtual learning environment. No matter what VLE you use, there is always someone that doesn’t like it.

8. What are your current projects (if any)?
I have no educational projects at the moment other than my Ph.D. work which is looking at Health Information and health literacy skills of people who access Health Information via the 3D virtual world, and how this influences their real life health behaviour.
Part 2

1. What does a typical class of yours look like in the Second Life’s virtual environment?
   Basically, what we are doing here is a clinical simulation. Therefore, the class has to look like a clinical area. It can’t look like a spaceship because what we are simulating here is the same as what we would do in a simulation lab which is, according to research, a useful environment because it is authentic and familiar to the students. So, the area has got to look authentic, thus it looks like a ward. Therefore, they teleport straight into the ward because that’s where the class is. We sit down across our patient at the distance we are expected to and we try to make our patient’s avatar look like the patient that we were trying to describe or discuss. For instance, if we are talking and seeing that you are about to meet Mary who is a 75 year old woman, then we try to make an avatar look like a 75 year old woman. So, they work through the scenario as they would do in a clinical simulation lab if it was sitting in a physical environment. Because this is a simulation, the setting needs to be authentic.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
   Well, within our university there can be up to 500 undergraduate nursing students, at one time, all trying to get into the physical clinical simulation lab, and that makes it a bit difficult for me to get in with my students. Therefore, I wanted another authentic-looking area that would allow me to represent that kind of immersion and an area that looks like a ward. Another advantage is the social aspect of it that enables you to see other avatars. Moreover, the area looks authentic, so they can become immersed. The synchronous communication and the ability to capture the text (the chat log) for reflection are additional useful elements. Also, what is really useful for me is to be able to teleport and see a nursing lecturer from other universities so as to work collaboratively with other people. For example, last week my students, after doing the problem-based learning scenario, they presented back a kind of multidisciplinary team meeting, which is what they need to do for the role they are going to do. So, last week they presented that in Second Life to people from a real clinic from other universities in a much more engaging type of environment that would have been possible via just Blackboard. I have tried these scenarios on Blackboard, but people get nervous about putting stuff in the discussion board. Besides, quite frequently no one replies within 2 to 5 hours, so they often lose interest and they don’t engage again. Consequently, the synchronous normal back and forth discussion is important as well.

3. Respectively, are there any disadvantages?
   Yes, one of the disadvantages is that there is a third party viewer so you are in there and what you have built is very difficult to get out if you want to take it elsewhere. Another disadvantage is that you are tied to Linden Lab’s time frame. This means that the system may crash while you are in the middle of a class for reasons of maintenance, upgrading or other and your class can be abruptly interrupted. Another disadvantage is obviously that sometimes individuals’ technical skills or their computer availability is not compatible with Second Life. However, that I think has definitely reduced in my class in the last three years. Less and less people seem to have problems with that. Another problem we have is that IT staff in our own university are supportive but not particularly knowledgeable. IT problems are universal throughout the world I think. In addition, some
students are rather reserved and not sure they really like working in this novel environment or they are a little bit confused what the purpose is. I tend to focus very much on what is we need to do for the module. These people are full time members of staff doing a part time course with competing demands on their time. Therefore, they don’t have time to mess around. They need to get in and do what they have to do. So, if they see the value in it, then it is much easier to engage them. That, of course, is not as much of a disadvantage as it may be for other people.

4. Comparing the university classroom with the virtual classroom, which one may have better results?

I think they are probably comparable. I mean that there are advantages and disadvantages to both. For example, if we have a discussion in the real life class, the discussions don’t tend to be recorded. So, they are very valuable and you get the face-to-face intonation, if you are using voice, intonation of voice, etc. Furthermore, there is the social element, that is, the kind of feeling that they are all together and they are bonding as a group. Nevertheless, you can have that very well within the virtual environments as well. One of the advantages in the virtual environment is that they can work in-world very flexibly from home. There is no travel time to University and this is perfect for our students who, as I have already said, have limited time at their disposal but also for some of the students who live far away from campus. So, they can get up, do their class and then go back to their business or work from home. That’s definitely one of the certain advantages.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?

I would say that one or two out of about twenty five students have heard of Second Life before they came to me. I can say that none of them spend any leisure time in Second Life. They come in, do their class, and then leave. This occurs because I ask them to create another avatar if they wish to use Second Life as a social networking tool. I find this really important because it means that I don’t know what they do after they leave class. So, I have no idea if they use it for leisure time. Besides, I don’t think this is any of my business—it’s like you are on their Facebook page; I am not interested in being on their Facebook page. The avatar they create is an avatar for class use exclusively and they are expected to act like a student exactly the same as they would be required to behave in any class. If they want to use it for leisure or as a social networking tool, they can create a separate avatar and do what they want.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?

Certainly from their feedback none of them have said that they didn’t feel they learned anything. What I do is very much a formative type of assessment that is going to lead to their summative assessment. So, we don’t really go in without a purpose. Some people may argue that that’s a waste of the virtual world because the virtual world is meant to be doing things that you can’t do in the physical world. As a matter of fact, I can’t do what I am supposed to do in the physical world because I can’t get access to the lab. Because I am doing simulation, there is no point in me presenting them with a spaceship, saying,
“Let’s walk about a spaceship and take X-rays”. That may work, but it is all about using less and less. If you were to show them how to fly a plane, it would be awkward not to use a flight simulator which looks like a plane! None of them failed the assignment after doing what they were supposed to be doing within Second Life, except for one who I think would have failed it regardless. The other important thing worth mentioning is that this is a blended approach so they are not purely in Second Life, but they have face-to-face classes as well, and they also use Blackboard and discussion boards for other aspects, beyond the Second Life stuff. I believe it is important that it is not purely online.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
I haven’t measured it completely, but the results on the progression rates are no worse, so they are at least as good as. However, a couple of the comments made apparent that they felt more connection with me in the virtual setting than they did via e-mail. Likewise, when students met me in the classroom within the normal classroom time and chatted with me about something, they felt that much more engaging than doing so via e-mail. They also pointed out that their communication skills had improved in the real world because waiting for someone to type something gave them a little bit of time to reflect on what they had seen and what their answer would be. So, I found that quite interesting.

4. Some of the interviewees have mentioned that their first educational projects within virtual worlds have failed due to lack of orientation. Have you faced a similar problem? What do you do to orient your students?
At first, I send them out an adobe file which is a kind of step by step guide of how to download and how to use Second Life. It is an amalgamation of the Wiki that a healthcare librarian has put together. So, I send them out that as well as a link to the videos that Linden Labs do about how to use a viewer and then I bring them into the lab. Bear in mind that they have already created their avatar before they come to class for the first time. In the lab, we do about an hour session where I have my avatar in Second Life on a back screen while they are on their individual computers and I instruct them to do certain things like “walk up here, walk down there, click this, friend everybody” etc. I do get them to set the classroom to home. Additionally, I give them a landmark for home so that, if they do go a little bit wandering, and they get lost or pushed somewhere else by mistake, if the island is offline for a second or two, they can always use the landmark or click home to come straight back home. So, they do get videos, adobes, and stuff which is fairly serious but also a little bit of a joke. We do our own things, such as having a laugh about each other’s avatars, things that serve as ice-breakers. I give them some clothes, and I direct them to the library because they always want to change clothes. As you know having your own avatar is quite a personal thing. They don’t like all looking the same, so I just take them to the library in the inventory where I give them some clothes. On the first session they meet to do something in class where they have another ten minutes just of induction. Usually, in-between the first session in class and the first session in the virtual world they get together themselves and have a little practice. Quite often my students say that they are never going to be able to do what they are asked to. For example, in the last class one girl was almost in tears in the idea but in her second session, which was only about 3 hours into Second Life on 3 separate occasions, she came in, sat down, changed her avatar completely, and so on. She had obviously picked
up a lot quicker than she assumed she would and that is almost always the case. I do consider in-class induction of high importance. However, I do know that some people have done this purely online and it’s similar in results.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account? What is your opinion? (2nd question)
   Yes, I have. If it closes, it closes. It will be disappointing, but there are many other virtual worlds if I decided that I want to continue in that. I think that, especially because of the financial crisis, people have been looking at the price of things much more cautiously. Also, people have maybe come out of the hype circle, and we may be just on the cusp of the kind of peak of productivity, if you like, but it may take a bit longer because money is an issue. At some point I may have to fight to keep our place open as well. However, if Second Life closes, I think we will lose certain things that other virtual worlds such as OpenSim cannot do as well, even with the hypergrid. A lot of people use Second Life not in a traditional classroom, but they go on field trips to certain areas to get that authenticity, whereas in the hypergrid, you are really going to someone else’s class. You are not able to go and observe people in a club if you are doing psychology, for instance.
   So, I think that would be disappointing. However, I do think that, if you are determined to use virtual worlds –which, I believe, offer something different than just flat screens and a web tool–, then people will find a way to do it. I don’t think virtual worlds are going away, to put it that way! So, whether in Second Life or somewhere else they will continue.

3. Are you concerned about Second Life’s closure?
   Well, on the one hand I am concerned because I wouldn’t like to have to start from scratch again. At the same time, however, I am not concerned because I think I would find another way to create another 3D environment whether that is via Unity 3D or any other virtual world, which is something that we are looking at as well. I don’t have shares in Linden Lab so if I can find a better way to do what I think and then I will do it. Second Life, as I have said quite often, is just another tool in my blended learning portfolio. So, if it goes, I will come up with an alternative solution.

4. Does this possibility affect your decision to use Second Life?
   Not really because, to tell you the truth, I have heard that Second Life is closing or that this is going to happen for 3 years now. Besides, people that I know had heard the same thing for 3 years before that. If they are making something like a 75 million profit, I don’t think that they are going to close it. If Linden Lab decided that they didn’t want Second Life any more, I believe that another company would buy it. So, I think that it will still exist, possibly in a different way –maybe in a better way– but I don’t think it will just disappear.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment?
   Yes, I am probably going to do that in conjunction anyway. I have already tested a few different environments to see if one is better than the other.
6. If yes, can you please name this alternative solution?
I will probably try to use Unity 3D, if I can get engineering people to programme. I may look at other OpenSim areas as well. Actually, if we all go behind firewalls, then I am afraid that we will lose that community which is extremely important. As a matter of fact, Second Life or being involved in Second Life has not just improved my teaching because I teach in it. It is the networking and the discussions I have had with other educators that has probably had the biggest impact on how I think about teaching.

Part 5

1. What is the monthly cost of using this virtual world?
I haven’t got a clue. I think, it is more or less £4,000 a year (approximately £330 a month).

2. Who usually funds your in-world projects?
At the moment it is funded by our IT department, but it will possibly come under our school. I don’t know yet, though.

3. How affordable do you consider it?
I think it is quite expensive for what it is. Nevertheless, I also think that “it is peanuts”, compared to other virtual learning environments.

4. Have you used the discount offered by Linden Lab to academic institutions?
We did in the past but I think the discount has been discontinued.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
I think that it was naive of them. However, I don’t think that education is their priority. I think they are a business and they make decisions on what they think is best for their business. If they don’t believe that keeping education is a good idea for their business, then they won’t keep us – it is as simple as that. I don’t think they owe anybody anything. I think they have to act like a business and they will, just like any business. If they decided tomorrow that they didn’t require education anymore, they would end the education discount. However, I think they are naive because if they hadn’t, they would probably have even more people. I think their problem is that educational institutions probably don’t spend a lot of money.

6. How do you intend to deal with this?
The price does make me think about whether it is worth staying in Second Life or not. I think it is expensive, but if more people engaged with it, it would be worth it. I think that when virtual worlds take off, if you can get the amount of space we currently have for four grand, you will be doing well. The thing is that, if they do really explode, then people will start thinking, “no, I am not charging that amount anymore, get me some more money”, because 40$ a month in OpenSim is not going to make people money. I wouldn’t be surprised if OpenSim prices go up fairly soon.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
I am not sure. Possibly, when the project team were in, they may have. However, I think we had our own builder and we have someone who can script. Also I can build some stuff myself. So, we probably haven’t paid any substantial amount of money to anyone for
building. Most of our stuff had already been built and any other future building was done by a small team within our university.

Interview 22
Mrs. Patricia Murphy (SL name: Pamala Clift) — Rockcliffe University (I have been helping universities learn how to use the virtual world environments for converting courses into 3D and businesses who are trying to train their employees on different methods like Agile and Scrum Project Management)

Part 1

1. Which virtual environments have you used for educational purposes?
I have used Second Life, OpenSim, SpotON3D, Blue Mars, Reaction Grids, World of Warcraft, Thinking Worlds, Active Worlds, Unity 3D, IMVU, VenueGen, Sococo, Club Penguin, In-Worlds and dozens of others that I researched.

2. What were the reasons that led you to choose these virtual environments for educational issues?
I prefer Second Life because it has the largest user base and the greatest inventory of already built items which you then don’t have to recreate. We have a massive amount of user created items that we can access for a minimal amount of money. So, to try out a course you can start off with not having to recreate the wheel. Hence, this is my preference for using as an educational environment, plus it has a rather good voice component that I make use of extensively. Doing everything from scratch is a redundancy of effort. If you choose to have that control, that is what open sims are for.

3. For how long have you used these virtual environments for educational purposes?
I have been in-world for 5 years and I have actually been in education. I was working at a University, using the learning management 2D systems that they have such as Blackboard, e-Learning, WebCT and Angel. These are good for backup reference and self-tests but rarely will contain the memory retention I would consider that real education should afford. I kept trying to explain that there are other venues, but I was eventually laid off in the cutbacks. New ideas rarely are given credence in the academic circles unless the tenures think of it.

However, there has been research showing you can have a real life classroom and a virtual classroom where you can teach the same subjects and students end up getting the same test scores. However, 3 months later, when the kids were again tested on the material you find that the ones who were in the virtual classroom remembered better than the ones in the real life classroom. So, retention is better in a virtual environment because it engages more activity, you have to use your hands, that is like when some do doodling for example. When you are trying to listen to a lecturer, just sitting, there, is not engaging. However, if our avatars are sitting here, I can still control or shift view to the back of your head, ride a shark or type a question to the gal next to me and still listen. This engages more senses, making things more retentive. For the last two and a half years I have been teaching in industry, how to use this methodology for group facilitation and brainstorming, and giving lectures to other universities and helping them to use a method that will touch on all of the teaching methods. Tactile, Visual, Auditory and Social.
Which I believe is the new component and the only one that kicks in the need to remember.

4. In what academic level(s) have you used these virtual environments?
I am dealing with Ph.D. students and the professors of the Universities in the distance learning departments themselves, and I help with Agile/Scrum training in 3D which is a project management methodology for large computer software projects. I do have those working with grammar school students that I assist with the psychology and methodology.

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
I have used this to teach my classes in here. I have helped, with other people setting up and orienting people into how to come into virtual environments. I am very good at orientation, slowly bringing people up to a speed so things become more engaging. In the old days when we learned keyboarding, it took 3 years to learn how to properly type at a decent speed. We no longer seem to value orientation, we only want to jump into “fast-food” knowing. So because 3D virtual environments are so different with no help, people coming in here only find frustration. Nobody spends the time to orient them before entering a totally different environment. I tried to explain “you can’t expect to go directly to your course material and not have the interface interfere with the class. Unless you know the interface, there is no way for you get passed that”. Sort of like you having to learn while in another language. It takes time to get that component comfortably up to speed. Thus if education wants to be more engaging, they really should have an interface course for the environment. Then start teaching courses in here, otherwise you have lost the class to the interface and it will fail. So many well intentioned professors and teachers have tried to show off the potential of the virtual environment, but because they are not supported by their department and school, shove it all in one class and get less value all around, which only serves to validate the naysayers.

6. How many educational projects have you carried out using this alternative teaching method?
I probably have helped a dozen or so educational projects.

7. How successful were these projects?
The assessment is still under question as to how to properly assess learning. You understand, as I do, that even today in our environment in the traditional classrooms, we are still questioning assessment methods. So, the assessment target method is still fluid at the moment. I do consider them successful, though exploratory. I guarantee they were memorable!

8. What are your current projects (if any)?
I have several projects always going on. I run a group called “The Roadside Philosophers”. The Roadside Philosophers are an international group of people from around the world who are actually using the Virtual World as a metaphor in their search for truth. So, we talk together in a group every two weeks and we discuss one particular aspect of reality using a diverse geographical brainstorming group format I developed. The group has been running for over five years and continues to grow. We have between 13-37 people come to these voluntary meetings to listen and contribute diverse
perspectives. I always learn. The second thing I am doing is trying to deal with the emotional IQ within virtual environments. There is a lot of confusion in virtual worlds and social media. Doesn’t matter who, confusion happens for scientists, professors, students, business people they get totally caught off guard about how they “feel” and what is real. A particularly favor subject for philosophers, “What is reality?” They come in here and the biggest difficulty is virtual relationship problems. They get engaged here and they actually fall in love. That is why virtual worlds get a bad reputation because nobody knows how to deal with this new medium. Therefore, because it is so confusing, and because this seems to be inhibiting this media from being globally used, I decided to address it directly dealing with the sex component, the intimacy and the needs that are revealed in a new environment. The world can be extremely engaging and positive or extremely devastating. I have recreated Café Bumbles which is a proof of concept funded by NIOSH (National Institute of Occupational Safety & Health) in the US. Its purpose was how to teach teenagers coming into the workforce the proper expectations and what they should or should not do. Employers expectations and their rights as a teenage worker. I have reconstructed this for the Florida International University and it has been discussed to be taken over by Georgia Tech. I also have a Ph.D. student that I have recreated the traditional classrooms for in a 3D school that plans to conduct his research in both environments real and virtual as part of his thesis. I teach in virtual worlds all around the grid, my course, called the “State of Being” presentation, in which I talk about avatar perceptions. How all perspectives are all valid and how to discern which perspective someone is coming from so you can know how best to engage them before investing your emotion.

Part 2

1. What does a typical lecture of yours look like in Second Life’s/OpenSim’s virtual environment?
You can use several methods to engage your students while you are teaching, PowerPoint slides, YouTube and live videos, open classroom discussions, props, avatar shifting of costume or take on different personas, or creatures, virtual field trips, programmed response areas. Students engaged in helping each other via team work or group discussions. Everyone knows you learn things best by teaching others. My students teach me as well…

2. Why do you use Second Life/OpenSim in your teaching? In your opinion, what are the advantages of this teaching method?
I have discovered that almost nothing is remembered without a social component. You will remember till the test and then forget it till you have a reason. There is no reason to remember something if it does not aid you in a social goal. You learn a skill so you can get a job to get a gal or raise a family; get validation from peers etc. Second Life is a very social place with the extremes of personalities that assist in my understanding of motivation.

3. Respectively, are there any disadvantages?
Stability of platform, the responsiveness of the creative team, bandwidth and integration of educational tools still have a long way to go for perfection. Second Life is not actually
spending much time addressing the needs of the immersive and augmentative engagers. So, it may be that we may not have this environment for that much longer.

When you enter in an open source environment such as OpenSim, InWorldz, ReactionGrid, SpotON3D, Unity 3D, what you have done is put your whole educational component under the charge of a small team that is running that particular virtual world platform. Bear in mind that anything that is a small team has a tendency to become a little bit more unstable than a larger more collaborative team. There is no 3D collaborative web component, like there is for the 2D web.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
The virtual classroom has better memory retention. You know and I know that sitting in the same spot for a long time, being forced to pay attention to someone talking to you in front of the room, is extremely boring; not engaging – you are sitting there but your mind wanders. This (Second Life) allows you to sit here, you are engaged, you can look at things – I especially have in my place here fish that flow around which is visually attractive. Also, if you are trying to listen, and there is a lot of ADD students for instance, they want to be engaged, they want to listen, but they need to feel movement. So, you provide them with turtles and fishes which they can ride and sharks so that they can actually feel movement. While still listening and being engaged, they can watch themselves move and that is amazingly helpful for ADD students to be able to feel the movement and not feel like they are sitting. So, having this in the environment is a wonderful, memory aid – “oh, I remember when the instructor said that, I was riding the turtle.”

A lot of educators say “That’s play… They are not paying attention… They should focus…” Well, some people can’t focus if they are staying totally still – they need movement, hence the doodlers of the old world.

We have hopped-up, on-sugar students with short attention spans. We need to engage all of the components most of the time, or do a great job of shifting through them fast enough to keep them engaged.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time make your lesson more effective and attractive?
The best possible way to do that is not really lecture. Sometimes it is necessary – especially for orientation– but to be more effective and attractive, you need to find a way to make it more engaging. The social component is the major part of the motivation. Yes, that is a concern that they will hear conflicting opinions, be harassed and grieved and that is what real life is as well. If we keep them in a sterile globe and don’t address what they will meet out in the engagements in the real world, then we are not giving them an education they can use. We are giving them something that is only valid within academia and not functional. Understanding of real life and its intense conflicting modes is what education should teach. The methods of filtering information and opinions in this overload of information age is the highest priority.
2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?

That depends on what the class is. If you are learning about World War II and doing a reenactment, then yes, this would indeed be a way to live and understand what happened in a major memorable way. If however, you are teaching calculus there are some cerebral interactions that mathematically can be rendered in real time with a visual component but to do the problems would be cerebral computations anyway. It is hard to live some educational components but even those classes can be added to with the additional memory retention of multiple sensory inputs.

The problem that I get most of the time is when teachers come in here and say “I am going to bring somebody into Second Life, and we are going to start right off learning about 17th century architecture”. It can’t be done. You have eliminated the orientation time for the students to actually learning about how to be engaged in the environment.

There has to be an orientation class so that you have a chance for your students to “fall into immersion” and no longer forced into thinking about the control of the avatar and the environment. If you don’t, you’re going to end up having failed classes.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

Absolutely more engaging! Every student, if before classes have come in here and gone through the initial orientation, they are fine. However, I have seen this environment used so poorly that the instructor just read his lecture into the microphone and logged off, never responding to student requests or interacting or even realizing there were students there. The students hate this environment then. If you use a tool wrong, it does not mean the tool is bad. I can’t screw in a screw with a hammer. Students will spend more time with the technical issues than actually learning what it is supposed to be the course. You will have some students who get the environment, and some who will actually struggle for a long time, saying, “I don’t see the value in this”. They may never see the value because their value system rejects it because it is a cartoon world. They see virtual worlds and a lot of them will only see it as a game. That is what they are familiar with, and see it as totally irrelevant. All of these objections to the environment can be overcome with proper orientation and a little time. Once you can understand the engagement capacity and you get into the immersion factor, then there isn’t anything outside real life running into the world that is going to be any better than this because here experiences can be accumulated at exponential speeds.

Part 4 (Second Life)

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account?

Yes, I have and it is my recommendation always to have a backup. Technology is a very fluid environment. I am not exactly sure that humans will actually get virtual worlds until it goes holographic, where everybody will actually integrate holographically with each other. Humans have a far slower transition capability than technology does. Technology is moving light-speed fast, and human minds are just struggling along at the walking stage.
So, yes I have reconstructed most of our things in other virtual environments. I have things reconstructed in SpotON3D, OpenSim and partly in Unity 3D. So, I make sure I learn all the different technologies as fast as I can. There are always tons to learn and different in each space in Second Life scripting, building, particles and everything else in multiple, different worlds. The things that are going to be ubiquitous between this world and other worlds may be a good portion of the verbiage. “Prims”, “sculpties”, “mesh”, “scripts”; all of these kind of terms, that we use to communicate will carry over to other arenas. So that way, at least, you know “somewhere here I should be able to build, somewhere here I should be able to find a prim”, at least when, you have a common verbiage, you’ll have common terms to ask the questions.

2. What is your opinion?
Yes, I think Second Life is going to be phased out into something that is more a gaming, controlled environment. They are tightening up their viewers so that fewer and fewer viewers are compatible with it, and they are going to make it so that they can have more control. They are disassociatives, they are of a gaming mentality and this is where they see their profit margin. They don’t see what they created as reality, which is unfortunate because it is the most valuable component.

3. Are you concerned about Second Life’s closure?
Sure. I have grown very fond of this platform and I will have to have a time of mourning over its loss.

The only thing for sure is, that nothing is for sure. Technology, humans, perceptions all of these are going to be constantly changing. That’s the only absolute; that there isn’t anything that is going to be constant.

From the time Microsoft started Windows, there has been nothing that has stayed the same. You have to be comfortable with fluidity and this is one of the things we need to do for our students as well-make them comfortable with constant change. Facts are Googleable. If students want to find out the atomic weight of carbon, they don’t have to remember it anymore, they just search the web to get the fact. Education needs to teach them to ask the right questions and how to discern the correct answer amid multiple presentations. Illiteracy of the future is not going to be who can and cannot read; it is going to be who can learn, unlearn and relearn. Your ability to learn quickly and understand transition is going to be the medium that is going to be a valued in years to come.

4. Does this possibility affect your decision to use Second Life?
I prefer using Second Life for the reasons I have already mentioned. However, my primary backup solution is SpotON3D, maybe Unity 3D or OpenSim.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
Yes, of course. I use SpotOn3D; that’s my back up. Even though I do have OpenSim and can build, create and do things from scratch in OpenSim as well, SpotON3D is innovative and I think at this point of time that they have a good hope of being stable.
Part 4 (OpenSim)

OpenSim is new technology used for the development of virtual environments.

1. How stable do you expect this technology to be?

It is in its infancy stage. It is taking what Second Life has grown from, when it was in a-b-c mode, and is replicating it. So, it is less complex than what we have now. Its stability is in the hands of the person creating and maintaining it so will vary considerably. The person who is running that OpenSim is different than another OpenSim. However, if you want an environment that is closed, controlled and 100% under your control and you have the resources in which to do that, then OpenSim is the absolute best form of being able to keep a lockdown on how to teach people.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?

The reason why you need backups is because everybody messes up their own environments. Backups are important to keep for one reason only and that is if they are convertible over. If I can take a backup of my built in one environment and then when I move to another environment have actually replicated that environment, then the backup is valuable. And then of course, human glitches are always the reason why you need backups, to begin with. Technology has its glitches as well and it’s good to know that because the unstable condition of the internet and the fluidity things change. What works now won’t work tomorrow and that includes your backups. As technology changes, you can back up like crazy but if it doesn’t convert over to the next technology, it is useless.

3. OpenSim grids have the potential of “hypergridding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?

There is a problem with hypergridding in the fact that whatever you have in your inventory when you go to a new grid has to be transferred over to that grid. In other words, anything that you consider as your own creation and you would like to have the exclusivity over is gone because that grid now has a copy of everything you have in your inventory. So, any illusion of security or ownership is gone. Also, they can take from your inventory anything they want, and they can claim it as a glitch. So, there isn’t any security when you are hypergridding. It’s just fine if we are all Universities and we are in the belief system that everything belongs to everybody—and that’s a lovely perspective, as long as you are aware of that fact.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?

It comes down to the money. There are well-established virtual worlds, but they are taking their money from the leisure world, not from education. Education has no money! So, consequently, where are you going to get your money from? Your money is going to come from grants or student fees. If you can’t get the hobbyists clients that create and interact for fun, you are not going to have money from any other source so any OpenSim environment will not be self-sustaining. A lot of virtual worlds and opensims are by definition temporary. Competition is going to be persistent and OpenSim is smaller. They are runs by a few people all wanting to be Gods of their own world and you can’t
biologically backup someone. So, if a person loses interest or has a biological melt down the environment won’t exist either so it doesn’t matter.

Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?
It depends on what exactly it is that you are trying to host. I have the Café Bumbles and I am going to put an office there for one of the professors so he can engage with his students in an official place of authority.

We can lock down the voice; we can lock down the access; we can be viewed by a small portion of the sim—we don’t have to actually have a whole sim. He pays 20 dollars a month; we have all the capabilities. It’s the fact that people want to have the whole sim that causes the problem. For 20 dollars a month you can have a very functional environment that is engaging, that has offices and has all the benefits without a huge amount of investment. A thousand dollars to set it up, 20 dollars/month and that’s it.

2. Who usually funds your in-world projects?
This one here (The Roadside Philosopher’s Think Tank) is being funded by Rockcliffe University. Agile dimensions also contribute to the sim which has a lot of activity; people are very engaged here; it’s getting well known and so they support this area that I have here. I personally don’t pay anything. Café Bumbles is paid by Florida International University and the National Institution of Occupational Health and Safety.

3. How affordable do you consider it?
It is very affordable; you don’t always have to buy a new sim. If you know what you are doing, you can make it extremely engaging…

4. Have you used the discount offered by Linden Lab to academic institutions?
No, I have not. However, I do know a lot of other Universities that have used it and now grumble terribly about the fact that it is lost. The fact is, because the Universities have locked themselves up on their island all by themselves, they are really not making any use of what is really available here in this environment. So, they just go in their little exclusivity corner in the world, but they can do that in OpenSim if all they want is exclusivity. If you want engagement, and real world activities with real world people, and remembering things, you are going to use the real populous— that is part of your engagement. University institutions are not using the virtual environments correctly. They have created a replica of their campus which is, absolutely, totally invalid because you can show them a picture of it and it will be, by far, more valuable. This is the picture and this is the map— there you have it— far more costly, far less useful and that’s what they have been doing. They are not using the capabilities that Second Life’s environment offers and that is totally useless and costly. Giving an educational discount to somebody who replicates their campus wasn’t very cost effective for Linden Lab, hence, they dropped it.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
It was a bad idea in one way because it was more or less shooting themselves in the foot for future buy-ins, except of us, the flag-wavers. Apple got their foothold into the market by giving discounts to education to teach their platform to all the young students who
would afterward resist learning the PC in favor of the operating system they were trained in.

Because the educational community was not showing value in their I-Will-Recreate-My-Campus motif and they were not doing the conversion, then it made perfect sense to eliminate that perk.

It is, in essence, another example of education not doing anything functional for real life. So no, it is not a compliment at all, but there is so much you can do to work around it. There are lots of ways to make such small areas totally worthwhile. So, the whole environment is yours to explore. So many people have created so many wonderful things that there is no reason why you have to replicate everything from square one again. Universities have the same type of orientation workarounds, the same they replicate—all of them are done in other places; you don’t need to replicate the wheel; you just need to find the landmarks and go there—that’s all you need.

6. How do you intend to deal with this?
Universities have complained to me. What I tell them is that they don’t need a whole sim, they don’t need to have the educational discount— they just allocate their resources better. Work together, collaborate. Take advantage of what already exists in the environment.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Universities pay me to do that! Also, Universities can—with proper instructions— make very good use of their students’ labor under a qualified in-world instructor who can take a lot of hours and actually teach your people how to do it, and what is good, bad, ugly, and how to recreate things. Expecting someone to come in here, learn to do the environment, create something satisfactory—all with just entering in here—is not realistic. You need three years at least before you can have anything that remotely looks like what you want and it always has to be functional. So yes, hiring someone who is confident within world is a preferable thing for any educational institution—to have at least one good mentor who has been here for a long time, who can tell you what is good, bad, and ugly. Then, you can make use of free labor all the time with proper orientation with students. That would be my advice.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
The universities that I have worked for had dedicated providers.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)? What is the monthly cost of using this technology for the creation of a virtual environment? (3rd question)
Universities are paying me to create things for them. Specifically, I gain 45 dollars/hour but that actually depends on how far you want me to go from scratch. In Second Life, I can pick up something that already exists from someone else who has already created something similar and modify it by cutting down on my hours. On the other hand, in OpenSim I have to create everything from scratch which equals to more work hours, and this is obviously more costly.
4. Who usually funds your in-world projects?
I have already talked about it.

5. How affordable do you consider it?
It is very cheap in OpenSim and you can set your own from almost nothing, except from server costs, and the time, talent to do so. Those I have found are usually funded by individual grants. The question is: “is doing that, really, satisfying what you seek?”

Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
My first virtual world was Second Life and my initial backup is SpotON3D, but I am not constantly using OpenSim for educational purposes.

2. Which one of these two virtual environments do you consider more appropriate for educational use?
It depends on what you want. If you are looking for the conventional classroom, you sit here and teach me. In this case, either one of those would work. If you are looking for memory retention and engagement in real life, then I would choose Second Life, simply, because more crazy things happen in here. Moreover, more real life people who have problems are going to make you learn to adjust and modify your reactions. This way, you will learn to do that versus having someone, here, giving you all the answers.

3. Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).
Second Life because there is so much user-created stuff and you have interactions from real life people not devoted to education which gives a more valid real life crossover of conflict than sterile academic walls which will prove invalid out in real life. Almost everything has been already created and there is no need to make it on your own.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?
No, Second Life is my first choice. Long term persistence is the question that I would challenge you for OpenSim. I don’t believe OpenSim technology is going to be the persistent one because OpenSim is going to last as long as the person who runs the sim is able to do so. OpenSim is a very simplified version of Second Life that is under independent control. The reason why I am using SpotON3D is because we know things are going to be fluid and because Linden Labs has been moving more towards the game-like environment.

5. Which one of these two virtual environments offers best value for money?
Second Life would if you see the source of collaborative input as valuable. In a virtual OpenSim environment, it is going to cost you a whole lot more in setup time and money for the construction than it would in here. Maybe a week in here and months in OpenSim to set up something from scratch.
6. Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities?
No, it is only because the technology in OpenSim has to be a backup. In an aspect, it is more cost intensive and more time intensive than the other. So, it depends on where you put your value.

Interview 23
Dr. Jo-Anne Murray — Division of Veterinary Clinical Sciences (Veterinary Med.), University of Edinburgh, UK

Part 1
1. Which virtual environments have you used for educational purposes?
We have used a number of virtual environments for educational purposes such as Second Life, WebCT, Wimba Classroom, and we are just about to use Learn 9.

2. What were the reasons that led you to choose Second Life’s virtual environment for educational issues?
Well, I am teaching online students who never physically come to Edinburgh University. We were looking for something that would give them a base and also promote a sense of presence for them within the university. So, that led us to develop an area in Second Life for distance learning students.

3. For how long have you used Second Life for educational issues?
I have used Second Life for 3 years.

4. In what academic level(s) have you used Second Life?
We have used it with postgraduate students but we have just recently developed an area in Second Life that we are going to use with our undergraduates as well.

5. Are you using the virtual environment of Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
We are using it to support the materials that we provide in the virtual learning environment. So, we hold tutorials in Second Life but we also have some virtual resources in there for students to look at. There is a base in there which we call virtual tack room with resources of links to support services within the university such as library, disability of vets and registry.

6. How many educational projects have you carried out using this alternative teaching method?
I think we have done maybe 2 or 3 survey type projects, but we have not written anything up from them, yet.

7. How successful were these projects?
I think that the work that we have done has been helpful because it provided us with insight into the students’ attitudes towards using Second Life. We got some further information on the base we teach to use it along with the other information available on the web for students who need to have a clear understanding of what they are using it for and have this benefit in their learning. Anyway, it is really being useful as a social space as well.
8. What are your current projects (if any)?
We are going to use Second Life with a group of undergraduate students to support them in their studies in the animal husbandry. So, I have developed some areas in Second Life and some resources in there that the students will be able to access and then we are going to follow that up with some surveys to see the degree to which students find that useful.

Part 2

1. What does a typical class of yours look like in Second Life’s virtual environment?
It usually looks like a group of between 8-10 avatars meeting around a log fire setting and having a text chat about an aspect of the learning materials that they have been working on that particular week.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
I think the main advantage is that it gives the students what feels to them almost like a base of virtual campus and it has been particularly useful for building communities of students. So, just the fact that they are getting into Second Life, creating an avatar, and talking with each other about that, their experiences, and how helpful this virtual experience has been to them is building a sense of community which can be advantageous to other aspects of their work.

3. Respectively, are there any disadvantages?
I think it is not cut out for some of the students and also some students depending on their computer set-up may have problems running it. It may run quite slow on their computers and especially the graphics may look slightly different. So, I think those are the main issues. Also you need to quickly move them away from the orientation island and then get them to the university’s base because sometimes students can perceive it to be a little strange environment.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
I think that the virtual classroom can be equally as effective as the traditional classroom, if not more engaging at times as students may be more willing to participate in discussions.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?
Well, we haven’t encountered that because we run orientation sessions prior to using the virtual environment for our tutorials. We have recently surveyed our students to see what the best time to do the orientation is. I have not really looked at the results yet to figure out if students prefer having orientation right at the start of the programme study or at the point we are just about to use Second Life and how that affects their perception of Second Life. However, we have always run one session which is just all about getting into Second Life, setting up the avatar, learning how to walk, fly, move about, and the like. We have always done that before starting any of the actual tutorials sessions in-world.
Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time make your lesson more effective and attractive?

Yes, I think it definitely does and I am quite happy for them to do that. It gives all of my students the chance to get together and get to know each other a little bit better. So, yes, I think that it does help because, if they are using it on their own time, they are getting practice and this helps them familiarise themselves with the environment and feel more comfortable with it. This is one of the benefits of Second Life.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?

I don’t know if it does have this impact necessarily on all students but it definitely has this effect on some of our students.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

I don’t have that experience because we have not done this particular comparison yet. We have only ever used it with online students.

Part 4

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account?

No, we haven’t actually. We haven’t taken that into account because we don’t rely solely on it for our teaching. Besides, even though we are aware of this possibility, we are also aware that there are other alternatives that we could make use of instead of Second Life.

2. What is your opinion?

We certainly can continue with our studies without using Second Life. It does enhance our teaching, but we can continue without it as well.

3. Are you concerned about Second Life’s closure?

No, I am not concerned at the moment.

4. Does this possibility affect your decision to use Second Life?

Well, it wouldn’t affect my decision to continue using it, but, if I were to decide whether to keep doing any further development work within it, then this possibility would certainly influence my decision-making.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)

Yes. Even though, I don’t have a lot of experience of other ones but I hear that OpenSim is an option.

Part 5

1. What is the monthly cost of using this virtual world?

I think we are paying for our particular programme about £700 for a year.
2. Who usually funds your in-world projects?
Well, we are funding our programme level, but the University of Edinburgh has also purchased an area in Second Life as well. So, we also get support from our university in terms of developing.

3. How affordable do you consider it?
It is quite expensive for a programme level. That being said, I also believe that it is value for money but if you fail to receive any funding, then it is quite difficult to support this educational scheme.

4. Have you used the discount offered by Linden Lab to academic institutions? If yes, how do you consider the decision of Linden Lab to discontinue this offer? (5th question)
Yes, I have. Concerning their decision, it is problematic for us.

6. How do you intend to deal with this?
I am not sure yet.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Yes, we have.

Interview 24
I.P. (anonymous) — Department of Computer Science (Computer Science & Artificial Intelligence), N/A

Part 1
1. Which virtual environments have you used for educational purposes?
Second Life and Open Wonderland.

2. What were the reasons that led you to choose Second Life for educational issues?
E-Learning experiences and distance collaboration experiments.

3. For how long have you used Second Life for educational issues?
Approximately 3 years.

4. In what academic levels have you used Second Life?
Both with undergraduates and postgraduates.

5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
Both, support and full distance learning experiences.

6. How many educational projects have you carried out using this alternative teaching method?
Three educational projects and several controlled experiments.

7. How successful were these projects?
Good result and user impressions.

8. What are your current projects (if any)?
Understanding the effects of virtual worlds on Artificial Intelligence perception.
Part 2

1. What does a typical lecture of yours look like in the Second Life’s virtual environment?
Sometimes it replicates the classic lecture; sometimes it better exploits the third dimension.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
Deep involvement of remote learners.

3. Respectively, are there any disadvantages?
Well, the distance is obviously an important drawback.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
The university classroom except for some cases that specifically need a simulated environment.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
Yes it does.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?
I think it can but just for not newbie users.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
Yes, they do.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account? What is your opinion? (2nd question)
Yes we did but there are always alternatives.

3. Are you concerned about Second Life’s closure?
No, we were in any case abandoning our island.

4. Does this possibility affect your decision to use Second Life?
Not for now.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
We are moving to open Wonderland.
Part 5

1. What is the monthly cost of using this virtual world?
More than 200€ (there’s not any educational discount, actually)

2. Who usually funds your in-world projects?
Nobody now.

3. How affordable do you consider it?
Not anymore affordable for my Research structure

4. Have you used the discount offered by Linden Lab to academic institutions? If yes, how do you consider the decision of Linden Lab to discontinue this offer? (5th question)
How do you intend to deal with this? (6th question)
Yes we had and this decision was really bad. That’s why we abandoned Second Life.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Yes, we did.

Interview 25
Mr. Nikolaos Pellas — Department of Product & Systems Design Engineering (Architectural Design and Interior Design), University of the Aegean, GR

Part 1

1. Which virtual environments have you used for educational purposes?
I have used Second Life and OpenSim.

2. What were the reasons that led you to choose these virtual environments for educational issues?
The fact that both environments are interactive, enable versatile synchronous and asynchronous communication and have very beautiful, lively and realistic graphics.

3. For how long have you used these virtual environments for educational issues?
I have been using Second Life for three years and OpenSim for two.

4. On what academic level(s) have you used these virtual environments?
I had been using them for my master’s degree and more recently in the context of my Ph.D. in order to teach undergraduates.

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
In both ways. We were, usually, using virtual worlds to support and supplement the lectures held at the university. Sometimes, however, we were presenting remotely to students, through Second Life and OpenSim, new techniques and new training subjects and we were giving them the opportunity to practice what they had learned.

6. How many educational projects have you carried out using this alternative teaching method?
Two in Second Life and one in OpenSim.
7. How successful were these projects?
It was a very positive experience for our students, and our projects were quite successful. They could have been even more successful, if some factors that distracted the whole process and downgraded slightly the results, did not occur. Specifically, Second Life had really demanding technical requirements and thus very often we were facing problems related to our students’ graphic cards and other times technical issues regarding VoIP. What was giving us a hard time in OpenSim was that we had to know a programming language in order to “set up” our courses, unlike Second Life where we could find many essential items for our lesson ready for sale in the market place.

8. What are your current projects (if any)?
We are, currently, preparing a project on virtual learning communities and the ways that students can come together and co-operate using the “Jigsaw” learning technique in the context of these communities in Second Life. Through this project we seek to look at the engagement factors and the students’ virtual learning presence. A second project that runs now in our university entitled “Studio Based Learning”, is related to interior design and takes place in OpenSim.

Part 2

1. What does a typical class of yours look like in the Second Life’s/OpenSim’s virtual environment?
As in Second Life we were running courses remotely, we developed our space in a way that looked like a university space. We had a presentation board and we were using the technique of brainstorming where students were welcome to write their opinions freely on the board. As a result, we could discuss more easily the developing subject. Likewise, the OpenSim lesson was based on a lifelike plan.

2. Why do you use Second Life/OpenSim in your teaching? In your opinion what are the advantages of this teaching method?
Both of them are very attractive virtual environments, with rich graphical design and support many communication channels. Beyond that, Second Life is very easily used by educators who have no virtual designing and scripting skills, since there is a market place where everyone can buy everything they need from, at very low cost. In OpenSim there is no equivalent feature. Another very important advantage of both worlds is the possibility of communication they provide among thousands of educators from around the globe, through the existing mailing lists. The major advantage of OpenSim, of course, is that it provides open access and everyone who knows how to create objects and scripts can easily take advantage of it and create beautiful virtual environments. From its onset, since it followed the steps of Second Life, it was quickly adopted by educators and now tends to be characterized as a “more educational” virtual environment.

3. Respectively, are there any disadvantages?
In my opinion, a drawback of OpenSim is that it has no market place. So, whoever wants to use it must either learn to create everything by himself or herself, or hire experts to do so. I have to mention that a major disadvantage of Second Life is its cost. Unlike OpenSim, where everything is free, in Second Life many services must be paid. We should not forget, though, that Second Life was not created primarily for educational
purposes, but for leisure ones. Finally, I'd like to mention that neither of them supports the use of Microsoft Office.

4. Comparing the university classroom with the virtual classroom, which one may have better results?

Face-to-face interaction is always better. In our case, however, we use Second Life and OpenSim for the needs of distance learning. In such cases, where face-to-face communication is not feasible, the use of virtual worlds is, in our opinion, the best alternative. Sometimes, of course, we use virtual worlds to conduct experiments which cannot take place in a university classroom.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?

Certainly, orientation is essential for the success of such programs. In the beginning of every project, we present to our students the world through information that we post on our website and guide them to learn how to use it. Firstly, we present to them the purpose of our activities and what skills students may expect to gain from the lessons in the virtual world. Then, we explain the steps they have to follow in order to create their account and modify their avatars’ appearance. We continue by presenting to them the avatars’ navigation system in the world and then we give them the opportunity to wander around, to start familiarizing with it and understand in practice how to use their avatar. Then, we present to our students all the possible ways of communication in-world between users and finally, we inform them about the problems and risks that may face in their communication with others.

Nevertheless, I think that the age of the students and any prior knowledge in the use of virtual worlds have a greater impact on how well they will learn to use Second Life and OpenSim than the orientation process.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?

Certainly! It is, of course, up to students how much and in what ways they use each virtual world, beyond our courses. Personally, I can say that I have learned numerous things communicating in-world with remarkable people. The worlds of both Second Life and OpenSim are like “online games” and that makes some students want to spend some of their free time using them. It has been found that on the one hand, these students are doing their best to have good results in our lessons and on the other hand, by coming in touch with other users, they gain various skills and knowledge. But this is true mostly for Second Life, since we were hosting our own OpenSim private server and students there had hardly any contact with people outside our university.

2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?

All the projects we have carried out so far in Second Life and OpenSim took the form of “action-based learning”. So, I do think that when virtual worlds are used in this way,
students are enabled to experience the educational activities and learn in a more experiential way than a lecture or even compared with the use of LMS applications.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
Certainly! Virtual worlds seem very user-friendly and interesting to most of our students, as they make them feel free. Moreover, some of them after their introduction into the virtual environments begun to think they could have Masters in virtual worlds or virtual learning and conduct research about them.

4. Since your university is hosted in a private (institutional) server, do you think that the fact your students do not have constantly the opportunity to interact with users who do not belong to your university community affect negatively their immersion?
I don’t think that this is the case here. In my opinion, immersion might be affected, but only under specific circumstances. The first is that we should be aware of the interactions taking place within the real world classroom and secondly, we have to investigate the framework of these interactions. Therefore, we should –primarily– look into these factors and then come to a conclusion regarding interaction in relation to immersion both in the real and virtual world. So, the fact that Second Life has such a wide community is obviously a great advantage that reinforces immersion, since it provides its users with many opportunities for interactions with others, but, on the other hand, we should take into consideration the “griefers” or other strangers who would probably disturb the learning activities. In my opinion, this may be one more reason, which led people build “open source” worlds.

Part 4 (Second Life)

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account?
Yes, I have taken it seriously into account, but we cannot do anything about it. If the company decides to shut it down, it will do so. That is a given.

2. What is your opinion?
I don’t believe that the closure of Second Life can harm virtual learning in general. I don’t think that the projects and surveys that will be running at that time will face any problems. Alternative environments will definitely be found. We don’t depend on it.

3. Are you concerned about Second Life’s closure?
Not really. Second Life is just a platform to carry out our distance learning projects. Nothing more, nothing less. If Second Life terminates, we will find another platform to use.

4. Does this possibility affect your decision to use Second Life?
No. I will be using it for as long as it is still on.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution?
Definitely. We cannot abandon our projects. We know well how fluid things are concerning virtual worlds and how fluid virtual worlds are in general and we are prepared that we might sometime need to look for another virtual world to host our projects.
However, we have already been using OpenSim and maybe in the future, if necessary, we will test the Reaction Grid.

Part 4 (OpenSim)

OpenSim is new technology used for the development of virtual environments.

1. How stable do you expect this technology to be?
I think as time goes on, it becomes more and more stable, but also more user-friendly.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
It is indeed very useful. No matter what goes wrong, no matter what error may occur, no matter even if everything in the world is accidentally lost and cannot be created again from scratch, everything can be fully recalled directly, without mistakes, without the need of extra time or effort. That is why keeping backups is such a useful tool.

3. OpenSim grids have the potential of “hyper gridding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
This is an equally useful tool provided by OpenSim. It is very useful especially for teachers who wish to transfer their educational activities from a different virtual world to OpenSim or from one OpenSim grid to another, but are unable to create their training area from the beginning.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?
No. On the contrary, I believe that competition will improve it. Competition always makes people want to improve themselves. This will lead the developers of OpenSim to make it even better, even more useful, even more attractive, even more interoperable and thus even more competitive.

Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?
It depends on what a university needs to have in the world. We pay about 50€ a month for a small island with a library and some classrooms similar to the university ones.

2. Who usually funds your in-world projects?
I fund my own projects entirely myself.

3. How affordable do you consider it?
It depends again on the projects that tutors want to run in Second Life, the land area and the objects needed in-world for the educational activities. But, don’t forget that some projects are much cheaper to be carried out in Second Life, rather than in the real world.

4. Have you used the discount offered by Linden Lab to academic institutions?
No. I think that the university was unaware of this offer.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
It’s certainly bad news for educators. However, Linden Lab knows better its financial situation.
6. How do you intend to deal with this?
Not applicable.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No. We buy anything we need from the marketplace. In fact, several times, some tutors from other universities have let me use their in-world training areas to conduct my lessons.

Part 5 (OpenSim)
1. Is your virtual university hosted by a dedicated provider or by your university?
It is hosted by my university.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Not applicable.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
As far as I know it is just the maintenance cost of the server, but I cannot estimate the exact amount of money we pay for that.

4. Who usually funds your in-world projects?
Not applicable.

6. How affordable do you consider it?
It is, actually, very low cost and it is very affordable.

Part 6
1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
We used Second Life first, because when we started our projects, it had already existed for several years, it was widespread, many educators were using it and numerous relevant articles and papers had been written on it. Then we used OpenSim mainly for financial reasons.

2. Which one of these two virtual environments do you consider more appropriate for educational use?
That would be Second Life. It is more developed, it has more users, it offers more stimuli to our students and more places to explore and learn.

3. Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).
Second Life, since it offers more opportunities for interaction with other users compared to a private hosted OpenSim server, like the one we have created in our university.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?
Yes, that was one of the reasons that led us to look at and use OpenSim.
5. Which one of these two virtual environments offers best value for money?
In my opinion, Second Life does. Certainly, the money we have to pay to maintain our space in Second Life is not negligible, but the services and tools provided are numerous, very useful for educators and many of them don’t apply in OpenSim. If a university can afford the cost of using Second Life, I would strongly recommend it over OpenSim.

6. Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities?
Yes, partially. Not that much the cost of my own projects which had very few requirements, and were brief and cheap, but certainly, the high cost of other projects carried out in Second Life by my university tutors, forced us to move to OpenSim.

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**Interview 26**

Mr. Indika Perera — Department of Computer Science (Computer Science, Technology Enhanced Education), University of St Andrews, UK

**Part 1**

1. Which virtual environments have you used for educational purposes?
   Second Life and OpenSim (including Sloodle and Moodle).

2. What was the reason that led you to choose these virtual environments for educational issues?
   It was personal interest.

3. For how long have you used these virtual environments for educational issues?
   Eight years.

4. On what academic level(s) have you used these virtual environments?
   Teaching and research on Bachelors to Postgraduate research.

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
   For both needs.

6. How many educational projects have you carried out using this alternative teaching method?
   Our research group has over 10 completed projects.

7. How successful were these projects?
   Very successful.

8. What are your current projects (if any)?
   Policy considerations for 3D Multi User Learning Environments, Routing Simulation, and Cloud supported 3DMUVE for education.

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**Part 2**

1. What does a typical lecture of yours look like in the Second Life’s/OpenSim’s virtual environment?
   In-world activities and/or blended sessions.
2. Why do you use Second Life/OpenSim in your teaching? In your opinion what are the advantages of this teaching method?
   Its dynamic, interactive and student engagement.

3. Respectively, are there any disadvantages?
   Privacy and reliability for assessments.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
   Both have different advantages.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
   Yes that makes them familiar with the environment and as a result there is better engagement with confidence.

2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?
   More likely but not necessarily.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
   That depends on the nature of learning task and design of your ILOs.

Part 4 (Second Life)

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account?
   This is not an issue (what about online degrees and distant education modes) this is not a new phenomenon.

2. What is your opinion?
   This is not new (we get this with e-Learning) but address the issues we have been experiencing with 2D e-Learning based distant education.

3. Are you concerned about Second Life’s closure?
   We used to but with content migration options an OpenSim becoming more reliable and interoperable this is not a challenge. NASA also moved its projects from Second Life to OpenSim last year.

4. Does this possibility affect your decision to use Second Life?
   Yes can affect the future educators choices and cause a network effect resulting in increasing threat to Second Life operations.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
   Of course we have already done so with OpenSim.
Part 4 (OpenSim)

OpenSim is new technology used for the development of virtual environments.
1. How stable do you expect this technology to be?
Will be, but not in near future. It is a platform so teachers have to design their virtual worlds as they need.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
It’s very useful.

3. OpenSim grids have the potential of “hypergridding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
Hypergrid is a good option for expansion in learning activities and multi-institutional collaboration

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?
No OpenSim and Second Life are tightly interoperable and there is no competition per se as one in commercial motivation and the other is open-source free solution.

Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?
I am not really sure about that because I am not involved with the finance considerations.

2. Who usually funds your in-world projects?
The university.

3. How affordable do you consider it?
Not much compared to the services.

4. Have you used the discount offered by Linden Lab to academic institutions?
Not sure.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer? How do you intend to deal with this? (6th question)
Not applicable.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
By the university itself.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No.
3. What is the monthly cost of using this technology for the creation of a virtual environment?
Research groups use and develop upon it as a part of the work

4. Who usually funds your in-world projects?
EPSRC, HEA, SFC

5. How affordable do you consider it?
Very affordable compared to commercial services.

Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
Second Life and then both Second Life and OpenSim.

2. Which one of these two virtual environments do you consider more appropriate for educational use? Based on your experience, in which virtual environment were the educational activities more effective and attractive? (3rd question) Which one of these two virtual environments offers best value for money? (5th question)
OpenSim.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life? Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities? (6th question)
Yes.

Interview 27
Dr. Shu Schiller — Dep. of Information Systems & Operations Management (Research), Wright State University, USA

Part 1

1. Which virtual environments have you used for educational purposes?
I have used primarily Second Life.

2. What were the reasons that led you to choose Second Life for educational issues?
I use it mainly because of its capability to create content. That’s the main reason.

3. For how long have you used Second Life for educational issues?
I have been using it for four-five years.

4. In what academic levels have you used Second Life in your teaching?
Undergraduates and graduates (Master level).

5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
I have used it in a supportive role.
6. How many educational projects have you carried out using this alternative teaching method?
It’s hard to come up with a number. I have used Second Life in two different projects which have been carried out multiple times.

7. How successful were these projects?
They were pretty successful. They served the purpose of what I wanted to use in my class. So, I would say that both of them were successful.

8. What are your current projects (if any)?
Right now I am not running any projects. The last time I did was in the fall of 2011.

Part 2

1. What does a typical lecture of yours look like in the Second Life’s virtual environment?
We are all gathered on our island in the form of avatars; we sit together, talk, and do things together. I don’t know how to describe it… It’s a combination of lecture and actions. It is creation, exploration, dancing, playing games, and the like.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
I use Second Life for two reasons: Firstly, it has the capability to create content, so the students can learn how a virtual product can be developed and made. Secondly, it is quite playful, so it can deliver a very different learning experience.

3. Respectively, are there any disadvantages?
The application is still not very easy to use, thus to some of our students it’s not very intuitive. Also, it is very demanding on the computer configuration; you really need to have a very fast or decent computer. Sometimes, students don’t have such resources and this can be very challenging.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
I can’t compare them regarding their results. There are so many different ways to define results. In my opinion, they support each other. They can’t be compared in the way that one can replace the other.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?
Yes, the students have to go over an instruction file. My instruction file is very detailed, probably 20 pages long. It has a lot of information and frequently includes images, pictures, and step by step instructions. So, the students will have to complete a registration, come into the world, and just walk around in order to understand what this environment is and how it works. I also use face-to-face class time to demonstrate what that looks like on my computer, so that the students can see the real action inside Second Life before I step into my virtual Second Life class. So, the students are very well prepared when they come to the Second Life class.
Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?

They do communicate with each other during my class, they type with each other, and instant message with each other almost all the time. They also communicate outside of Second Life class as well, so students may exchange information and ask questions outside class time. I think that such communications are very important because they also learn from each other’s experience and students may answer questions among themselves, before I even direct my attention to their question. So, that does make my class more effective.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?

Yes, because Second Life is a very action based environment. Although you are not a 100% embodied into this virtual space, the avatar being able to be connected with an avatar does allow students to experience something that they would never have before in the traditional classroom. So, the virtual environment does help them to have, to feel the “Second Life” that is very much like experience.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

There are always students who enjoy, and there is always a small number of students who struggle. The majority of students do enjoy a lot, and they feel this is very different, very exciting, but every time I have a Second Life class there is always going to be a few students complaining about how challenging this experience is. So, I think the majority of them enjoy it very much and that is a very different experience than a traditional classroom/lecture, but that’s not 100%.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account?

If that happens, then a university or any individual can decide to use something else. We don’t have to hang ourselves on Second Life.

2. What is your opinion?

On that occasion, if that finally happens, first of all the educational institutions are probably going to move to somewhere else. Second Life is not the only one. There are many other virtual worlds that are now available and since the educational discount has been discontinued indeed, there will be something else that will be a lot cheaper compared to Second Life.

3. Are you concerned about Second Life’s closure?

I am not very concerned since there is a great number of similar virtual worlds for educational purposes. I am not saying about research or any other purposes, but for educational purposes I am not very concerned about Second Life disappearing. It may be
a tribute, a very good case study for students to understand the reason why the Linden Lab rises and then falls.

4. Does this possibility affect your decision to use Second Life?
Yes, of course. If you are running a long term project and then you know Second Life is not going to stand pass of the summer, you may not use it at all. I think it depends on the situation.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment?
Yes, absolutely.

6. If yes, can you please name this alternative solution?
Not yet. I am not looking into OpenSim, but there is something else –I forget the name. Probably, something new that may emerge as alternative.

Part 5

1. What is the monthly cost of using Second Life?
If I remember that right, I think it is probably a few hundred dollars per month. I might be wrong because I am not paying for it.

2. Who usually funds your in-world projects?
The projects don't have to be funded. Our island is being paid for by my University.

3. How affordable do you consider it?
I think it is very expensive. Our university might not stay there for long at all –maybe, until this fall. We probably won’t continue the contract.

4. Have you used the discount offered by Linden Lab to academic institutions?
The university had enjoyed the discount for the previews years until they discontinue the discount.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
I am left all clueless. I don’t know why they had to do that, and, in my opinion, it is not a good thing.

6. How do you intend to deal with this?
That’s what we are doing. When our contract ends in this fall, we are going to use something else.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
I have never done that, because I didn’t have that kind of need. So, I have never used any professional paid service.
Interview 28
Dr. Robin Teigland — Department of Marketing and Strategy (Business Administration), Stockholm School of Economics, SE

Part 1

1. Which virtual environments have you used for educational purposes?
I’ve used primarily Second Life.

2. What were the reasons that led you to choose Second Life for educational issues?
The ability to create your own content and the fact that there was a community online already.

3. For how long have you used Second Life for educational issues?
For about 5 years.

4. In what academic level(s) have you used Second Life?
Everything from bachelors to executive education. So, I have used it with undergraduates, postgraduates (including masters and Ph.D.s), and also high school—but not very much.

5. Are you using Second Life for universal conduction of the courses or just to support the usual educational methods (in class)?
I am using it more as support, as a complement to traditional educational tools, so it is like blended learning.

6. How many educational projects have you carried out using this alternative teaching method?
If we define the term “project” as a “course”, that is if you’re asking me about the courses I have done here, then I have carried out 10-15 educational projects.

7. How successful were these projects?
They were all successful, we fulfilled the objectives.

8. What are your current projects (if any)?
I don’t have any education-wise, but I do have some research-wise. We are working on Nordic Virtual Worlds Network, which is a 2 years research project and has now gone over to a voluntary organisation. It is about people from the Nordic region and elsewhere who are interested in the use of virtual worlds for entrepreneurship and innovation. I am also conducting a study of the open source community, OpenSim.

Part 2

1. What does a typical lesson of yours look like in Second Life’s virtual environment?
It is more like the traditional one. We have an in-world classroom, a big blackboard, it looks like a normal classroom. However, it depends, sometimes we do activities where the students actually go out and they interview people in Second Life, or we have treasure hunts, or training exercises that are like simulation, as well as user innovation exercises; so, this is a typical class. But recently we have been mostly using it just as a lecture hall.
2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
I use it because, first of all, I think it is important to always test new teaching methods, to experiment and to learn about how we can improve the educational process; that’s why I started using it. I keep using it because, on the one hand, I think it is good in terms of distance learning, for example, if the students are having lectures for courses that are held in the United States. On the other hand, it is also because of the ability simply to have fun and the fact that it doesn’t have to be so serious all the time; you can combine learning with having fun in an educational setting too. For instance you can do simulations, which I think are a lot of fun. Moreover, you can play with issues such as anonymity, identity and so on.

3. Respectively, are there any disadvantages?
In terms of disadvantages, one thing that drives me crazy is that you never know what the quality of the sound will be like. There can be sound problems, which is really annoying. Imagine that after all these years they still haven’t fixed the sound quality. In my view, that seems to be the key problem which Linden Lab still hasn’t fixed. So, you always have to take into consideration the problems caused by technology. You have the technology threshold, of your participants, that is getting them over in-world, which may take more time but I find that they can usually figure it out pretty fast. Moreover, because of the technical problems that arise, it takes more preparation time for teachers; you add a layer of complexity to your teaching compared to the traditional classroom.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
It depends on what you are learning. If someone is learning interpersonal skills (simulation training), then I think that the simulations within Second Life are better. On the other hand, if you are just doing a traditional lecture, then I think the classroom is better, because you get all the gestures, not just the voice, since it is not an avatar just walking around. So, it depends on what you are teaching.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?
I usually give them some links (YouTube videos, Second Life help sites) and some information beforehand on how to get into Second Life, what to do, how to get around etc; I give all that to the students first. Furthermore, quite often, in terms of blended learning, I give the students the option, if, for instance, they are in Stockholm, to either meet me in the classroom and follow my lecture along live, or when I have Second Life up on the screen they can come with or without their computer or they can be wherever they want, and then just be in Second Life. So, I give students the option as to how they want to participate.
fun. I remember, for example, when I was in-world some time ago preparing a lecture and students showed up and we started a conversation which normally we wouldn’t otherwise have had. However, if I were just sitting at home preparing my lecture for the next day, then the day of that lecture I wouldn’t see my students in the same way. But if the students show up on the island, we can start a conversation and if I am busy I can just ask them not to disturb me at that particular time. Therefore, I think it can be a good thing because it can facilitate learning, in the sense that perhaps you can communicate with the other person more in some way. But again it really just depends on what the purpose of the lecture is and who the students are.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?
Again it depends on what the lesson is. If it is just a traditional lecture, then not really, but if it is a lecture about virtual worlds or about the internet community, then yes it does, because then they can really experience it at the same time. It depends on the content; if it is training or simulation, then yes, they do create that set of memories or experiences that they can remember as they go into their memory bank. So, it can definitely lead them to live the lesson. Imagine, for example, that you are a student and you have a hundred different lectures in a period of one or two months, and one is in the virtual world of Second Life. You are going to remember the latter a lot more than the traditional one because it is so different.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
Yes, I would say so. Especially the ones that are more engaging such as the treasure hunt or learning about how to use virtual worlds. Once they had one module in which I was teaching strategy, and they were to go out and interview entrepreneurs in Second Life. That was definitely much more interesting for them than a traditional lecture. I also remember when one student came dressed up as a dinosaur or robot or something like that, but that actually added to the dynamics of the class, so it was a good thing. So, I think there is much more playfulness in those activities. Still, however, there are some who don’t take it so seriously, and they play around too much with their avatars and disturb the other participants.

Part 4

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account?
Yes, I am aware of that. In fact, there are a lot of discussions right now regarding how long Second Life is going to be around or what will happen if it were to close and it doesn’t look good to them. We have taken that into account, and we also did the same when we were thinking about exploiting the option where you could pay discounted if you paid for two years in advance, something that we actually did. However, before that we took into consideration issues such as “will Second Life still be around?”, “is that the best thing to do?”, and we decided to go for it anyway. So, yes we have thought about that.
2. What is your opinion?
In my opinion, it is a big risk and I think you can hear more and more about companies pulling out, worried and wondering about what Linden Lab is doing. Nobody is really sure about Linden Lab’s direction.

3. Are you concerned about Second Life’s closure?
I am concerned but at the same time not concerned since there are more platforms always coming along. I think people have always known that Second Life may close one day. Generally speaking there is always a “second” (that is another company perhaps) coming. The “first” one who makes a move is never the one who persists. Google wasn’t the first, Facebook wasn’t the first, and there are lots that weren’t the first. Subsequently, if there is a need, something will come along and take its place and will learn from those who were the first movers.

4. Does this possibility affect your decision to use Second Life?
No, I don’t think so. We have an island, so it doesn’t make sense to spend a lot of time and money starting something in OpenSim at the moment; there is too much of a technology threshold there to start over. We just keep on going and hope that it will last.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
Yes, I will probably go to OpenSim. I am doing a research project on OpenSim, so yes, more likely I will go to OpenSim (institutional hosted). Another one is Kitely (dedicated provider).

Part 5

1. What is the monthly cost of using this virtual world?
It is already paid and I can’t really remember. I think we pay about 150$ per month, for one island that we have.

2. Who usually funds your in-world projects?
My research center.

3. How affordable do you consider it?
I think it was affordable but without the educational discount it becomes less affordable. I think that, without the discount, the cost is 350$ a month which is a lot of money for a whole year, since there are other options too.

4. Have you used the discount offered by Linden Lab to academic institutions? If yes, how do you consider the decision of Linden Lab to discontinue this offer? (5th question)
Yes, we have. I think they are shooting themselves in the foot, I don’t understand that. Education is a fantastic use of it, it’s also one of the most leading areas in terms of the use of virtual worlds. New people get in, they learn about it; these are all potential customers.
So, as I said before, I think they are shooting themselves in the foot, to be honest. Most software, most tools like this have educational discounts. Therefore, for somebody it is better to have 50% of something, rather than 100% of nothing. That is how they ended up driving away a lot of educational institutions and how they reduced their customer base.
6. How do you intend to deal with this?
It is quite probable that we’ll leave Second Life depending on what Second Life does; right now it is just a frustrating situation with all the sound problems. Because of the way things are at the moment, we have monthly meetings and we still have all sorts of echo and sound problems. If they get that fixed and the crisis situation is a bit improved, then we will stay and I will start using it even more than I do now.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
Yes, we have. We bought a virtual center (blackboards, chairs etc.) and we also paid people to create simulation areas, to film etc.

Is there anything else you would like to add before we end?
I think there is a great deal of potential here, but the problem is that there is very little sharing going on. The good thing, however, is that I am part of the Euroversity project which is a project of 19 partners across Europe and one from Israel. The whole idea is about creating a databank of the use of virtual worlds for higher education in which everybody can go in and put or add whatever they want. What we are trying to do is to promote the use of virtual worlds, which I think has a lot of potential. There are a lot of people using Unity 3D now. So, there are pros and cons in every platform.

Interview 29
Dr. Thrasivoulos Tsiatsos — Dep. of Informatics (Computer Science), Aristotle University of Thessaloniki, GR

Part 1

1. Which virtual environments have you used for educational purposes?
The subject of my Ph.D. was the development of a platform which was used tentatively, so that we could check its ease of use and whether or not it could enhance educational activities. The platform, which was called EVE (Educational Virtual Environments platform), was developed 9 years ago, in 2003, by the staff of the laboratory I was joining at that time and I was the one who designed it and participated in its development. I also used Open Croquet many years ago for an activity which was mainly aimed at testing whether or not it could support some co-operative learning scenarios. Then we used Second Life, on a piloting basis at first, for similar projects but, since we noticed that it gave us several useful tools and services, we carried out some more projects using it and we still do. Recently, we have used OpenSim to play a “game” that we have designed based on it.

2. What were the reasons that led you to choose these virtual environments for educational issues?
After the unsatisfactory experience we had within Open Croquet, we initially turned to Second Life because it had numerous useful functionalities available that we wanted to incorporate in our scenarios. Moreover, it has a very large user base and our students can easily create an account there. It has many useful features such as the chat, the private instant messages (IM) and the scripting language that helps us become more creative. We also thought that it would offer some services of relatively good quality; for instance we believed that we would be able to see the avatars clearly, that there would be no bugs and
that we would have good quality sound since we were really interested in the use of VoIP.

3. For how long have you used these virtual environments for educational issues?
   I have been using Second Life for the last three years in the context of a lesson called “Virtual Learning Environments” in order to conduct teleconferences. On the other hand, this is the first year we are using OpenSim for the needs of the game I have mentioned before and we are planning to use it for teleconferences and interdisciplinary collaborations with foreign universities, as well.

4. In what academic level(s) have you used these virtual environments?
   So far, we’ve been using OpenSim only with fourth-year students in the undergraduate level whereas we’ve been using Second Life in both undergraduate and postgraduate (Masters) levels.

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
   We are using them during extra teaching hours as a supplement and support to our lectures, in the context of a method called “blended learning”.

6. How many educational projects have you carried out using this alternative teaching method?
   Considering that we run a different project each semester then we may say that so far we have carried out 5 projects in Second Life. In OpenSim, on the other hand, we have carried out only one project so far, the game I previously mentioned.

7. How successful were these projects?
   I consider them very successful. We, ourselves, evaluate our own projects too after their completion and we receive very positive feedback from our students. Of course, there are always some technical issues, but they are not so significant as to downgrade our results.

8. What are your current projects (if any)?
   In the Masters level (MSc) there will soon be a workshop. The students’ projects will be presented and discussed by the entire body of the Masters’ students and myself, through Second Life. This will take place twice, in two days’ time, upon students’ availability. Moreover, we are planning to co-operate with foreign universities, as I have already mentioned. They will be carrying out role-play scenarios within OpenSim and we will be offering them technical support. Finally, the game we have designed in OpenSim will be played three times: twice in inter-university level and once within our own university by our undergraduate students.

Part 2

1. What does a typical lesson/class of yours look like in Second Life’s/OpenSim’s virtual environment?
   We have formed three spaces. In two of them we conduct collaborative activities. Initially, I hold a lecture there regarding what I expect students to do. Then I form student groups. They log into Second Life as often as they want to and collaborate for the completion of their projects. Once they have completed them by a predetermined date, it’s time for their presentation with the use of “Fishbowl” technique, where a group of
students present their project and the rest comment on it. For the needs of these procedures, we have created in-world specific spaces with specific functionality. As far as the game is concerned, a space has been created in OpenSim, in which there are objects which carry hidden multiple-choice questions. Four groups of three or four students start the game simultaneously. Under some rules that we have preset for the game, each group’s members collaborate to give answers to some questions; meanwhile, the groups compete against each other on various aspects such as which one will answer either more questions, or more correctly, or at the first attempt, or even without asking for help etc. In the end, the winning group comes up; some prizes are awarded to the students and the winners get a bonus on their marks depending on the game’s outcome.

2. Why do you use Second Life/OpenSim in your teaching?
Generally, the benefits of virtual worlds mainly refer to the various ways of communication they offer. We may communicate via VoIP, text chat, instant messages (IM) and gestures. Moreover, we have incorporated some minor additional features on the tutor’s chat channel. The tutor is able, at any time, to read in his chat box who has raised hand, who has made a gesture, who has written something in the chat box, who has asked for permission to speak etc. This is extremely useful for the tutor since it allows full supervision of the class and whatever takes place in it. Clearly, avatars help us significantly to achieve all these. So, avatars are another value which provides additional functionalities. Generally, it is the representation of space that creates for the user a sense of being in a traditional classroom setting and thus we can work in-world in the context of a classroom and in a more formal context when a speech, presentation, or educational activity takes place.

3. In your opinion what are the advantages of this teaching method?
The main advantage of teaching through Second Life and OpenSim is that these worlds allow for what is called “flexible learning”. Whenever I may need some extra hours to give my students some advice, analyze something, guide them, or help them with their projects, I don’t have to find an available classroom or laboratory at the university during its operation hours. We can arrange for a meeting in-world, at a time convenient for the students as well, in order to offer the assistance they need or carry out an extra activity. In my opinion, what makes virtual worlds so useful is exactly this flexibility that they offer. If you asked the students, of course, I’m sure that they would give much different advantages on their part.

4. Respectively, are there any disadvantages?
I wouldn’t describe it as a disadvantage, but it certainly is a limitation. A lot of our students have stated that they wouldn’t replace face-to-face communication with communication through Second Life or OpenSim.

A major drawback of Second Life concerns its cost, and by that I don’t mean the cost of renting a space as much as the cost of uploading files. We were holding presentations, we needed to upload files and slides and we had to pay a fee for everything we wanted to upload. Likewise, whenever we wanted to use some prims or sculpty prims, an additional fee was required, as well. Especially when that additional cost arose in the course and we hadn’t budgeted it, we realized that the land we had at our disposal couldn’t cover our needs and that was a serious issue. Moreover, the offered services were not always that
good. There were cases, for example, when we had rented a space where 30 avatars could be depicted simultaneously and, even though there were only 15 avatars on the land, some of them were “covered” by clouds. Also, both virtual worlds have several code restrictions on their programming languages.

5. Comparing the university classroom with the virtual classroom, which one may have better results?

This is very difficult to measure. I can say that if I wasn’t using Second Life and OpenSim to carry out the collaborative activities, I would have to find something similar to do in real life. Nevertheless, it would be very difficult for me to find a classroom at a certain date and time that everyone would be available to come to the university. On the contrary, it is much easier for them to log in for a teleconference that will last an hour or two. Additionally, I have noticed that the game students play has really stimulated them to actively participate in class, study further, check and enrich their knowledge and, generally, it has contributed to better learning results. Of course, that game couldn’t have taken place outside OpenSim.

Undoubtedly, both real and virtual worlds have advantages and disadvantages. The virtual world, under specific circumstances, may offer some things which, probably, are quite difficult to be achieved in the real world. When a curriculum must necessarily be undertaken remotely, then virtual worlds are a great choice.

6. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?

I personally am the one who is monitoring and checking through further research the students’ adaptability in virtual worlds, so I avoid giving them too much information on how to move and what to do. Apart from a brief guide, which they can read a couple of hours before our lesson, I provide them with no more instructions. Nevertheless, every time, in every activity, there is an avatar-assistant to whom students may send instant messages asking information such as: “How can I upload a file?” etc. The assistant explains the procedure and thus the students’ attention is not distracted from their goals. I think, in fact, that this assistance is vital, at least for the first couple of sessions. The avatar-assistant is actually a student that students may or may not know in real life, but they are informed that he or she exists in-world in the form of an avatar in order to help them. The assistant may approach the student groups if he or she considers that they need help, talk with them, and advise them. However, we are in the process of creating a “bot” that will provide primary assistance.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time make your lesson more effective and attractive?

I am under the impression that, generally, my students don’t get immersed in the virtual world. They get involved with the worlds and their activities for just as long as it’s necessary for our lesson and no longer. For as long as they participate in an activity, they get engaged and devote all their energy to that and especially to the game. Nevertheless, I think that this has more to do with the structure of the activity and less with the world
Of course, I think that when someone is immersed in a virtual world finds the lessons more attractive, but I don’t focus on that. I am not concerned with whether or not my students will actually get immersed and whether or not they will want to spend their leisure time using the virtual worlds. What I really want from them is to get engaged into their activities for as long as the lessons last. Therefore, I try to make our activities attractive.

2. Do you think that the virtual environment of Second Life/OpenSim leads your students to “live” the lesson?
Yes, it does. We can carry out the lesson just like it is normally carried out in the classroom. I make sure my students follow my instructions, raise hands, ask for permission to speak, avoid talking needlessly, refrain from making noise, listen carefully when others are talking, making presentations, participating in our talks etc. Everything is done as in the in-class lessons. So, yes, I think that they do experience our lessons. These, in fact, are some outcomes that we have noticed ourselves.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
As far as the game, which cannot be played in the university anyway, is concerned, they certainly do. In fact, they very often tell me that they really liked it, that it motivated them to learn and that they want to play it again. As far as the other activity is concerned, as already mentioned, most of the students seem to prefer the face-to-face lesson in the university classroom rather than the lessons in Second Life. Still, when we need to have two or three additional hours of lessons they will prefer to do so through Second Life where things are more flexible.

4. Since your virtual university is hosted in a private (institutional hosted) server, do you think that the fact that your students do not constantly have the opportunity to interact with users who do not belong to your university’s community will affect their immersion in a negative way?
We use OpenSim only for our game since we couldn’t play it in Second Life. Many students from other universities participate in our game as well, so we do get in touch with people who don’t belong to our university’s community. However, in that specific activity, we are not concerned about the students’ immersion in general. The fact that they will be engaged for as long as the game lasts is what we are looking for. And they always get engaged when they play. That’s in the nature of the game, but in any case we don’t particularly deal with students’ immersion. We are more interested in their engagement in our activities and I can say with absolute certainty that we always achieve that.

Part 4 (Second Life)

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account?
Yes. There is always that possibility and we had taken it into account when we were starting our projects in Second Life, but our activities are always very brief and thus we are not significantly affected by this risk.
2. What is your opinion?
There is a whole company behind Second Life, so there are some other factors that may affect the operation of this platform. We didn’t depend on Second Life in order to create a virtual university. We have created some rooms on a small island where we meet for some hours during each semester. Moreover, that was one of the reasons that led us to host our own OpenSim server: so as not to have to face that risk at some point.

3. Are you concerned about Second Life’s closure?
Its potential closure does not concern us at all. We left Second Life before it had even seized to operate. In other words, we were not afraid of that possibility. We are already using OpenSim regardless of Second Life’s closure.

4. Does this possibility affect your decision to use Second Life?
The reasons we left Second Life have nothing to do with that. There are other reasons that led us away from Second Life and are related to its drawbacks as mentioned before.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
We have already done that by leaving Second Life and moving on to OpenSim.

Part 4 (OpenSim)
OpenSim is a new technology used for the development of virtual environments.
1. How stable do you expect this technology to be?
When a university hosts its own server, its persistence depends on three factors: a) the staff that is required to maintain it and offer technical support b) the equipment, that needs to be suitable for the use the server is intended for, and c) the ability of the computers that constitute the server to support the activities that the tutors want to carry out within OpenSim. Fortunately, regarding our server stability, we didn’t face any problems. As long as we are using a computer that is very “strong”, we have a great internet connection, some of our students maintain our server and we plan our activities according to our server’s capabilities, we face no problems.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
I do consider them very useful. In Second Life, very often, two or three students were collaborating to create spaces in which they would place various objects. Each one of them was keeping in his or her inventory a copy of each object created. So, in case we wanted to recreate that space somewhere else, we had to combine the objects kept in two or three different students’ inventories. That was, certainly, difficult and time consuming. We faced this kind of problems when we were trying to move our virtual space from Second Life to OpenSim. Therefore, being able to keep backups of our whole world in OpenSim and not copies of single items in many users’ inventories has proven to be very useful for us.

3. OpenSim grids have the potential of “hypergridding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
That does not concern us at the moment since our server is isolated from the rest of the grid. Nevertheless, in the future we are intending to have inter-university collaboration
with other universities in Greece and thus I think that it will be of much use for us then. We will participate in a PanHellenic OpenSim grid network where our students will be able to visit other Greek universities’ servers. So, without a doubt, hypergriding is useful.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?

Nobody can say that for sure. I personally believe that this competition may have a positive effect. It seems that the OpenSim community sees the progress in Second Life as challenges to overcome for the improvement of OpenSim. On the other hand, I don’t think that the target group is wide enough to be able to preserve all these platforms. So, one of them will ultimately prevail. Of course, taking into account that Second Life starts declining, someone might also think that OpenSim will slowly start declining, as well. Nonetheless, in OpenSim, if a good grid network is formed and people who have invested on it continue to exist, I don’t think there will be a big problem. After all, let’s not forget that this is done on a voluntary basis, so if we continue having this will to maintain the proper function of OpenSim, that will ensure its long time persistence.

Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?

We had a small space. If I can remember correctly, we were paying more or less 50€ a month for the land we were renting. We were paying extra money for the slides we had to upload. I remember that during the last three-month period we paid about 100€-150€ in order to upload files for the activity we carried out.

2. Who usually funds your in-world projects?

That was actually me. I am the one paying for all the cost. However, since, at the same time, my research and the activities that help my students learn take place in Second Life, 100€-150€ is not a very high cost.

3. How affordable do you consider it?

To be honest, I think that it is not very affordable. In our case, I think that it isn’t worth paying for Second Life anymore. Our students are recorded to log into Second Life only for two or three sessions, that is for four to six hours, with intervals of one or two months between them. In fact, if we wish to examine this cost on an annual basis, then it certainly multiplies. Furthermore, the number of students may also increase and then a bigger island is needed, but that of course costs more; that cost can be estimated at about 500€-1,000€ per year. So, I don’t think that it’s worth staying in Second Life. On top of that, the university doesn’t fund the use of virtual worlds like Second Life. Nevertheless, even if there was such a funding, I would rather use it in order to buy a very good machine for our OpenSim server or pay a student to maintain it and support our classes. That would be far better.

4. Have you used the discount offered by Linden Lab to academic institutions?

I knew that there was such a discount for the academic institutions, but we had never used it. I think that this discount is worthwhile for an institution that would like to invest a fairly big amount of money in acquiring a wide space within Second Life. We have a
very small and cheap space in Second Life. The cost of using Second Life is very big and unaffordable for us because we upload files.

5. How do you consider the decision of Linden Lab to discontinue this offer?
I think that it was a very bad idea and even worse was the fact that it happened so suddenly. Every institution makes its planning and budget to invest time and money in order to create its space in a virtual world. When it has planned to use the discount for a specific period of time, for as long as its projects last and suddenly that discount stops being offered, then the institution goes off budget. That is when some very serious problems for the course of the projects come up. I think that because of Linden Lab’s wrong decision, Second Life has lost many of its users. My personal view is that Second Life has no future as a social networking platform. Second Life’s future, in my opinion, has to do with education in general and with distance learning in particular. Linden Lab should have invested in education and not only continue the discount but also offer even more facilities to the educational institutions.

6. How do you intend to deal with this?
We had never used it. Besides, now we use our own OpenSim server.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, our students have created everything. We have several undergraduate, postgraduate and doctoral theses in the context of which students create parts of our university’s virtual space.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
Recently, we have built our own OpenSim server which currently has only one island, but we intend to create four.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, our department is a Computer Science department. So, our game was created by one of our students who had great programming knowledge. He was able to quickly understand the way everything is created within OpenSim and provide us with the framework upon which we are able to create similar games ourselves.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
This is a bit hard to estimate. The first and biggest cost is the purchase of server equipment. We also have the cost of the network connection, but this is covered by the network operation center that manages our network, so, I can’t really estimate that. Apart from that, we have the operating cost of the server which is also hard to estimate. On the other hand, and as far the cost in terms of effort is concerned, we may count the students’ working hours for server maintenance, the days they spent in order to set up the game and the hours they spend every time before we play the game in order to make the necessary preparations. If we had hired staff to take care of all these, then we would have to pay 2.000€-3.000€ a month.
4. Who usually funds your in-world projects?
The university pays for the operation of the server. Server equipment was bought with funds, approximately 2.000€-3.000€, from a government development program and it is not only used to host OpenSim but it also covers several of our needs.

5. How affordable do you consider it?
I consider it very affordable. In fact, it is very cheap as long as tutors and students are open-minded. In our case, for instance, instead of hiring qualified personnel, we encourage our master’s students to engage in operating our server so as to gain work experience in their field.

Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
We were using Second Life at first and then we decided to turn to OpenSim. We would have moved to OpenSim much earlier but we didn’t have the necessary equipment to host our OpenSim server. When we got it, we were able to do that. One of the reasons that led us to OpenSim was its low cost. In Second Life we were paying a huge amount of money and that was not money given for investments like the money we gave for our server equipment; that was actually lost money! Furthermore, we wanted to have full control of what we implement. As a Computer Science department, we are interested not only in the use of technology, but also in its improvement. In OpenSim, we are able to create whatever we want, we can make modifications of the server and we can add images, sounds, videos and anything else we may need. In addition, by using an open-source software, we don’t face copyright problems or problems regarding licenses and generally anything that is irrelevant to our work. We want to be devoted to our work and not deal with licenses that may expire and ruin our experiments, in which case 100 students waiting for it would be really disappointed.

2. Which one of these two virtual environments do you consider more appropriate for educational use?
We haven’t carried out any collaborative activities in OpenSim and therefore I can’t express a definite opinion. Regarding our game, it was better in OpenSim.

3. Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).
I can only compare the games. In both environments they were equally attractive and effective, but the game was more easily feasible and more flexible, in terms of setup and implementation, in OpenSim.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?
Not just that. OpenSim is an open-source software. Even if it “falls”, we will do our job anyway using the libraries that already exist. We just won’t be able to evolve it and bring it to a level as high as we would like it to be. Nevertheless, we will use it on our own for as long as we need it and we will direct its use to wherever we think it is necessary.
5. Which one of these two virtual environments offers best value for money?
OpenSim is still pretty immature, while Second Life is now more mature. So, the quality of the offered services is better in Second Life, even though we are still facing technical problems quite often there too. Nevertheless, I think OpenSim keeps improving.

6. Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities?
I would have never left Second Life in the first place if OpenSim hadn’t been available; and I would have never invested money on the equipment for an OpenSim server, if I hadn’t tried Second Life first. I used Second Life in order to check what I could do in a virtual world like that. As soon as I realised how much a virtual world could assist us from an educational point of view, we thought that it would be more efficient to invest money on our own OpenSim server than paying a company to do that for us. So, yes, the cost of using Second Life, along with other factors, led us to OpenSim.

Interview 30
Dr. Michael Vallance — Department of Media Architecture (Transmedia architecture / Media Literacy/Design), Future University in Hakodate, Japan

Part 1

1. Which virtual environments have you used for educational purposes?
First let’s define the virtual world you are discussing here because the term has been adopted by Management Systems such as Blackboard and Moodle (as VLE’s).

For me, virtual worlds are computer simulated environments that allow for three-dimensional representations of individuals and objects that can be manipulated and modified. So, I have used Second Life, OpenSim, WoW, QWAQ, and JIBE.

2. What were the reasons that led you to choose these virtual environments for educational issues?
We started using Second Life thinking that it would be an experience for our class of students. Utilizing some of the places that are already made and taking the students to places like the NASA science labs, that are available in virtual worlds, appeared to be a good idea. Looking at some of the “design aspects” like future cities seemed appealing to us as well. I mean that you can go to places that have been designed like that or culture oriented places like China town and get experiences of different cultures but also of different cultures in different time zones like ancient Greece, for example. There is a Second Life island replicating that and that was very interesting but we weren’t really getting that much educational value out of it, hence we switched. It’s just became a nice novel experience but we weren’t quite sure what the learning benefits were for the students because they were just participating and consuming information, not actually doing much creating, while our course gets students to create and design. When we decided to create our own island, we spent about one year in Second Life where we purchased an island or leased some land but the productivity and what we got out of that didn’t really justify the expense and the effort that was put into getting all that and also we found that the Second Life itself had to go down for maintenance in the middle of the day in Japan in order to be used, and that was a pain as well. So, we thought that we would like to be more independent, thus we switched to OpenSim because we were very
much into OpenOffice and other different technologies that we use, instead of Microsoft office, for example. We more tried to use the open source environment, so we went through OpenSim and we put up OpenSim on our servers. We have an OpenSim space which we run of another server based out of the US because that is simply very reliable and sure quite cheap to do, but we mirrored that on our service in our university. The pity of that now is that we can use that space in any way, shape, or form that we want. So, we only bring a small number of students into that space, that are very interested in creating inside a virtual space, and we use it for students to create and then get other students to use what the initial students have created. As you can see, we run experiments inside, so we have a robots programming project where we get our design students to create the tools and design the different kind of classrooms and also the different presenter boards or maybe some other kind of virtual tools inside our OpenSim space. Afterwards, the robot programming students will go in and try to utilize that for a programming project and by doing that we intuitively develop the space so that as the students recognize a problem they communicate that problem to design students. The design students then come up with the solution and after that we come to the next task, one month later when the programming students will utilize that solution, that design students have come up with, to do a more difficult task. Then there are more problems, so they say, “what do you need now to help you solve this problem?”. Again, they talk to design students and the design students will then build the next stage of the space, so it can be said that it is a learner-centered and a student-centered design space ran as an experiment rather than something that we integrate into a particular course per se. We use it as just one of a number of different alternatives within our media architecture course. Consequently, I can say that most virtual worlds attempt to replicate the real world as much as possible and most educational uses to date attempt to replicate real world classrooms and activities. I believe otherwise: we should use technology only to add value to education. But educators need academic guidance in terms of a task framework of sorts and an awareness of associated learning processes and outcomes.

3. For how long have you used these virtual environments for educational issues?
I have used Second Life for two years and OpenSim for two years as well. The project started initially in Second Life and because that had been pretty much successful, we decided to go with Second Life where everything was ready made for us to go and utilise. That was sufficient for us in the beginning since we were quite new to all this. Nevertheless, as we got rather skilled at Second Life and since we have been investing our resources, our energy, and our efforts into OpenSim, the past two years has been all about OpenSim. However, this doesn’t mean we don’t go into Second Life. For example, on Friday I am giving a presentation at a conference in Second Life and that’s a wonderful thing but for our research and for our students who want to use virtual realities, we have been using OpenSim. Also my University is becoming more interested in my project but along with that interest there has also been some concerns. We were working with three schools in South Wales for the programming of the robots. The schools in the UK, for example, certainly wouldn’t allow access to Second Life if they didn’t know that we have our own OpenSim closed environment which is not hypergrid to anything. They feel that their students are safe in this environment because they can only get into this environment with the access and passwords that I provide and nobody else can get in, so
the schools in the UK are happy about that but also my university is very happy about that too. As a result, OpenSim seems to be a logical choice to appease those who are concerned about giving access to this kind of environments where some perceptions of that kind of environments might be rather negative.

4. In what academic level(s) have you used these virtual environments?
   1. Undergraduate university students – Years 1 and 2
   2. Sixth form UK students

5. Are you using these virtual environments for universal conduction of the courses or just to support the usual educational methods (in class)?
   I am not using them in my courses. I am conducting research projects only, with a purposive group of students as designers, programmers and task participants. However, I have integrated the design aspect into one Communication Studies class. I have also integrated the research into my second year Communication classes (approx. 80 students per year, in particular the Information Design students) through, for example, the development and presentation of Future Energies via Google SketchApp. Overall, I have to make clear once again that I am not directly teaching within the virtual environment. I am actually physically meeting the students in my classroom and then we are doing the project and the design. Later on, the students go into OpenSim and design in there, but they are still my students. Within OpenSim, the virtual space is really utilized for learning in terms of communication and collaboration when we link up with the students in the UK. The robots programming students are then doing the robot project with the students in the UK but the only way they communicate it to me is actually through our OpenSim space. We have a media presentive within OpenSim and I have connected that up to one of my video cameras, so I can stream live media onto a prim inside OpenSim and this way the students can actually see each other as real students. On the other hand the maneuvering of the virtual robot is actually done by the avatars. So, it is a bit like blended reality since we have blended the real and the virtual together, but we are trying to see how we can utilize the tools to overcome a particular task. When a problem arises, we are seeing how the virtual space can provide us with a solution instead of looking at the virtual space as a solution to figure out what the problem is.

6. How many educational projects have you carried out using this alternative teaching method? How successful were these projects? (7th question)
   Not applicable.

8. What are your current projects (if any)?
   In the OpenSim space, the main project is the programming of robots and the collaboration of programming robots between different countries. To be more precise, the screen captures the students’ actions, we are videotaping the students themselves in the UK and in Japan, we are transcribing the teamwork that they are doing locally and of course we’ve got their avatars’ transcriptions as well, and we are putting all that data into a Google document. We then share the document between myself and the researcher in the UK and analyze the transcripts. Through the analysis of the transcripts, we are trying to find evidence of development of cognitive processes and by doing that we are trying to match the development of the students’ different cognitive processes to the task itself. So, we think that as we are increasing the difficulty or the complexity of the task, certain
cognitive processes are likely to be activated and that is brought up by the evidence that the students are communicating and collaborating. Doing that is quite tough, but we think that we have a reliable instrument trying to interpret what the students are actually doing and what they are saying. We know what they are saying, we can see what they are doing inside the virtual space, we can see what they are doing physically with the robot in the lab, and it is up to us then as researchers to try and interpret that in terms of learning and also regarding whether students are actually benefiting and learning something. If they are learning, we are then interested in discovering what they are learning and what the different cognitive processes they are going through are when they are doing these particular tasks. What we found out is the educational aspect of what we are trying to research. Otherwise, it is just something rather novel, something to pass the time, maybe partly entertaining. For us in education, it’s all about learning but what evidence do we have of learning and how do we find that evidence? That’s our main educational goal, the main educational drive really for doing this particular project. Furthermore, we are going to conduct research in another technology called JIBE, and that’s based on the Unity 3D engine which brings a lot more flexibility to the kind of tasks that we are developing in the terms of programming of the robots. They are both utilizing the real world and this JIBE space will help us push the research challenges even further, we think, but again we are looking into virtual environments as solutions to the problems that we have. We found that OpenSim has served a particular purpose but now the task has become a lot more challenging and we want the robots to do a lot more, we want the collaboration to achieve a lot more. When we start to push the boundaries, we realise that there are limitations but now there is something else available which will allow us to do that kind of communication and that is the Unity 3D technology. So, we are now looking at that for our next annual project.

Part 2

1. What does a typical lecture of yours look like in the Second Life’s/OpenSim’s virtual environment?
I don’t lecture – in fact I am 100% against the didactic approach if adopting virtual worlds.

2. Why do you use Second Life/OpenSim in your teaching? In your opinion what are the advantages of this teaching method?
Virtual worlds are best used for “experience” thus supporting a more social constructivist pedagogy and connectivism.

3. Respectively, are there any disadvantages?
The major disadvantage relates to the users: the “teacher” has to adopt a specific pedagogy and the students must be motivated by a more experiential learning process. These are the biggest barriers to adoption: teachers and students.

There are a lot of limitations. These limitations are about students’ psyche when they get into the virtual space. Is it entertainment or is it learning? Can I take it seriously? In our project they do because they are research students-media architecture students-but if I took general students in there, just like you take them to a certain web page or inside a blackboard or a Moodle place, they would have difficulty dealing with it as a learning
environment. When it comes to virtual worlds, this mindset that this is not learning is something that should be overcome. Teachers and academic staff aren’t really convinced by it, and I don’t blame them, but there is so much potential there in terms of simulation, history, geography, science – you can run simulations and case studies and role-plays... all in this virtual space. These cannot be carried out on a 2D web space like Moodle.

It’s got potential, but it’s really hard breaking down the mindset. I think people are not ready for it yet. That’s about it really. And how can they be ready for it? The graphics themselves in the avatars look too unreal, they just look ridiculous but if it became more realistic then possibly it might have a lot more potential. However, I don’t see it as potential for mainstream education, I see it as potential for experiments, simulations, and doing particular tasks like collaborating with robots and looking at historical sights and studies. Instead of looking at pictures, you can get into Second Life and go back in time and see what it was like in ancient Greece. You can wander around and put on the appropriate clothes if you want to as well. It’s smartless but many people can’t get beyond the game element of virtual spaces. So, it is not OpenSim. I think it is virtual worlds themselves that are limited.

Regarding disadvantages, I don’t think there is a problem with the OpenSim per se. OpenSim is a wonderful technology, you have got good servers, good support – it is as good as anything in terms of the tools of virtual technology. I think that there is more limitation to the virtual worlds’ technologies themselves, i.e. the heavy load on the kind of computers you need to have in terms of graphics cards etc. and of course you’ve got the network connection which is required to be pretty reliable, and stable, and good for the rendering of the different objects. Besides, the interface is not very user friendly, it is not very intuitive, for instance, you can give students an iPad and within 30 minutes they can figure out how to use it along with some of the applications on the iPad. In contrast, if you put students into a virtual world like Second Life, all they can do is just manage to fly around the world, and they don’t have that much control of that either. Again, the interface leaves a lot to be desired, not to mention that trying to get students in-world if you are limited to about eight avatars is disheartening. We did one project where we had about sixteen to twenty-four avatars and it was like hurting cats, they were all over the place, and it was very anarchic really. It was actually very difficult to achieve anything in the time that we gave the students.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
That’s a loaded question. What results do you want and what do you mean by better? Should we compare? Information & Communication Technology (ICT) rich and non ICT classes have been compared since computers entered higher education and the agreement now is that it is a mute comparison and even when conducted reliably the results conclude “no significant difference”.

Once again, it depends on what your goals are. It depends on what the aims are. It depends on what you are trying to achieve. It is like saying, “Do we put students in the classroom with the books, pencils, paper and a whiteboard, do we give them all laptops and call it a one to one or laptop initiative or do we put them in a lab of computers?”.
They are all different environments. It depends really on what the aim is. So, the answer
to that is “yes” or “no”. It’s what I say when I do my teacher training, “it is not about the technology, it is about your lesson plan”. In your lesson plan, you have outcomes, stages of development in your lesson plan, ways of checking the development in your lesson plan. Where does technology fit into all that? Do not try and bolt on the technology, you know if the technology is going to fit into your lesson outline. Do not force your lesson outline into the technology. So, the question should be the other way around.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life/OpenSim to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
I moved out of Second Life to a private OpenSim space in order to focus solely upon the tasks for our research. The students as avatars meet others from coordinated schools but not as a social context. I am simply uninterested in “identity” issues or other strands of virtual world research.

2. Do you think that the virtual environment of OpenSim leads your students to “live” the lesson?
Yes, the students are experiencing the complexities of collaborating in the remote programming of a robot using unique tools designed by the learners within a virtual space.

Going back to your question, my answer is affirmative if it is set up right by the instructor, if it is guided well, if the task itself is clearly laid out and there are markers along the development of that task, indicating the students’ benefits of what they are doing. It certainly encourages a kind of student set to a certain type of learning, it encourages students having to hypothesize, locate information, then construct something and finally report on that. A virtual space is a lot more informative and challenging, a lot more exiting and interesting, so it does have that kind of potential.

3. Based on your experience, do your students enjoy the educational activities within the Virtual World more than the ones in the university classroom?
They tell me so.

Part 4 (Second Life)

If Second Life were to close many educational institutions would be left “homeless”.

1. Have you taken this issue into account?
No idea.

2. What is your opinion?
Second Life looks great and has so much potential but why hasn’t it become more ubiquitous? We opted out due to privacy issues, cost, downtime (maintenance was too often undertaken at times most suited to USA time zones thus making Second Life often inaccessible here in Japan during the day). The iPad has entered the market and its user interface is so simple. Second Life won’t be adopted until a more user friendly interface for movement and construction is adopted.
3. Are you concerned about Second Life’s closure?
   Yes as it would send a poor message to funding bodies.

4. Does this possibility affect your decision to use Second Life? If eventually Second Life terminates, will you attempt to replace it with another virtual environment? (5th question)
   Yes, absolutely that’s why we have replaced it with OpenSim.

Part 4 (OpenSim)

OpenSim is new technology used for the development of virtual environments.
1. How stable do you expect this technology to be?
   It is open source so it will be “in development” for a long time but, like OpenOffice and Linux, there will be stable versions along the way, probably developed by commercial entities.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
   Very. I have total control of my space on my server and backed up. My university finance department and academic managers are more comfortable about this too.

3. OpenSim grids have the potential of “hypergridding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
   Very much and we have tried this on occasions. Think Star Trek effects too– beam me up, Scotty! The exciting part though is to hypergridding to a real space; for instance, I saw a demo of an avatar being teleported onto a real stage in Hong Kong where Intel were introducing some graphics technology. Like a hologram I guess, but points to the future of real-virtual immersion, which makes me motivated to prepare academics with informed metrics for effective tasks.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?
   No, not at all. Like Apple Macs and Windows. People have always told me since my first Mac in 1993 that only 5% of computer users are Mac users. Yet Apple leads and not follows. I think the OpenSim community and technology are similarly positioned.

Part 5 (Second Life)

1. What is the monthly cost of using this virtual world?
   Well, we did it 4 years ago and it has been very expensive but my OpenSim space is free. I bought a computer, a server –it is on the server, just like anything else is on your computer once it is there. So, it is just the electricity that is running it. I would say that the initial cost of a piece of land was very expensive and that was very unimpressive.

2. Who usually funds your in-world projects?
   We got external research funding. Even my current project is a research project. The advantage of that is that I don’t then have to go through the University educational structure and a lot of the bureaucracy that the education department enforces. By this being a research project there is a lot more flexibility in what I can do and then I can integrate this project into my classes as a research project. In the classes where I have
used it, the students can choose to use the virtual space to do the designing. As I said, I’ve only got about eight students who are doing that. I have a class of forty; the other students are doing eye movie, Flash, and the like. So, it is not really part of the educational department within our University, thus I can get it funded by research and keep it that way.

3. How affordable do you consider it?
Not at all.

4. Have you used the discount offered by Linden Lab to academic institutions?
No, we hadn’t even thought about it. I think there was another grid, Teen Grid or something like that, which was around a while ago but was shut down. We were looking at that four years ago to see if we could make use of it. However, compare that to nothing, it is a no-brainer. Let’s say, for example, that you spend 500$ to 600$ on Microsoft office when you can download OpenOffice for free and it does all the same stuff: you can type a document, do a spreadsheet, a presentation, etc. Why spend 500$ to 600$ on something that you can download legally for free, and it is just as good for all the minor things you do with the technology. Microsoft office or OpenOffice? It is a no-brainer. So, the same applies to Second Life. Why would we spend a thousand dollars on Second Life when we want to use it for creating rather than for travelling around to other beautiful spaces that have been built by other people, mind you. We are not doing that. We want to use the technology for designing, building, and creating and in OpenSim, you can do that for nothing.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer? How do you intend to deal with this? (6th question)
Not applicable.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, because the focus on our project is more about creativity and we decided not to replicate the real world in the virtual world. There is no point doing that for our particular project. We don’t need the nice buildings for the students to do the tasks. So, we haven’t hired anybody at all because it’s all about students learning and creating something, based upon the problems that the students who do the programming tasks communicate to the design students who then have to come up with the solutions. Let me give you another example; a few weeks ago we used Google SketchApp, for one of our projects, and we found out that we can export a three dimensional SketchApp, a built-in, into a cloud of our which can then be inputted into our OpenSim space. It is not just copy and paste, something has to be done to it but ultimately it can be done and I have got one of my students looking at it now. So, we don’t need to hire professional people to do all this because that would not be the point of why we use the virtual space.

Part 5 (OpenSim)

1. Is your virtual university hosted by a dedicated provider or by your university?
I host it from within my office on a server. I have another hosted by ReactionGrid.
2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No. My students pick it up as they experience the space.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
After initial outlay, the only cost now includes overheads such as electricity and consumables such as hardware.

4. Who usually funds your in-world projects?
Funding from Japan education ministry. We received funding from UK Prime Minister’s Initiative in 2008 to start the project.

5. How affordable do you consider it?
It’s very affordable.

Part 6

1. Which virtual world have you used first and for what reasons have you decided to turn to the other?
Now OpenSim. We used Second Life to begin with but were disappointed with:
Second Life occasionally being unavailable (especially in Japan when Linden Labs did their maintenance during our daytime hours). The cost of Second Life. Security worries in Second Life – with OpenSim the virtual world is only accessible on my server. This has appeased my cautious university administrators plus now I can safely invite schools into the space for demonstrations. The constant need to update Second Life – this was such a pain when using university computers. It was simply not possible to get immediate updates due to admin password required, etc. Second Life closing the TeenGrid and that reinforced our belief in a lack of true ownership. In our OpenSim space everything is ours and controlled by us! OpenSim support is excellent and I prefer the spirit of communication among the OpenSim community. OpenSim is also customisable.

2. Which one of these two virtual environments do you consider more appropriate for educational use?
Depends on what you use it for.

3. Based on your experience, in which virtual environment were the educational activities more effective and attractive? (Please indicate only one virtual environment).
OpenSim is effective but Second Life is attractive.

4. Since OpenSim technology is recent and promising, it seems that it can provide long term persistence in comparison to other virtual environments or Second Life. Was this the reason which led you to utilize this technology instead of Second Life?
No, see 1 above.

5. Which one of these two virtual environments offers best value for money?
OpenSim, it’s free.

6. Did the high cost of Second Life lead you to choose the OpenSim technology for your educational activities?
Yes, partly.
Interview 31
Dr. Spyros Vosinakis — Department of Product and Systems Design Engineering (Virtual Reality), University of the Aegean, GR

Part 1

1. Which virtual environments have you used for educational purposes?
In the past, I had been using virtual worlds that I had created myself using the VRML. Nowadays, since the use of preconfigured virtual worlds is a common practice, I have personally used Second Life too, but, for educational purposes, we have opted to use OpenSim.

2. What were the reasons that led you to choose OpenSim for educational issues?
First of all, the selection of OpenSim is based on the fact that Second Life as a virtual environment is fairly widespread, user-friendly and these two environments share many common features. In practice as well, Second Life has proved fairly easy to use as regards content creation by users. That was a feature of great interest to us; since our department is in the field of design, there would be no point if our students simply entered the world just to talk to each other. At the same time it has a very good background in support materials, such as scripts and forums, which are very helpful for new users. Therefore, we were interested in finding a virtual world like Second Life, but Second Life itself was far too costly to be used by us, since we would have to maintain our own island and we didn’t have the required budget to do that in Second Life. At the same time we wanted to host our own server in order to conduct research into it because we don’t see the virtual world as an exclusively educational tool, but as a research field as well. So, we find it positive that the use of our own server gives us control to a much wider extent than Second Life does. For these reasons we opted to use the virtual environment of OpenSim.

3. For how long have you used OpenSim for educational issues?
We have been using OpenSim for about 2 years.

4. In what academic level(s) have you used OpenSim?
Undergraduates (BSc) and postgraduates (MSc).

5. Are you using OpenSim for universal conduction of the courses or just to support the usual educational methods (in class)?
We use the educational approach called “blended learning”. Part of teaching takes place in the real life classroom and part of it takes place in the virtual world.

6. How many educational projects have you carried out using this alternative teaching method?
For the last 2 years we have been carrying out 2 projects per year.

7. How successful were these projects?
I would say that the educational results are satisfactory, overall. Without having carried out a comparative study, I think that these 2 years we have had better results than the previous years when we used more traditional means of education.

8. What are your current projects (if any)?
The first project which is addressed to undergraduate students is called “virtual reality”. It is held in the fifth year of the undergraduate curriculum (five-year Department of
Engineering) and it is a course of the “human-computer interaction” faculty. One of the issues that concern these students is virtual reality. This course is conducted five hours each week of which three are dedicated to in-class lecturing and two to laboratory practice. During lab, students are putting into practice, within OpenSim, part of what they have learned theoretically during the lecture.

The other course is part of a Master’s degree in the form of “conversion”. Within its framework students are participating in an “interaction design studio”, in which they are divided into groups of two or three and their project is to design interactive systems in order to solve problems. We apply the so-called “problem based learning” model and we use the virtual world as a platform for collaboration, creation, prototyping, and presentation of students’ work.

Part 2

1. What does a typical session of yours look like in the OpenSim’s virtual environment?

In the undergraduate course, the main objective is students to learn the world itself as a tool; utilizing it in teaching occurs to a lesser degree. Hence the object of teaching is virtual reality itself. Therefore, we are all immersed, in some way, in the virtual world and I assign them some exercises. In the beginning I present them with some examples, something regarding scripting and the code they will use. Then I get them into the virtual world to try out some more exercises, that I assign them, and individually solve a problem that I present them with. I, as an avatar, visit students, see what they have done, test and evaluate, in a way, their solutions.

When it is time for students to start working in groups, we divide the world so that every group has their own workspace to use in order to bring their project to life; we also have a central space where we all gather during workshop time to do some activities which are synchronous. Whatever is taking place within each group’s workspace is absolutely asynchronous. Each of the groups is developing their projects their own way, at different times. I am passing through their workspaces some time out of the day in order to observe their progress and give them some guideline or direct them, whenever I come across a student working on their projects.

The course of the Master’s degree has not yet begun being taught this academic year, but I can describe what we did last year (we will probably do something different this year). We had created, within the virtual world, a space which resembled a classroom and in that space we developed a system for presentations, where students were able to upload images and make presentations. Using a projector, students were presenting, inside the virtual world, the progress of their project as if they were having a presentation in a real life university classroom. We commented on their presentations in note cards which we would leave at different points in their workspace within the virtual world, so that they could see them, address the problematic areas of their projects and then present us with a new or improved version. I would like to stress that this session did not deliver any theoretical knowledge to the students. Whenever we intended to give our students theoretical clues, we did so within the real life classroom and not within the virtual world. Finally, the virtual world is used as a platform of remote education. When our students faced difficulties with their projects, we arranged some sessions beyond the regular
course hours, during which we met with our students in order to help them, answer their
questions, and give them guidelines.

2. Why do you use OpenSim in your teaching? In your opinion what are the advantages
of this teaching method?
Firstly, since that was our first attempt to use such a virtual world and we didn’t have
much experience, we preferred to be in a closed and protected world like the one that the
private hosted server of OpenSim offers us, rather than Second Life where we would be
quite exposed to other users’ invasions. Moreover, in Second Life, uploading images is
charged. The nature of our courses has students upload dozens of images every week,
which they use for the creation of their objects and presentations. OpenSim provides this
facility free of charge and this is very important to us. Another advantage is related to the
OSSL, the programming language of OpenSim, which is an extension of LSL but offers
more features. The OSSL enables us to create interactive objects and paint any kind of
interactive content on the textures. Using OSSL we were able to create message boards,
post-it notes etc. I can’t tell to what extend this is possible in Second Life. Another very
significant feature provided by OpenSim concerns the creation and use of agents. I am
very interested in that since my current research is associated with the agents and the
development of their commands. We plan to introduce the use of agents into our
educational activities in the future, aiming to help our students make more effective and
comprehensive presentations of the issues they study.

The last yet very important advantage of OpenSim, in my opinion, is the possibility it
gives us to keep backups. If at some point students destroy a small or large part of the
world, the next day we are able to retrieve the world that we had kept as a backup two
days ago and everything can go back to normal. This is not possible in Second Life.

3. Respectively, are there any disadvantages?
Of course there are. I am not at all satisfied with the groups’ functionality in OpenSim.
Their installation is difficult and their quality is dubious. We are facing many problems
with the operation of groups, which is problematic, incomplete, and sometimes causes
latencies. This is a major disadvantage for us, since we use the groups in the lesson so
that the two or three students who are members of the same group can all have the right to
modify the objects and scripts that are necessary for their work. Even if the members of a
group become “friends”, they cannot modify each other’s things. Therefore, when groups
don’t work, lessons cannot be carried out properly.

Furthermore, the LSL in OpenSim is not a 100% functional. Nevertheless, as I mentioned
previously, we cover our programmatic needs through the use of the OSSL, thus the
malfunction of the LSL does not affect us significantly. Meanwhile, the quality of the
graphics and the overall content display in OpenSim is inferior to those in Second Life.
Something that seems to be missing from Second Life and OpenSim as well is the ability
of users to integrate documents and applications used in the real life world into the virtual
one. Of course, we can use Google docs via web browser, but the operation of that
technique is problematic and does not work satisfactorily. Not all of my students are able
to simultaneously view a text that I want to present in OpenSim or Second Life. So, there
is no real integration, only apparent. And the last problem concerns voice
communication. For the voice communication I had implemented FreeSWITCH, whose
operation has proven really problematic. Currently, I’m in search for an alternative voice server and I have heard positive comments from colleagues about Mumble. I am planning to try it out soon.

4. Comparing the university classroom with the virtual classroom, which one may have better results?

Regarding the parts based purely on the element of communication, I think that, for many years to come, face-to-face teaching and learning will keep being advantageous in that it allows more direct use of non-verbal communication and generally facilitates communication and understanding, making them both more direct. Beyond that, when practice on something which is difficult to be done in class and cannot be presented on the board is required, then it is clear that the virtual classroom comes in handy, allowing us to build, try out, and illustrate. So, if we want to show something tangible or give the students the opportunity to try something out and experiment with something, then certainly the virtual environment serves these goals better. From there on, face-to-face communication, even today, still has its value and will not be replaced easily.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?

We have noticed this problem as well. Fortunately, we were lucky enough to observe it before entering OpenSim. Earlier, in an attempt to experiment with virtual worlds in education, we had set up a project in VRML and tried to carry out a comparative evaluation of learning effectiveness with two groups. One of them attended a typical course, whereas the other one engaged in educational activities for the same course yet conducted inside the virtual world. To our surprise, we observed that students did not do well in the virtual world. Trying to justify this result, the answer was very simple. Students in the virtual world were totally lacking in orientation and impressed by the new educational tool “got lost” while exploring it. Besides, navigation in virtual worlds is difficult for anyone not familiar with such environments.

Since we realized our mistake, from that first attempt to use virtual worlds and on, we have been spending our first lesson, which usually takes at least three hours, on the familiarization of our students with the world, and we don’t organize any educational activity. During this lesson, students create their avatars and learn to move within the world, regulate their cameras, communicate, create small objects, etc. Our aim is to make them see the world more as a game, which they want to be acquainted with, rather than as an obligatory technology which they are forced to learn and use. This way, the majority of our students learn quickly to use it pleasantly, without difficulty. This works well. As a matter of fact, some of our students choose to engage further with OpenSim after class. They log in while they are at home and experiment by themselves with object creation. Nevertheless, there is also a minority of students who find it harder to familiarize themselves with the world.
Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of OpenSim to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?

Yes, this has proved to be true for both of my courses, especially for the one of the undergraduate program. I noticed that every week that I logged into OpenSim, I found out that someone had made something interesting which had nothing to do with our projects but might have been seen as some kind of “artwork” by the student. It was not simply a transfer of a real object to the virtual world, a fact which shows that students regard it greatly as a game and I think that this makes the course more attractive. Once I replaced the environment based on VRML, which we had been using the previous years, with OpenSim that was more versatile and contemporary, the number of students attending our classes increased greatly, as the course was elective and not mandatory.

2. Do you think that the virtual environment of OpenSim leads your students to “live” the lesson?

Yes, but I have to point out that we did not exactly have within this virtual environment what we would call “a lesson”. I think the term “live” is more meaningful in that it was a participatory and collaborative experience.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?

They definitely enjoy them more! I can say this with certainty. That’s why participation in this course is markedly increased. Students enjoy coming to the lab and becoming creative in the virtual world.

4. Since your virtual university is hosted in a private (institutional hosted) server, do you think that the fact that your students do not constantly have the opportunity to interact with users who do not belong to your university’s community will affect their immersion in a negative way?

That is a very reasonable question. From my perspective, it depends on the educational objectives and the way the virtual world is used. For example, if I want my students to practice in English in a role-playing context, then it makes sense to get them into Second Life where they may come across random users, communicate with each other in English, and get trained through it or cooperate with other university students. If, however, the main aim of a session is not the communication with others but mainly the internal communication among the group members while working on a project, as in our case, then I don’t think that students are losing something important as regards their education by not coming in contact with people outside our university. I don’t consider the communication of our students with people outside university that essential for my class, especially when taking into consideration that the average Second Life user, for example, across whom our students may come, is not a student aiming to learn something in-world. The average user is someone who wants to meet people, play, or role-play etc. Nonetheless, during the winter of 2010-2011, in the context of the virtual reality course, we created a second island in our virtual world, where we hosted the University of Cyprus. A Cypriot colleague and partner of mine who was teaching the course of “Human-Computer Interaction” assigned his students some projects, similar to what my
students had been working on. So, there was some kind of interaction between the Greek and the Cypriot students. Of course, that made the sessions much more interesting for all of us then, but I don’t think that this interaction significantly affected the educational results.

Part 4

OpenSim is new technology used for the development of virtual environments.

1. How stable do you expect this technology to be?
It’s not sufficiently stable, yet. When we first started using OpenSim, in previous versions, we were facing serious problems; the older the versions were, the more unstable OpenSim was. Now we have reached a higher level of stability. We have managed to have up time lasting two or three weeks, which is not much but it’s much better than it was in the past. In any case, qualified technical personnel are needed in order to take care of the server maintenance, settle any problems that may occur and restart the server once a week. I think that, this way, it could be fairly stable. A good administrator, who will arrange the proper use of the in-world resources, is also needed. Students, especially those without much programming knowledge, are frequently carried away by their creativity and waste the resources of the server, loading it with countless prims and scripts. Apparently, this has a negative impact on its stability often causing it to crash. Unfortunately, OpenSim, unlike Second Life, does not “take the initiative” to block the creation of the scripts that may harm its function?

Of course, a world that is used exclusively for role-play, without students creating things, could easily be kept at fairly stable levels.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
This is one of the most important advantages of OpenSim. Whatever may happen, any error, we can quickly retrieve our virtual workplace without any problems.

It is also very useful for the first lessons of each semester in OpenSim when students are experimenting with the world. Then, having kept before class our virtual space “clean and tidy” as a backup ,we recover it after class to erase the students’ first trial efforts so as not to burden the world with useless objects and scripts.

I would also like to mention that I have created my own set of tools that I use in classes. I keep them in backups in order to be able to transfer them and share them with other users.

3. OpenSim grids have the potential of “hypergriding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
I have not dealt with hypergriding, yet. I consider it useful anyway. We are planning to be linked with the universities of Rhodes and Piraeus, in the future, to open up the opportunity for our students to explore the virtual space of other universities beyond their own and see other students’ creations. I consider these opportunities given to students through hypergriding very positive, mainly because students observing the creations of others and exchanging ideas and knowledge broaden their horizons and become more creative and competitive (in a positive way), thus our lesson becomes more interesting. At the same time, since we want our virtual land protected, we keep it closed. However,
whenever we need it, thanks to hypergriding, we can visit the virtual spaces of other universities and, respectively, we can host students of other universities on our virtual land.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?

On the contrary, I believe that this can have a positive influence. Sometimes I feel that the people behind OpenSim see Second Life as a “rabbit”. As soon as they see something new in Second Life, they try to apply it in OpenSim as well. OpenSim tries to follow Second Life, but, at the same time, it has developed its own unique mechanisms, which don’t apply in Second Life, and are continuously expanded. So, for the time being, I believe that things are not negative for OpenSim. I see that there is a progress, which may be slow but certainly exists. From one version to another, we see that slowly the flaws are being corrected and several new elements are being introduced.

It is affected negatively only by the fact that it is not used by many people. I think that getting more users is the key to the progress of OpenSim. The more it is used, the more glitches will be detected and the more urgent it will become that the development team need to upgrade OpenSim fixing the faulty areas.

Part 5

1. Is your virtual university hosted by a dedicated provider or by your university?
We host our own server in our university.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No. Of course, if we keep using it in the context of specialized courses, in the future, we may do so mostly for quality imaging reasons, especially if the cost isn’t too high.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
It is only the operational and maintenance cost of the server. We could say that the cost is minimal.

4. Who usually funds your in-world projects?
Our university.

5. How affordable do you consider it?
From a financial point of view, the cost of using OpenSim is minimal, but it costs in human resources and this is important. We need qualified people to take care of the server and set up in the world whatever we need for our educational activities. This takes time and of course “time is money”. If a university does not employ qualified staff and leaves its “non-qualified” tutors to do by themselves whatever is needed for the function of OpenSim, then even more time is required. Consequently, each university has to make a choice as regards OpenSim: either employ professional staff that will cost much, but will perform the necessary tasks quickly and effectively, or have its tutors specialize, an option which will have an equivalent cost, because it takes time and effort for them to learn the technology and, hence, this translates into economic cost.
Anyway, I think that OpenSim is economically very affordable, especially if a university has tutors in teaching subjects, like computer science and engineering, who, by definition, have those skills needed to run a virtual world or if it hires technical personnel, whose responsibility, among others is the maintenance of the server as well.

Is there anything else you would like to add before we end?

I believe that, we have to discover new teaching methods in these environments and escape from the traditional classroom. We should see them as a medium strongly coloured by the elements of simulation, role-play, and interactivity. We should view them as spaces where we are given the possibility to examine subjects that we cannot approach in the real classroom and not as a remote collaboration tool. For that purpose, there are other tools, much simpler than virtual worlds.

Finally, I would like to mention one remarkable case. In the postgraduate program, last year, there was a student who was able to hear a very small percentage of the sounds; he was almost deaf. He was able to read our lips and this way he managed to follow what we were saying, but he needed to have visual contact with the speaker in order to do that. Also he was able to speak, but his speech was difficult to understand, thus we had to pay close attention to him in order to understand what he was trying to say. Although he was a very good student and that was clear from his writings, inevitably, in the participatory processes in class, he remained “hidden”. In the virtual world, where he existed as an avatar, as long as the voice chat wasn’t used, not only did his handicap pass unnoticed, but he was also acquiring the role of a leader. He was the one to communicate with the other group members; the one to communicate with the tutors; he was the one to participate more than any other student. So, suddenly, the roles were reversed, just because some things that were taken for granted in the classroom changed in the virtual world. This is a very interesting observation. I have read articles about similar cases. In other words, the avatar causes identity to change as well. Someone shyer, more reserved, someone who, in the real life world, may have difficulties in communication, in the virtual world he is likely to overcome them because, suddenly, any weakness they may feel that they have or they really have disappears, since they can form their avatars in a way they feel it expresses them and take over the roles they want. So, somehow the virtual world makes up for some failures and weaknesses of the real life world.

Interview 32
Ms. Sheila Webber — Department of Information Studies (Information Literacy and on Educational Informatics), University of Sheffield, UK

Part 1

1. Which virtual environments have you used for educational purposes?
In terms of 3D environments, I’ve only used Second Life for teaching. I have had a brief effort with Google Lively too.

2. What were the reasons that led you to choose this virtual environment for educational issues?
When I started in 2007, Second Life was really the most obvious route to choose. So, in terms of “which virtual environment”, it wasn’t so much of a choice. However, the visual 3D element that you can create, such as the models in 3D (e.g. I have done a 3D version
of a research model about information behavior) was one of the reasons. Then, there is the fact that my students can meet people from other places around the world or the United Kingdom and are also able to “use” people as tutors. These people are geographically distant, but can “pop in” our lessons for an hour or two to help or to give tours of what they do in Second Life. Additionally, first years are studying Information Management through Second Life and I think that being fluent in using a virtual world for that reason will be positive for their CVs. The masters’ students, who are taught Educational Informatics, need to learn not only about the use of virtual worlds as learning environments, but also about numerous other ways of learning through the use of technology.

3. For how long have you used this virtual environment for educational issues?
   Since October 2007 (five years).

4. In what academic level(s) have you used this virtual environment?
   I have used it with first year undergraduates and Masters’ level.

5. Are you using this virtual environment for universal conduction of the courses or just to support the usual educational methods (in class)?
   In both cases, they are part of a blended learning approach.

6. How many educational projects have you carried out using this alternative teaching method?
   Well, there are two projects: one with the first year students and one with the Masters’ level students. I have carried out each one of them 5 times, once a year since 2007.

7. How successful were these projects?
   Well, with the first year class, actually, the culmination of the Second Life activity is that each student has to do a research interview with a Second Life resident, asking the interviewee to think about a time when they needed information and describe that critical incident. Then they have to analyse the text chat transcript for their assignment and reflect on their performance as interviewers. So, this assignment is designed to assess their understanding of information behaviour research models as they use those in analysing their data. So, I mention this as a key measure is whether they can do well in this assignment. Second Life adds the element that there is a wider range of interviewees and normally students were asking about info behaviour in Second Life, a novel research topic. Anyway, by this key criterion, having this inquiry-based assignment did enable some excellent work from the students. Not all work was excellent, but then it never is, so I would judge that the use of Second Life with the students was successful. In terms of the Educational Informatics students, I think that has also been successful in terms of students understanding some of the affordances of a virtual world and how it can be used in education. This is coming from students’ feedback, in the form of small-scale informal presentations they do in Second Life after attending the virtual world conference. Also from student evaluation, I must say that, certainly, not all students like Second Life, but in particular the Masters students can see why it is useful.

8. What are your current projects (if any)?
   As I said, our main projects since 2007 are two and run annually. The first one runs for the first year students in the context of Information Management and the other one for the
Masters level students who are taught about Educational Informatics. Also, since 2007, there has been a programme of discussions and events focused around Information Literacy and Information Behaviour, at least one a month. This is aimed at librarians and educators, but also students if they like. We mostly get graduate students, and anyone else who is interested. Here is the URL of the list of events which, unfortunately, I haven’t updated since last October, but there continues to be at least one event every month and, in fact, the last one was yesterday (May 2\textsuperscript{nd}, 2012).

**Part 2**

1. What does a typical lesson of yours look like in Second Life’s virtual environment? These are only the activities relating to Second Life. All the whole-class activities take place in one of the Information School’s computer labs, since not all the students are able to access Second Life at home (e.g. because their computer or internet connection is not good enough). Text chat is used for all the Second Life sessions. During the first two weeks, students are given an introduction to Second Life, they are informed why Second Life is relevant to the class and why virtual world skills will be useful for their careers in Information Management and then they have an orientation session with various activities. After that, for some weeks, students participate in various activities focused on those skills which are directly relevant to the research interviewing task and evaluate their results. Some necessary lectures also take place during these weeks. During the seventh week students are introduced formally to the research exercise that they will be participating in when they conduct their interviews. The research has gone through the University’s research ethics approval process, and this process is explained to the students. The research question has been “What types of information behaviour can be identified in searches for information connected with Second Life activities?” This is a qualitative investigation, using a self-selecting sample of volunteers (mostly educators or librarians) recruited by the class coordinator via discussion lists or through personal contacts. The class coordinator matches students with interviewees, provides an information sheet on the research, notifies both parties, and gives the students responsibility for setting up the interview. The interview questions are designed to enable students to compare their results with findings from existing research into information behaviour in real life, but also to provide scope for further analysis. The students ask a Second Life resident to remember a time when he/she had information need relating to a Second Life activity. The student then asks questions about information behaviour related to that need. Students are reminded of the need to obtain informed consent, to ensure that the interviewee confirms that he/she has all the information they need about the research, to be well prepared, and to log the chat. The chat log also has to be passed to the class coordinator. Each student interviews one person and is given a transcript of another interview so that each person analyses two interviews. The following weeks students analyse their data, reflect on the process, and submit their assignment the last week. For the Masters program, I have created a little village, and the students choose a house as their home for the seven weeks that our project lasts. The first week students are having some basic orientation sessions, and the week after they choose their house, and each one of them creates a poster with his or her name on it to put by the house. This year, during that week we visited in-world exhibitions organized by another university’s students, physically located in Denmark. The two following weeks the students keep practicing in
creating and manipulating objects for their house furnishing, and more visits in Second
Life take place. This year we have visited the University of Edinburgh. The fifth week
usually includes presentations on other virtual worlds, and this year we have had one
more tour to Al Andalus. During the sixth week, all students attend a session of Virtual
Worlds Best Practices in Education Conference, take a picture, and make a poster of it to
put in their home, and the last week we tour around the homes, and the student talks
about the session they attended at VWBPE. This is part of an Educational Informatics
module. “This module aims to introduce students to key principles, methods and issues
associated with the use and impact of ICT in learning and education. It aims to enable
students to understand the scope of current practice and aspects of research in the field of
educational informatics, particularly within higher education but also in other contexts,
and to engage critically with relevant issues and debates.” They are also having practical
sessions on Blackboard & Wimba learning environments, and lectures on learning theory
etc. Part of their group assessment asks them to do “an evaluation of the educational
potential and limitations of Second Life, Wikis, and Podcasts” and they can choose to
make Second Life the focus of the individual essay they also have to do.

2. Why do you use Second Life in your teaching? In your opinion what are the
advantages of this teaching method?
I think it’s probably much the same as for the answer I gave in the earlier question i.e. 3D
environment, possibility of creating models, creating customised venues, etc. It’s nice to
be able to customise the learning space and give students the chance to do that. People
can come and look at my students’ work. Last year I specifically invited people to look at
exhibits the students had made. Also, it is important for the Information Management and
Librarianship students to know about virtual worlds. I think, it is a communication
channel they should know about for future employability.

3. Respectively, are there any disadvantages?
Technology is the biggest. Firstly, because it requires good broadband and a good
processing power and graphics. A lot of the students can’t use it at home, and even the
computers in our labs are not ideal, so sometimes they crash. Also, my university won’t
install it on the managed desktop. They won’t put it on the units round the campus, so
students can only use it in one of our labs and combined with the longer learning curve
for Second Life compared with some environments it can kill/dampen enthusiasm.
Students can’t go in-world at home or elsewhere on campus. So, they are less likely to
develop their skills or get engaged in Second Life activities outside class.

4. Comparing the university classroom with the virtual classroom, which one may have
better results?
It depends! They can both have excellent results and they can both have dire results. So, it
depends on the learning design, the learning outcomes, the cohort of students etc. I
suppose the biggest advantage of the real world is that everything is “real” but apart from
that, there are the advantages I mentioned already for the virtual world. All these are
missing from the lessons in the real world. I can’t afford to have 2 colleagues from
Scotland come down and help with a class for an hour, at least not very often. However,
with Second Life there are no travel costs, and they can do other work immediately
before and afterwards in their Scottish workplace. My students interviewed people from
the USA, other parts of Europe, and other parts of the United Kingdom. Additionally, I

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don’t have the skills, money, space to build models of research models of info literacy etc. in “real life”. Also I think that there is value in putting students in a different environment. Have you heard of “Variation theory”? It is linked to phenomenography—key author is Ference Marton and there is the idea that you learn by experiencing a phenomenon in different ways. So, that learning about how to interview in Second Life and in real life can help you learn more about interviewing, put the act of interviewing in sharper focus, encourage you to reflect on the differences and hopefully, then, you get better at it as you understand more. I was just at a VWER session; Shailey Minocha was talking about socialization for the first year students. I aim to support socialization (through group activities etc.) in face-to-face class, but the Second Life activity adds a different level of socialization including getting to know me as a tutor in a different less formal way.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students?
I do orientation here. Neither class is huge; there were 40 first years and only 11 masters students –though I do the 1st years in batches. The first session is about getting in-world, learning to walk about and fly, getting stuff from a box, rezzing things, riding motorbikes, talking to each other –that kind of things. We use an open area so people don’t get trapped in trees or anything. Second Life isn’t intuitive; I think you can’t expect people to do stuff till they feel they know how to do the basics.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time make your lesson more effective and attractive?
It varies between the students. Some of them do get motivated and interested; some don’t get attracted to it and see it as part of the class that they just have to do. The first year class is a core class, so they have no choice. Thus, that is one reason some don’t like it I think. This year, on student evaluations it was actually one of the things most mentioned by students as an attractive feature of the course, but it was mentioned as one of the least attractive features by some students. Also, I think, (this is just my feeling) that this 18-19 year age is awkward in that they are new to university; many students are also new to the United Kingdom and so, they have some conventional expectations of university which don’t include flying around as a robot or rabbit. Therefore, I assume that some of them feel that Second Life must be a bit uncool or perhaps childish. The older students don’t have such problems, I think. A few of them find it a bit challenging, but they seem more open to convincing, and, because they are used to being adults, they seem less worried about Second Life having the fantasy element.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?
I hope they live all my lessons! So, I suppose I see Second Life as one way of expanding their experiences. I don’t do so many straight lectures in real world. I do a lot of activities, or rather they do. So, I hope to engage them in different ways in different learning environments. So, I started by saying “hope they live all my lessons” as a sort of joke, but actually I think that is a serious aim.
3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
As I said, it varies. Basically, some do and some don’t. I haven’t done any research into the reasons. I think it would be quite complex because of the numerous variables, such as nationality, age, learning style, personality, their interest in the specific topic they are learning about etc.

Part 4

If Second Life were to close many educational institutions would be left “homeless”.
1. Have you taken this issue into account?
I suppose not in that I haven’t set up plans to use another virtual world since we don’t teach everything in Second Life.

2. What is your opinion?
By any means, it wouldn’t be a disaster. I would hope there would be notice if it was going to close in which case I would explore e.g. moving to jokaydiaGRID (Reaction Grid). I don’t think we would have our own OpenSim, plus I would want to use a place where there was a community.

3. Are you concerned about Second Life’s closure?
Yes, and I should have taken it as a motivation. I personally enjoy being in Second Life. I have my own land. I spend a lot on clothes, virtual cats, and the like. So, at a personal level I would miss it! On a professional level, it would be missed particularly for the professional events. That is where the community is particularly important. I have made some friendships and a few valuable research connections via Second Life. Librarians in particular hear about this island, which focuses on information literacy, and I have some material from other people.

4. Does this possibility affect your decision to use Second Life?
Yes, I suppose so. Using something like Reaction Grid isn’t like starting from scratch. I can use some of the same experience and skills, but it would be a pain in the sense of a bother. So, there would be additional work and perhaps less intrinsic enjoyment for me.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
Possibly with Reaction Grid. It would depend on what I was teaching at the time and what my other responsibilities were.

Part 5

1. What is the monthly cost of using this virtual world?
I think it worked out about £100 a month at the educational rate. We got the 2-years at the old discount rate. We have to renew it in October. Then mostly it’s the time of the tutors, mostly me plus my Ph.D. student who was a teaching assistant in Second Life this year and some cost of buying buildings or trees or whatever and uploading textures, but we don’t get anything custom made, so that’s not much money at all.
2. Who usually funds your in-world projects?
The cost of the rental is paid for by my department (the Information School) and the School of Education. We, actually, pay a bit more than them. To be honest I usually end up paying for trees and buildings, but I like playing around with landscaping. So, the main cost is paid for by the departments.

3. How affordable do you consider it?
Well, compared with the annual cost of something like Blackboard, it seems a snip. The main problem is that it is a cost at the department level rather than centrally. Though conversely, that means we don’t get interfered with, we have control.

4. Have you used the discount offered by Linden Lab to academic institutions?
Yes, two years ago. It expires in October.

5. If yes, how do you consider the decision of Linden Lab to discontinue this offer?
Well, it makes it harder work to get the funds to renew. A depressing decision…

6. How do you intend to deal with this?
I hope we will get some funds from the Educational Informatics research group and some from the School of education, again.

7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No.

Interview 33
Dr. Panagiotis Zaharias — Dep. of Computer Science (Information Systems), Open University of Cyprus, CY

Part 1
1. Which virtual environments have you used for educational purposes?
I’ve only used OpenSimulator.

2. What were the reasons that led you to choose this virtual environment for educational issues?
The reasons were practical. We were looking for a platform that would have content, facilities and services similar to those of Second Life, which has been used by many educators, and numerous positive comments for its potentials have been reported. At the same time, we wanted something that would be free of charge. A colleague of mine from the Aegean University who had set up an OpenSim server, informed me about the OpenSim technology and the facilities it offered, and I decided to “borrow” his platform to do an experiment.

3. For how long have you used this virtual environment for educational issues?
I used it last year in the context of a one-semester course, so that was for about six months.

4. In what academic level(s) have you used this virtual environment?
I used it with fourth-year undergraduate students in the context of a course entitled “Human-Computer Interaction”.

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5. Are you using this virtual environment for universal conduction of the courses or just to support the usual educational methods (in class)?
We didn’t use it for lectures. We used it as part of an assignment that students had to do. Our aim was to make students browse around the virtual world, collaborate in-world and design some interfaces. Therefore, we may say that we used OpenSim additionally to our usual educational practices.

6. How many educational projects have you carried out using this alternative teaching method?
Just one, the project I mentioned previously.

7. How successful was this project?
I would say that it was pretty successful. Certainly, we had some technical problems. Quite often the objects created by students were lost and that caused inconvenience, frustration and negative emotions, in general.

8. What are your current projects (if any)?
I have no educational projects running in OpenSim at the moment, but two of our students have Master theses dealing with issues regarding virtual worlds. So, we are just studying OpenSim as researchers, but I am not currently having any educational activities within it.

Part 2

1. What does a typical session/class of yours look like in OpenSim’s virtual environment?
Students formed groups and were left free to collaborate in-world and design simple interfaces by creating objects according to the specifications that we had given them. They were using the various communication methods that OpenSim offers to talk with each other, in order to learn how to use the world, exchange ideas, share their knowledge, create objects etc. More precisely, students were creating various images outside of OpenSim. Then, they were creating objects in-world and they were affixing the images on them, in the form of textures. With my assistant’s technical support, they were using some LSL scripts to make their creations interactive.

2. Why do you use OpenSim in your teaching? In your opinion what are the advantages of this teaching method?
Generally, I really wanted to introduce OpenSim to my students, to encourage them to use it and meet something new, something different, something beyond the ordinary. Regarding the advantages of virtual worlds, in general, and OpenSim, in particular, in my opinion, some very important features are the wide interactivity, the new opportunities for interactions and the innovative ways of interacting that they provide their users with. Specifically, the interactions via avatars increase the levels of immersion. That fact is what I find extremely important and may increase the students’ motivation to learn, since nowadays, motivation is considered to be one of the key factors for any learning process, regardless of the students’ age. So, seen from that point of view, OpenSim is a bit more “playful” and we thought that it would intrigue their interest. Based on our project’s results, I can say with confidence that we achieved that to a fairly large extent and I think that, if we didn’t have to deal with the technical problems that arose, we would have been even more successful.
3. Respectively, are there any disadvantages?
As I have mentioned before, we faced some technical problems and most of them could not be easily solved, since the server was hosted far away from us. A close colleague of mine was giving us access to the OpenSim server that he himself had created for the needs of his classes. So, whenever needed, we, from Cyprus, logged into the institutionally hosted OpenSim server that my colleague had hosted in Syros. Consequently, when we were facing technical issues, we couldn’t intervene directly in the operation of the server and solve them; neither could we constantly bother my colleague in Syros to fix our problems. If we had direct access to the server, that is, if we had the server hosted in our university, or if we had someone in Syros to supervise the operation of the server at all times, I think that these issues could be easily overcome. Generally, the interface was quite user-friendly and despite the problems we faced, we were able to carry out our activities. Nevertheless, I’ve heard OpenSim in general has still got some technical issues and we were not the only ones that faced them, but I think that it will improve progressively in time.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
Personally, as a researcher, I am in favor of the implementation of new technologies in education. I really want them to be used and also further improve. On the other hand, I have to be honest with you. I think that, up until now, face-to-face communication in the context of a traditional classroom hasn’t been exceeded, at least under circumstances where this is possible, i.e. when all people are in the same place. If we are talking about distance learning, then things are different. In any case, I think that in terms of motivation and immersion, virtual worlds are probably more effective.

5. Some of the interviewees have mentioned that their first educational projects within virtual worlds have failed due to lack of orientation. Have you faced a similar problem? What is your methodology to orient your students?
Of course, we did have orientation sessions and I consider them vital, especially for people who interact for the first time with virtual worlds. Before introducing students into the virtual world, a presentation was held by my assistant regarding the OpenSim interface, the way we log into the virtual world, the way the avatars move, what they can do and a few things about the LSL. From my point of view, I think that we should have given students more time to learn the world, since we were asking them to do so many things in very little time. Certainly, students should have been familiarized with the use of the OpenSim tools and the navigation within it to a much greater extent before we started our activities. Nevertheless, the results we had were quite good, considering that it was actually the very first use of OpenSim for educational purposes.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of OpenSim to communicate with others and/or spend their leisure time, make your lesson more effective and attractive?
Certainly that makes my lessons more attractive. As far as effectiveness is concerned, on the other hand, I have some doubts and so does the whole research community.
2. Do you think that the virtual environment of OpenSim leads your students to “live” the lesson?
Yes, I think that our students had, to some extent, the chance to experience our lessons and gain life experiences through OpenSim. In fact, if we carried out our projects again now that we have better knowledge of what virtual worlds are and how they are used, we would achieve even better results.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
The majority said fairly good things about our experiment. However, there were several cases where our students expressed a negative opinion about our activities, because due to the technical problems we were facing, they happened to lose part of their projects. There were also some students who, even though they were consistent with their assignments, they didn’t enjoy the lessons in the virtual world that much in general, and not especially because of the technical issues. I think that the ones who were more technically oriented liked our activities more than the rest. Still, in general terms, the feedback was positive and nobody said the activities were a “waste of time”.

Part 4

OpenSim is new technology used for the development of virtual environments.

1. How stable do you expect this technology to be?
As long as there is interest, the technology is used by the public and it keeps growing, it will be improving. From then on, the future will show to what extent it will be further adopted and mature as a technology. However, we can’t be sure about whether or not OpenSim will rise. In my opinion, its future as a technology will depend somewhat on the results to be achieved through its use. If the results are not good and promising enough, I think that the interest in that technology will die down.

2. A major advantage of OpenSim technology is the opportunity given to its users to keep backups. How useful do you consider it?
Unfortunately, I wasn’t aware that OpenSim offered that service to its users, since I have never dealt with its technical part. As far as I can see, it must be a very useful function of the world, especially for cases like our own where many of our creations were lost. If we were aware of that possibility we had in-world, we would have saved a great part of our work.

3. OpenSim grids have the potential of “hypergrinding” (teleportation of avatars and items from one grid to another). How useful do you consider this fact?
Even though we didn’t happen to use it, I consider it very useful, and certainly it will become a very useful tool in the hands of many educators who want to bring their students in contact with other universities’ students.

4. OpenSim technology faces stiff competition from other well established virtual worlds such as Second Life. Thus, do you consider that this competition will affect negatively its persistence?
From my perspective, I see a great advantage in OpenSim; unlike Second Life, it is free. However, so far, the quality of the services offered in Second Life is still better in comparison to the quality offered by OpenSim. Nevertheless, that doesn’t mean that
Second Life is generally better; OpenSim still has a long way to go. On the whole and taking into consideration that it is fairly difficult for the universities to get a funding for their projects, the fact that OpenSim is free is very important. So, when there is no funding, the choice is one-way; you choose whatever is free of charge.

Part 5
1. Is your virtual university hosted by a dedicated provider or by your university?
The server that we used was hosted by my colleague in his university.

2. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?
No, that was part of our students’ projects. They were creating various objects and they were making them functional via scripts in order to design simple interfaces.

3. What is the monthly cost of using this technology for the creation of a virtual environment?
We didn’t pay for anything, since the use of OpenSim was a purely friendly and collegial offer.

4. Who usually funds your in-world projects?
Not applicable

5. How affordable do you consider it?
Even though I don’t know the exact cost of using Second Life and OpenSim, I do know that OpenSim is considered to be much more affordable.

Interview 34
Mrs. Mary Zedeck — Instructional Designer (English, Education & Virtual Worlds courses), Seton Hall University, USA

Part 1
1. Which virtual environments have you used for educational purposes?
Second Life is the only virtual environment I have used.

2. What were the reasons that led you to choose this virtual environment for educational issues?
We were trying to reach students with literature in a different way. So, we explored virtual worlds as a means for students to become immersed in the characters and the stories that they were reading.

3. For how long have you used this virtual environment for educational issues?
I have been using Second Life for about five years.

4. In what academic level(s) have you used this virtual environment?
I have used Second Life both with undergraduate and graduate students.

5. Are you using this virtual environment for universal conduction of the courses or just to support the usual educational methods (in class)?
I am definitely using it as a supplement to traditional educational methods; I am not teaching a whole course in Second Life.
6. How many educational projects have you carried out using this alternative teaching method?
I have worked on several projects in different variations within the department of English and the College of Education and Human Services. There have been seven projects altogether.

7. How successful were these projects?
I think the undergraduate population takes more readily to the virtual environment in comparison to the graduate population. Therefore, I would say that the undergraduate courses that I was involved with were more successful than the graduate courses. In general, I think everything we have done in Second Life is successful. It is also worth mentioning that we are getting better and better every time we use it, and the same applies to the software.

8. What are your current projects (if any)?
Right now we are creating a writing center in Second Life where students will be tutored through our virtual writing center rather than face-to-face.

Part 2

1. What does a typical class/session of yours look like in Second Life’s virtual environment?
We don’t actually do any “teaching” in Second Life because our approach is more project-based. Students are responsible for taking on the role of a certain character in a novel, and they have to play a part, participate in a role-play or simulation, create a room that their character lived in, etc. Therefore, the courses I have been involved in have actually been dependent on student projects rather than on the instructor providing students with the necessary information.

2. Why do you use Second Life in your teaching? In your opinion what are the advantages of this teaching method?
Regarding the advantages, I definitely think that students have a sense of presence in Second Life that they couldn’t have through e-mails or even through an online course. Furthermore, in Second Life you can meet people from all over the world at any time of the day, and that has allowed us to bring experts into the classroom in a way that was not possible before.

3. Respectively, are there any disadvantages?
One of the disadvantages is that both students and faculty need to be skilled in using the technology and sometimes that can be a challenge. In addition, both faculty and students have to be patient with the technology. Another area that is a disadvantage is voice in Second Life which has a long way to go to be a reliable communication method.

4. Comparing the university classroom with the virtual classroom, which one may have better results?
I think they are both purposeful. I believe in face-to-face teaching and learning, but I do think the virtual environment has some benefits that we have already discussed. In my opinion, a mix of both is probably the best solution so that you can appeal to all different types of learners. Some students do better in the virtual environment, whereas others do
better in real life classrooms where face-to-face learning takes place. Therefore, the combination of both classrooms (hybrid) may be the ideal choice.

5. An important concern is thought to be the orientation; the induction process. What is your methodology to orient your students? Wells, that depends on the kind of project being carried out. In short projects, students are given an avatar and a password, and they use something that has already been created, thus they don’t have to go through the process of creating an avatar themselves. However, most times they create their own avatar, and then we have them come to our island where I conduct training to help them learn to walk, fly, sit down, make a friend, chat, and do the basic things you want them to do in Second Life. So, what we have done so far is definitely a face-to-face orientation; they don’t go through a non-assisted virtual orientation.

Part 3

1. According to your opinion, does the fact that your students may also use the virtual environment of Second Life to communicate with others and/or spend their leisure time make your lesson more effective and attractive?
Yes. I think that if we open this world to them and they decide to spend some time there, outside of class, it can only be a positive experience in that they will eventually become more capable of participating in the environment. I always encourage students to check it out in other ways in addition to what we are showing them.

2. Do you think that the virtual environment of Second Life leads your students to “live” the lesson?
Yes. As a matter of fact, one of our original goals when we first started was to have the students “live” the literature, get inside the character, create something that makes them feel something about the themes of the book and the interactions between the location and the history, in addition to the research that they have to do about a particular novel. Second Life is definitely a different path to teaching and learning than the path typically followed in the English classroom.

3. Based on your experience, do your students enjoy the educational activities within the virtual world more than the ones in the university classroom?
I think they enjoy the virtual world. Of course, there are some who enjoy it more and some who enjoy it less but the data that we have collected shows that while they find it enjoyable, students don’t prefer it necessarily above the typical classroom setting.

Part 4

If Second Life were to close, many educational institutions would be left “homeless”.

1. Have you taken this issue into account?
Yes. I am definitely aware of it, and I am definitely taking it into account. We have explored and we are still exploring other options, but for the time being we really haven’t found anything else that we would like to explore.

2. What is your opinion?
I think it will be sad. Linden Labs have certainly let down a lot of educational institutions. Many educational institutions are annoyed. However, I am very interested in emerging
technologies, and I believe there is always something else that can do the same job or there will be. We have actually looked at OpenSim, but we prefer Second Life. We do know that we will have to look at other alternatives if we decide to continue our virtual world exploration, which is our intention. As far as our current activities in Second Life are concerned, there are other virtual environments that could accommodate them if Second Life should close down.

3. Are you concerned about Second Life’s closure?
No, we have just started the writing center and I think we will keep doing that. Obviously, you never know what is going to happen, so there might be something tomorrow that will be better and that we will explore as well. We are just taking it day by day.

4. Does this possibility affect your decision to use Second Life?
See above.

5. If eventually Second Life terminates, will you attempt to replace it with another virtual environment? If yes, can you please name this alternative solution? (6th question)
Yes, we will probably do so. We have looked at a couple of virtual worlds, which we haven’t necessarily liked better than Second Life, thus at present we are staying with Second Life. For the time being, I am not ready to say which virtual environment, in particular, will be our alternative solution.

Part 5

1. What is the monthly cost of using this virtual world?
I think it is about 300$ a month.

2. Who usually funds your in-world projects?
The Teaching, Learning & Technology Center.

3. How affordable do you consider it?
I think it is pretty affordable. It’s definitely an investment in something that some people don’t believe in but it’s certainly part of emerging technology and thus worthy of investigation. Besides, web conferencing, for example, has a monthly fee too.

4. Have you used the discount offered by Linden Lab to academic institutions? If yes, how do you consider the decision of Linden Lab to discontinue this offer? (5th question)
Yes we did. It was very frustrating. We were actually hosted by NMC (The New Media Consortium), so all of our projects were carried out on an island that was part of NMC land. Consequently, when they stopped the discount for academic institutions, we had to purchase our own island, and that really took a huge toll on the projects we were running in Second Life on the NMC island. In fact, we had to start from scratch or try to piece things together. There were other people working on different projects but the projects I was working on had a five-year span in multiple avatars, some of which I don’t have access to. As a result, I couldn’t move things that they had put down because of various permission and copying issues and that was and continues to be very frustrating because not all of our projects have been recreated.

6. How do you intend to deal with this?
When they discontinued the academic institution discount, we purchased our own island.
7. Have you ever paid qualified personnel to create virtual items for your virtual space (buildings, items etc.)?

Yes. Unfortunately, I can’t give you exact numbers as far as cost is concerned, but, when we first started with Second Life, the first project was creating “The House of the Seven Gables” by Nathaniel Hawthorne. So, we paid a SL builder to create the house in Second Life and I believe we paid her 500$ about 5 years ago. Since then, we have had a Second Life builder that we hire on a contract basis and we pay him in Lindens (L$). I don’t do the paying so I really don’t know what he is paid. It’s project-based, so there will be months where he doesn’t get paid at all and then months where he is paid.
Dear participant, my name is Athanasios Christopoulos and I am a postgraduate research student at the University of Bedfordshire, U.K.
I am conducting a study on virtual worlds and how they can be utilized for educational issues. The concern of the research is addressed to Second Life, a well-known Virtual World and OpenSim, a novel technology recently used by the public for the development of Virtual Worlds. Their characteristics and features will be examined from different points of view, aiming to provide clear guidance to educators who are on the verge of deciding to use them.
Hence, your valuable experience from using such a different learning method is extremely important as it will highlight and enlighten their potential and advantages, respectively.
Please mention that your participation is voluntary and the collected records are part of the research database. However, you will not be asked to provide personal information unless that information is necessary for me to respond to your specific request.
The completion of the questionnaire will last approximately 5 – 10 minutes.
Three (3) of the participants will win a prize. If you wish to participate in the draw, fill in your e-mail address in Question 3.3 at the end of the questionnaire.
If you have any further questions, please do not hesitate to contact me at: Athanasios.Christopoulos@beds.ac.uk.
Part one - General questions about you

1.1 Please indicate your real life gender.
- Male
- Female

1.2 Please choose your age group.
- 18-24
- 24-34
- 35-44
- 45 or older

1.3 Please state your current academic level.
- Research postgraduate
- Postgraduate
- Undergraduate
- Foundation course
- Other non-degree level studies
- Other

1.4. Please indicate your institution's name.

1.5 Which one of the following virtual world(s) have you used for educational issues?
- Second Life
- OpenSim
- Both
- None

Part two (Second Life) - Section A (General questions)

2.1 On how many courses have you used Second Life during your academic studies?
- 1 – 2
- 3-4
- 5 or more

2.2 On how many courses have you used Second Life during each academic level?

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<thead>
<tr>
<th>Academic level / courses</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<tr>
<td>Research postgraduate</td>
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<td>Foundation course</td>
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<tr>
<td>Other non-degree level studies</td>
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<tr>
<td>Other</td>
<td></td>
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</tbody>
</table>

2.3 In which educational field have you used Second Life?
(You may choose more than one answer)
- Exact Science
- Medical Science
- Technological Science
- Arts
- Finance

Part two (Second Life) - Section B (Questions about your learning experience)

2.4 I am satisfied with my overall learning experience within Second Life.
- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

2.5 Second Life’s environment is appropriate for educational use.
- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

2.6 I consider Second Life useful for educational purposes.
- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

2.7 The context of Second Life is structured well enough to 2.8 meet the educational needs.
- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
<table>
<thead>
<tr>
<th>2.8 Second Life is efficient in providing good educational practice.</th>
<th>□ Strongly agree</th>
<th>□ Agree</th>
<th>□ Neither agree nor disagree</th>
<th>□ Disagree</th>
<th>□ Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.9 My overall learning experience through Second Life is/was pleasant.</td>
<td>□ Strongly agree</td>
<td>□ Agree</td>
<td>□ Neither agree nor disagree</td>
<td>□ Disagree</td>
<td>□ Strongly disagree</td>
</tr>
<tr>
<td>2.10 I regard my learning experience in Second Life as realistic.</td>
<td>□ Strongly agree</td>
<td>□ Agree</td>
<td>□ Neither agree nor disagree</td>
<td>□ Disagree</td>
<td>□ Strongly disagree</td>
</tr>
<tr>
<td>2.11 The knowledge gained is/was usually of high quality.</td>
<td>□ Strongly agree</td>
<td>□ Agree</td>
<td>□ Neither agree nor disagree</td>
<td>□ Disagree</td>
<td>□ Strongly disagree</td>
</tr>
<tr>
<td>2.12 When thinking of Second Life, I consider myself part of this virtual world.</td>
<td>□ Strongly agree</td>
<td>□ Agree</td>
<td>□ Neither agree nor disagree</td>
<td>□ Disagree</td>
<td>□ Strongly disagree</td>
</tr>
<tr>
<td>2.13 The overall level of immersion encountered in Second Life is high.</td>
<td>□ Strongly agree</td>
<td>□ Agree</td>
<td>□ Neither agree nor disagree</td>
<td>□ Disagree</td>
<td>□ Strongly disagree</td>
</tr>
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<td>2.14 a) In my opinion, the level of immersion experienced in this virtual world influences the educational process.</td>
<td>□ Strongly agree</td>
<td>□ Agree</td>
<td>□ Neither agree nor disagree</td>
<td>□ Disagree</td>
<td>□ Strongly disagree</td>
</tr>
<tr>
<td>2.14 b) In case of positive response to the previous statement, please answer the following statement too. I value this influence as:</td>
<td>□ Very important</td>
<td>□ Important</td>
<td>□ Moderately important</td>
<td>□ Of little importance</td>
<td>□ Unimportant</td>
</tr>
<tr>
<td>2.15 The level of immersion influences positively the attractiveness of educational activities.</td>
<td>□ Strongly agree</td>
<td>□ Agree</td>
<td>□ Neither agree nor disagree</td>
<td>□ Disagree</td>
<td>□ Strongly disagree</td>
</tr>
<tr>
<td>2.16 The level of immersion influences positively the effectiveness of these activities.</td>
<td>□ Strongly agree</td>
<td>□ Agree</td>
<td>□ Neither agree nor disagree</td>
<td>□ Disagree</td>
<td>□ Strongly disagree</td>
</tr>
<tr>
<td>2.17 The educational activities that take place in Second Life become interesting, thanks to the immersion encountered in it.</td>
<td>□ Strongly agree</td>
<td>□ Agree</td>
<td>□ Neither agree nor disagree</td>
<td>□ Disagree</td>
<td>□ Strongly disagree</td>
</tr>
<tr>
<td>2.18 In my opinion the teaching and learning activities in this virtual environment can replace the traditional ones in a positive way.</td>
<td>□ Strongly agree</td>
<td>□ Agree</td>
<td>□ Neither agree nor disagree</td>
<td>□ Disagree</td>
<td>□ Strongly disagree</td>
</tr>
</tbody>
</table>
### Part three (OpenSim) - Section A (General questions)

#### 3.1 On how many courses have you used OpenSim during your academic studies?

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<thead>
<tr>
<th></th>
<th>1–2</th>
<th>3–4</th>
<th>5 or more</th>
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<tbody>
<tr>
<td>Academic level / courses</td>
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<tr>
<td>Research postgraduate</td>
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<tr>
<td>Foundation</td>
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<tr>
<td>Other non-degree level studies</td>
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<tr>
<td>Other</td>
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<td></td>
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</tbody>
</table>

#### 3.2 On how many courses have you used OpenSim during each academic level?

<table>
<thead>
<tr>
<th>Academic level / courses</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>3+</th>
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<tr>
<td>Postgraduate</td>
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<tr>
<td>Undergraduate</td>
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<td>Foundation</td>
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<tr>
<td>Other non-degree level studies</td>
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<tr>
<td>Other</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

#### 3.3 In which educational field have you used OpenSim?

(You may choose more than one answer)

- Exact Science
- Medical Science
- Technological Science
- Arts
- Finance

### Part three (OpenSim) - Section B (Questions about your learning experience)

#### 3.4 I am satisfied with my overall learning experience within OpenSim.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

#### 3.5 OpenSim’s environment is appropriate for educational use.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

#### 3.6 I consider OpenSim useful for educational purposes.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

#### 3.7 The context of OpenSim is structured well enough to meet the educational needs.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

#### 3.8 OpenSim is efficient in providing good educational practice.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

#### 3.9 My overall learning experience through OpenSim is/was pleasant.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

#### 3.10 I regard my learning experience in OpenSim as realistic.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree

#### 3.11 The knowledge gained is/was usually of high quality.

- Strongly agree
- Agree
- Neither agree nor disagree
- Disagree
- Strongly disagree
<table>
<thead>
<tr>
<th>Question</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
<th>Option 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.12 I have visited places in OpenSim not provided by my institution.</td>
<td>☐ Many times</td>
<td>☐ Several times</td>
<td>☐ Sometimes</td>
<td>☐ A few times</td>
<td>☐ Never</td>
</tr>
<tr>
<td>3.13 When thinking of OpenSim, I consider myself part of this virtual world.</td>
<td>☐ Strongly agree</td>
<td>☐ Agree</td>
<td>☐ Neither agree nor disagree</td>
<td>☐ Disagree</td>
<td>☐ Strongly disagree</td>
</tr>
<tr>
<td>3.14 The overall level of immersion encountered in OpenSim is high.</td>
<td>☐ Strongly agree</td>
<td>☐ Agree</td>
<td>☐ Neither agree nor disagree</td>
<td>☐ Disagree</td>
<td>☐ Strongly disagree</td>
</tr>
<tr>
<td>3.15 a) In my opinion, the level of immersion experienced in this virtual world influences the educational process.</td>
<td>☐ Strongly agree</td>
<td>☐ Agree</td>
<td>☐ Neither agree nor disagree</td>
<td>☐ Disagree</td>
<td>☐ Strongly disagree</td>
</tr>
<tr>
<td>3.15 b) In case of positive response to the previous statement, please answer the following statement too. I value this influence as:</td>
<td>☐ Very important</td>
<td>☐ Important</td>
<td>☐ Moderately important</td>
<td>☐ Of little importance</td>
<td>☐ Unimportant</td>
</tr>
<tr>
<td>3.16 The level of immersion influences positively the attractiveness of educational activities.</td>
<td>☐ Strongly agree</td>
<td>☐ Agree</td>
<td>☐ Neither agree nor disagree</td>
<td>☐ Disagree</td>
<td>☐ Strongly disagree</td>
</tr>
<tr>
<td>3.17 The level of immersion influences positively the effectiveness of these activities.</td>
<td>☐ Strongly agree</td>
<td>☐ Agree</td>
<td>☐ Neither agree nor disagree</td>
<td>☐ Disagree</td>
<td>☐ Strongly disagree</td>
</tr>
<tr>
<td>3.18 The educational activities that take place in OpenSim become interesting, thanks to the immersion encountered in it.</td>
<td>☐ Strongly agree</td>
<td>☐ Agree</td>
<td>☐ Neither agree nor disagree</td>
<td>☐ Disagree</td>
<td>☐ Strongly disagree</td>
</tr>
<tr>
<td>3.19 In my opinion the teaching and learning activities in this virtual environment can replace the traditional ones in a positive way.</td>
<td>☐ Strongly agree</td>
<td>☐ Agree</td>
<td>☐ Neither agree nor disagree</td>
<td>☐ Disagree</td>
<td>☐ Strongly disagree</td>
</tr>
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</table>
**Part four (Comparison) - Section A (General questions)**

<table>
<thead>
<tr>
<th>4.1 a) On how many courses you have used Second Life during your academic studies?</th>
<th>□ 1-2</th>
<th>□ 3-4</th>
<th>□ 5 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 b) On how many courses you have used OpenSim during your academic studies?</td>
<td>□ 1-2</td>
<td>□ 3-4</td>
<td>□ 5 or more</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4.2 On how many courses have you used Second Life and OpenSim during each academic level?</th>
<th>Academic level / courses</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>3+</th>
<th>Academic level / courses</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>3+</th>
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<tbody>
<tr>
<td>Research postgraduate</td>
<td>Research postgraduate</td>
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<tr>
<td>Postgraduate</td>
<td>Postgraduate</td>
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<td>Undergraduate</td>
<td>Undergraduate</td>
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<td>Other non-degree level studies</td>
<td>Other non-degree level studies</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>4.3 In which educational fields have you used Second Life and OpenSim? (you may choose more than one answer)</th>
<th>Exact Science</th>
<th>Medical Science</th>
<th>Technological Science</th>
<th>Arts</th>
<th>Finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Second Life</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>OpenSim</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Part four (Comparison) - Section B (Questions about your learning experience)**

<table>
<thead>
<tr>
<th>Rate the following statements from one (1) to five (5) where five (5) is “Strongly Agree” and one (1) is “Strongly Disagree”.</th>
<th>Second Life</th>
<th>OpenSim</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>4.4 I am satisfied with my overall learning experience within each virtual world.</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>4.5 These virtual worlds are appropriate for educational use.</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>4.6 I consider these virtual worlds useful for educational issues.</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>4.7 The context of each virtual world is structured well enough to meet the educational needs.</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>4.8 Each one of these virtual world is efficient in providing good educational practice.</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>
4.9 My overall learning experience through each virtual world is pleasant. 5 4 3 2 1 5 4 3 2 1
4.10 I regard my learning experience in each virtual world as realistic. 5 4 3 2 1 5 4 3 2 1
4.11 The knowledge gained in each virtual world is usually of high quality. 5 4 3 2 1 5 4 3 2 1
4.12 The overall level of immersion encountered in Second Life and OpenSim is high. 5 4 3 2 1 5 4 3 2 1
4.13 When thinking of these virtual worlds, I consider myself part of them. 5 4 3 2 1 5 4 3 2 1
4.14 The level of immersion, experienced in each virtual world, influences the educational process. 5 4 3 2 1 5 4 3 2 1
4.15 The level of immersion influences positively the attractiveness of the educational activities. 5 4 3 2 1 5 4 3 2 1
4.16 The level of immersion influences positively the effectiveness of the educational activities. 5 4 3 2 1 5 4 3 2 1
4.17 The educational activities that take place in each virtual world become interesting, thanks to the immersion encountered in it. 5 4 3 2 1 5 4 3 2 1
4.18 In my opinion teaching and learning activities in each virtual environment can replace the traditional ones in a positive way. 5 4 3 2 1 5 4 3 2 1

<table>
<thead>
<tr>
<th>Part five - Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 If you have used more than one virtual world for educational purposes, please classify them from the most to the least appropriate for educational use.</td>
</tr>
<tr>
<td>5.2 Is there anything else you would like to add before we end?</td>
</tr>
<tr>
<td>5.3 If you wish to receive a copy of the results and/or you would like to participate in the draw, please include your email address.</td>
</tr>
</tbody>
</table>
E. The Structure of the Questionnaires

The questionnaire consisted of five parts, but the participants did not have to reply to all. In any case they had to answer the first and the last part and one of the remaining three, depending on their answer to a key-question which will be presented in more detail below.

On the first page of each questionnaire there was a short description of the content and the objectives of the current study and the students were informed that their participation was purely voluntary. As soon as the students had been informed about all the details and declared that they agreed to participate in the study, they could proceed to the main body of the questionnaire. Otherwise, they could quit the completion of the questionnaire at that point by simply closing their internet browser. Nonetheless, every participant had the right to discontinue the survey at any point even after they had already proceeded to its main body.

Part One: General questions about the participants’ in-world educational experience

Part one was comprised of five questions aiming, mainly, to identify the characteristics of the surveyed sample. In the first four questions the participants were asked to indicate their gender and age, the name of their academic institution, and their academic level. The fifth and last question of this part was the key-question of the questionnaire. Depending on the answer to that question, the participants were automatically redirected to a specific part of the questionnaire. In other words, those who chose the first answer, “Second Life”, were redirected to part two, which included questions about the educational use of Second Life. Similarly, those who chose the second answer, “OpenSimulator”, were redirected to part three, which included questions about the educational use of OpenSimulator. Instead of asking the participants to complete the questions revolving around Second Life separately from those revolving around OpenSim, an additional part (part four) was created for those who had used “Both” virtual worlds. This part also comprehends comparative questions referring to their learning experiences within these virtual worlds.
The last answer, “None”, was added to the possible answers of this question as a safety net so that those who accidentally started filling in the questionnaire, without having the necessary experiences, could be early excluded before spoiling the results. Thus, the students who chose this answer were led immediately to the end of the questionnaire without having completed any of the rest.

Parts Two-Three-Four: Questions about students’ experience in SecondLife/ OpenSim/ Both Virtual Worlds

The questions included in these parts, with very few exceptions, were very similar. Their main difference concerned the VW to which each one of the parts was addressed. Specifically, in part two, there were questions concerning the virtual environment of SecondLife, while in part three the questions were focused on OpenSim. Finally, in part four, participants were asked to answer simultaneously the same questions both for SecondLife and OpenSim. Therefore, the content of the shared questions of these parts will be presented only once.

On how many modules (courses) have you used Second Life/OpenSim during your academic studies?

The purpose of this question was to highlight the extent of the students’ experience in the use of virtual worlds for educational purposes. It was thought that the more the courses they had undertaken within each virtual world, the greater the extent of their experience and consequently, the more complete their opinion about this educational method would be.

On how many modules (courses) have you used Second Life/ OpenSim during each academic level?

After the students had indicated the number of courses in the context of which they used each virtual world, they were asked to clarify how many of them they attended during each academic level. The analysed data occurring from this question would reveal the frequency of the use of each virtual world in relation to each academic level. Furthermore, it would indirectly show in which academic level the educators consider the use of these virtual environments more efficient.
In which educational field have you used Second Life/ OpenSim? (You may choose more than one answer).

Apart from the academic levels, the educational fields and the scientific disciplines, for the needs of which the use of virtual worlds is believed to be ancillary, were considered important to be examined. Thus, this question asked students to indicate the particular field, in which they had undertaken modules, within Second Life or OpenSim.

The above introductory questions were followed by another sixteen questions seeking the personal view of the students about their educational experiences within these two virtual worlds. With the exception of two particular questions, which will be presented below, the rest of them include answers in the form of Likert scale.

I am satisfied with my overall learning experience within Second Life/ OpenSim.

The aim of this question was to provide an initial general overview of students’ opinion on the use of each virtual world, for educational purposes. Even though this question could have been posed at the end of the questionnaires, after the participants had answered various questions by taking into account many different aspects of virtual worlds, that was not considered appropriate. It was thought more reasonable to have students respond as spontaneously and unaffectedly as possible.

Second Life’s/ OpenSim’s environment is appropriate for educational use.

This is, also, a general question in which the students were asked to take into account all the factors they deem necessary for a successful educational process and determine which of them apply within each virtual world. At the same time they had to examine whether there are prohibiting factors in pursuing educational activity in each of the two virtual worlds in order to decide whether and to what extent each one of them is suitable for educational use.

I consider Second Life/ OpenSim useful for educational issues.

Considering only the positive factors this time, the students were asked to assess whether the virtual worlds in question are useful for educational purposes and
whether they assist them to learn in a more pleasant, easy, and effective way, providing them with interesting and useful learning tools.

The context (what is going on in the virtual world) of Second Life/ OpenSim is structured well enough to meet the educational needs.

From this point on, the participants were set questions related to the context of Second Life and OpenSim. In this question they were asked to evaluate the context of these virtual worlds regarding their potential for supporting successfully the educational activities. Once again, students were asked to express their overall view about the context of the investigated virtual worlds. This view would become more specific and clear once they answered the following questions, which were more targeted on specific factors.

Second Life/ OpenSim is efficient in providing good educational practice.

This is the first among the targeted and very specific questions regarding the context of these virtual worlds. It aims to show how suitable the students believe each of these virtual worlds is for practicing and improving their newly acquired skills which are necessary for the needs of their lessons and their scientific field. The students had to evaluate, firstly, the tools offered by Second Life and OpenSim and secondly, how realistic each of these worlds is and later continue to elaborate on whether or not the two worlds are efficient at providing the necessary context for educational practice.

My overall learning experience through Second Life/ OpenSim is pleasant.

The literature review has shown that the contexts of Second Life and OpenSim make the students’ in-world learning activities pleasant (see sections 2.2.3 and 3.2.3). Thus, it was thought that the students should be asked at this point if they usually experienced pleasant learning activities within each of the virtual worlds. The students had to take into account the learning experiences they had participated in, as a whole and not as single incidents.

I regard my learning experience in Second Life/ OpenSim as realistic.

As shown in sections 2.2.2.1 and 3.2.3 of the literature review the plausibility of each virtual world, in general, and of the activities that take place in them, in particular, performs a crucial role in the implementation of effective and pleasant
learning activities in-world. Thus, asking the participants to evaluate how realistic Second Life and OpenSim are was considered reasonable.

The knowledge gained is usually of high quality.

The vast majority of the educational activities, regardless of where they take place and what educational tools they make use of, aim to assist students in gaining knowledge and developing skills. Because the students had previously been asked about the suitability of each virtual world to host activities that develop their skills, at this point they were asked, by extension, about the quality of the knowledge gained through the activities they perform in each virtual world. Combining the students’ answers to these two questions, a comprehensive view of the effectiveness of the learning activities that occur in the context of Second Life and OpenSim is possible to be obtained.

I have visited places in OpenSim not provided by my institution.

This is the only question which was included exclusively in part three. Even though it constitutes of five items-answers, it does not follow the exact pattern of the five-level Likert scale, unlike the vast majority of the questions. This question aimed to reveal the frequency with which the students used to visit places not provided by their institution, and it was considered that any answers in Likert scale would distract the participants. It was Conrad’s [1] concerns about the students’ potential access to “‘positive’ and ‘negative’ context” within each virtual world that gave rise to this question. Certainly, the students of universities hosted in Second Life have numerous opportunities to visit virtual places outside their virtual university. However, what is the proportion of the students that is able to act similarly within an OpenSim IH or an OpenSim DP? Besides, the more opportunities for interactions of users with the virtual environment and other users each virtual world offers, the more intense the feeling of immersion students develop is (see section 3.2.1); and that should not be overlooked.

When thinking of Second Life/ OpenSim, I consider myself part of this virtual world.

This is the first introductory question of a group of questions regarding immersion in Second Life and OpenSim. According to the findings of the literature search,
users feel part of a virtual world when they are immersed in it (see section 3.2.1). Therefore, the proportion of the students who have experienced immersion within each virtual world is expected to be shown through this question.

The overall level of immersion (how much someone is part of this virtual world) encountered in Second Life/ OpenSim is high.

The previous question is supplemented by this one. As soon as the percentage of the students who have experienced immersion within each virtual world is detected, they are asked to classify the level of immersion they had experienced. Depending on the level of immersion they experienced in each virtual world, they were expected to identify different implications for the learning activities they had participated in. The following questions are going to cast light on this matter.

In my opinion, the level of immersion, experienced in this virtual world, influences the educational process.

It is noted that, as shown by the literature review, when students reach the state of immersion within a virtual world, the course and the effectiveness of the learning activities are benefited in numerous ways (see section 3.2.3). This question aimed to show the participants’ viewpoint regarding that finding of the literature review. Thus, the negative impact that the students may think that immersion has on their activities is not excluded in this question.

In case of a positive response to the previous statement, you are expected to express your opinion on the following statement, too. I value this influence as:

At this point, the students were asked to classify the range of the influences—that they consider immersion has on the learning activities. They had to think of both the positive and the negative impact that immersion may have on the learning activities.

The alternative answers to this question are in a five-point scale, which resembles yet it is not the Likert scale, for the participants’ convenience and the prevention of misunderstandings.

The level of immersion influences positively the attractiveness of educational activities.
This question, similarly to the following two, is focused on the positive influence of immersion on the in-world learning activities. This question, in particular, aimed to show if the students think that the virtual learning activities they participate in become attractive due to the fact that they are immersed in the virtual world they use, as the literature review has shown (see section 3.2.3).

The level of immersion influences positively the effectiveness of these activities. In section 3.2.3 of the literature review, it was shown that when students are immersed within a virtual world, the learning activities, in which they take part in, become more effective for them and students show better learning results. In this question the students were asked to indicate their agreement or disagreement on that statement, based on their personal experience.

The educational activities that take place in Second Life/ OpenSim become interesting, thanks to the immersion encountered in it. In the same section (3.2.3) the researchers’ viewpoint that when students experience immersion within a virtual world, they consider the learning activities in-world more interesting than when they are not immersed is presented. At this point, as well as in the previous two questions, the participants were asked to express their agreement or disagreement on that.

This question, combined with the previous two, aims to show if, according to the students’ opinion, there is a positive correlation between the immersion experienced by students and the positive attributes that they believe the learning activities conducted within the virtual worlds have.

In my opinion the teaching and learning activities in Second Life/ OpenSim can replace the traditional ones in a positive way.

This is a summarizing question. As soon as the students had considered a great number of the characteristics of each virtual world and had indicated their opinion upon these, they were asked to evaluate Second Life and OpenSim, comparing them to the traditional teaching methods. In order to answer this question, they had to estimate what they gain and what they lose, in comparison to the traditional teaching methods, when conducting learning activities within each of these two virtual worlds. Having considered every characteristic, they were asked to state
whether they thought that the educational practices within the virtual world they were using could replace the educational practices that are typical of a traditional classroom, without significant losses. Obviously, this is a difficult and complex question. Since it was the last to be asked, the students had the chance to consider all the factors of the virtual worlds, about which they were previously asked, before answering this question.

**Part five: Additional Questions**

The open-ended text questions which were asked in this part were aimed to give rise to further debates and probably, even new research topics.

If you have used more than one virtual worlds for educational purposes, please classify them from the most to the least appropriate for educational use.

Apart from Second Life and OpenSim, it was likely that some of the participants had also used other virtual worlds for educational purposes. Therefore, this question asked the students to list all the virtual worlds they had used in higher education from the most to the least appropriate for educational use, according to their personal standards. Through the participants’ answers, a more clear view of the worlds that have generally been used for educational purposes and the impression that the students got from them, would be provided. This question, as opposed to the previous ones, did not seek to show distinct results, just to give rise to new concerns and researches.

Is there anything else you would like to add before we end?

It would be naive to assume that a questionnaire could ever cover the entire area of the participants’ perceptions on the use of virtual worlds or any other topic. Therefore, the addition of this question at the end of the questionnaire was considered necessary. Since the participants had to reflect in order to answer the previous questions, they were anticipated to have developed concerns that they may have wanted to share with the researcher but did not have the opportunity to do so by answering the previous questions. This final question, therefore, welcomes any additional points, that are relevant to the current research and have not yet been made by the participants. The participants’ thoughts stemming from this last question give rise to new researches.
F. Questionnaires Results

The data collected through the use of questionnaires were not considered reliable enough to generate valid and meaningful conclusions for the needs of this study. Hence, since these data cannot be used effectively, it was not considered necessary to further present and analyse the individual characteristics (e.g. age, sex, academic background, etc.) of the sample.

Nonetheless, a brief presentation of the results in the form of tables and bar charts is given below. Therefore, the reader can compare the frequency of each response with the mean of the question, as well as the mode of each question with the trend of the sample, as presented in tables 5 and 6.

<table>
<thead>
<tr>
<th>Terms</th>
<th>Definitions</th>
<th>Calculation Formulas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample (n)</td>
<td>The number of participants who answered each statement.</td>
<td>-</td>
</tr>
<tr>
<td>Frequency (f)</td>
<td>The number of times each answer was given to a statement. Frequencies are illustrated in bar charts.</td>
<td>-</td>
</tr>
<tr>
<td>Mode (Mo)</td>
<td>The answer with the highest frequency.</td>
<td>-</td>
</tr>
<tr>
<td>Total value (\sum x)</td>
<td>The sum of the values of the answers given.</td>
<td>(\sum x = f_1x_1 + f_2x_2 + \ldots + f_nx_n)</td>
</tr>
<tr>
<td>Mean ((\bar{x}))</td>
<td>The average of the set of values. It can be calculated by dividing the total value of the responses to an answer with the number of respondents.</td>
<td>(\bar{x} = \frac{\sum x}{n})</td>
</tr>
<tr>
<td>Trend</td>
<td>The underlying pattern of behaviours which may be hidden. It is highlighted by the mean.</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 3 - Scales value measurement

<table>
<thead>
<tr>
<th>Scales</th>
<th>Scales Values</th>
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<tr>
<td>Strongly Agree</td>
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</tr>
<tr>
<td>Agree</td>
<td>4</td>
</tr>
<tr>
<td>Neither Agree nor Disagree</td>
<td>3</td>
</tr>
<tr>
<td>Disagree</td>
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</tr>
<tr>
<td>Strongly Disagree</td>
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### Table 4 - Statistic analysis of the results of the SecondLife Part

<table>
<thead>
<tr>
<th>Question</th>
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<th>̅x</th>
<th>Trend</th>
<th>Mo</th>
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<tbody>
<tr>
<td>2.4</td>
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<td>3.86</td>
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<td>Agree</td>
</tr>
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<td>2.5</td>
<td>52</td>
<td>3.71</td>
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<td>Agree</td>
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<td>Agree</td>
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<td>4.00</td>
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<td>Agree</td>
</tr>
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<td>Agree</td>
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</tr>
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</tr>
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<td>Agree</td>
<td>Agree</td>
</tr>
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<td>54</td>
<td>3.86</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
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<td>51</td>
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<td>Strongly Agree/Agree</td>
</tr>
<tr>
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<td>Very Important</td>
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<td>Agree</td>
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### Table 5 - Statistical analysis of the results in the comparison part

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<th>Trend</th>
<th>Mo</th>
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<td>Agree</td>
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<td>3.44</td>
<td>Neutral</td>
<td>Neutral</td>
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<tr>
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<td>Agree</td>
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<td>3.78</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
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<td>3.00</td>
<td>Neutral</td>
<td>Neutral</td>
<td>25</td>
<td>2.78</td>
<td>Neutral</td>
<td>Agree/Neutral</td>
</tr>
<tr>
<td>4.8</td>
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<td>Agree</td>
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<td>3.44</td>
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<td>Neutral</td>
</tr>
<tr>
<td>4.9</td>
<td>39</td>
<td>4.33</td>
<td>Agree</td>
<td>Agree</td>
<td>34</td>
<td>3.78</td>
<td>Agree</td>
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<td>Agree</td>
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<td>30</td>
<td>3.33</td>
<td>Neutral</td>
<td>Agree</td>
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<td>4.12</td>
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<td>Disagree</td>
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<tr>
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<td>4.14</td>
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<td>3.67</td>
<td>Agree</td>
<td>Agree</td>
<td>25</td>
<td>2.78</td>
<td>Neutral</td>
<td>Agree/Disagree</td>
</tr>
<tr>
<td>4.15</td>
<td>36</td>
<td>4.00</td>
<td>Agree</td>
<td>Agree</td>
<td>32</td>
<td>3.56</td>
<td>Agree</td>
<td>Agree</td>
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<tr>
<td>4.16</td>
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<td>3.44</td>
<td>Neutral</td>
<td>Agree</td>
<td>35</td>
<td>3.89</td>
<td>Agree</td>
<td>Neutral</td>
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<tr>
<td>4.17</td>
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<td>3.78</td>
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<td>Agree</td>
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<td>2.89</td>
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<td>Neutral</td>
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<tr>
<td>4.18</td>
<td>19</td>
<td>2.11</td>
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<td>Disagree</td>
<td>18</td>
<td>2.00</td>
<td>Disagree</td>
<td>Disagree</td>
</tr>
</tbody>
</table>
Students’ opinions about the context of Second Life and OpenSim

For brevity reasons, the part of the sample which has used exclusively Second Life for educational purposes will be called Sample A, and the part which has used both Second Life and OpenSim will be called Sample B.

The majority of the respondents agreed with the statement that their experience in the virtual worlds was satisfactory. The mean indicates that Sample A tends to agree with the statement, but Sample B has neutral trend for both worlds.
The majority of the respondents agreed with the statement that their experience in the virtual worlds was satisfactory. The mean indicates that Sample A tends to agree with the statement, but Sample B has neutral trend for both worlds.
The majority of the respondents agreed with the statement that virtual worlds are useful for educational purposes. The mean confirms the relevance of this finding and shows that the trend of both samples is consistent with the statement.
The majority of Sample A agreed with the statement that Second Life has a well-structured context that meets their educational needs. Yet, the majority of Sample B retained neutral position on this statement with reference to Second Life, whilst the number of respondents who had either positive or neutral attitude towards this statement about OpenSim was equal.

The mean shows that Sample A tends to agree with the statement, but Sample B is neither for, nor against the statement regarding OpenSim.
The majority of the participants agreed with the statement that, in the context of Second Life, good educational practice can take place, but Sample B retained neutral position on the validation or otherwise of the statement regarding OpenSim.

The mean shows that Sample A agrees with the statement concerning Second Life, unlike Sample B, which tends to neither agree, nor disagree with the occurrence of this feature in either of the virtual worlds.
The majority of Sample A strongly agreed with the statement that their participation in the educational activities within Second Life was pleasant for them. Sample B also expressed its agreement on this statement.

The mean confirms participants’ agreement about the pleasant nature of the educational activities within Second Life and OpenSim.
The majority of the participants considered their educational experience in Second Life as quite realistic and agreed with the statement. On the other hand, sample B, remained neutral on this statement about OpenSim. Nevertheless, the mean shows that the whole of the sample tends to be neutral towards this statement.
The majority of the participants agreed with the statement that, through the use of virtual worlds, high-quality knowledge can be acquired. The means of the responses show that the tendency of all participants who have used Second Life is neutral on this statement, but sample B tends to agree on OpenSim possessing this feature, as well.
The majority of the participants considered their experience immersive enough, and agreed with this statement. Sample B, on the other hand, kept neutral position towards this statement about OpenSim. The mean shows that the sample tends to agree with the statement regarding Second Life, but neither agrees nor disagrees with the statement about OpenSim.
The majority of the participants agreed with the statement that high levels of immersion are experienced within Second Life, contrary to Sample B which did not validate this statement about OpenSim.

The mean indicates that the sample tends to agree with this statement about Second Life, but, at the same time, it tends to disagree with the statement about OpenSim.
The number of participants who either agreed or strongly agreed with the statement that the level of immersion experienced within Second Life affects their educational activities is equal. The majority of sample B also agreed with this statement regarding Second Life, but they equally agree or disagree with respect to OpenSim.

The means show that sample A tends to agree with the statement, whilst sample B tends to agree with the statement in reference to Second Life, but tends to be neutral about OpenSim.
The majority of the participants considered the impact that immersion has on the in-world educational activities as very important. The same applies in the general trend of the sample.
The majority of the sample agreed with the statement that the educational activities became more attractive under the influence of immersion.

Likewise, the mean confirms the tendency of the sample to agree with this statement.
The majority of Sample A neither agreed nor disagreed with the statement that the immersion encountered within Second Life influences positively the effectiveness of the educational activities. Neutral position kept Sample B towards this statement about OpenSim. Nevertheless, Sample B agreed with this statement regarding Second Life. The mean shows that Sample A tends to agree with the statement, but Sample B has neutral trend for both worlds.
The majority of the participants agreed with the statement that the learning activities become more interesting thanks to the immersion experienced within Second Life. However, the majority of Sample B neither agreed nor disagreed with this statement with respect to OpenSim. The trends of the sample are in complete agreement with the results.
Sample A had neutral attitude towards the statement that the learning activities taking place within the physical world can be successfully replaced by the activities taking place within Second Life. In contrast, the majority of Sample B disagreed that this statement could be valid either in the case of Second Life or OpenSim. The mean of these answers fully validates these results of Sample B.
Summary

Even though students expressed themselves positively, in general terms, about the context of both worlds, they seemed to find the context of Second Life more comprehensive. Correspondingly, a great difference is noticed on the views of students with respect to the immersion experienced in each of these worlds. They believe that Second Life has significantly higher immersiveness compared to OpenSim, which leads to proportionate influences on the learning activities. Finally, it became clear that students do not consider purposeful the replacement of the activities carried out in the physical world with the ones of the virtual world.
G. Figures of Virtual Workspaces

University of West England – SecondLife

The Orientation Labyrinth

Figure 51 - Labyrinth's overview

Figure 52 - Modifying the avatar's appearance
Figure 53 - Navigation

Figure 54 - Settings
Figure 55 - The use of text chat

Figure 56 - Instant Messaging (IM)
Figure 57 - Camera control

Figure 58 - Sitting and standing
Figure 59 - Touching objects

Figure 60 - Flying
Figure 61 - Playing audio and video

Figure 62 - Music and video settings
Figure 63 - Voice chat

Figure 64 - Profiles and mini map

Figure 65 - Landmarks and inventory
Various Projects

Figure 66 - Teleporting

Figure 67 - The warehouse
University of Leicester – SecondLife

Figure 68 - Art project

Figure 69 - The orientation labyrinth
Figure 70 - The biology laboratory

Figure 71 - The lab infrastructure

Figure 72 - Some microbiology plates, a microscope and a display screen
University of Ausburg – OpenSim
First Aid Project – Minotaur’s Labyrinth

Figure 73 - The head-up display application

Figure 74 - Labyrinth's overview
Figure 75 - Starting Point - Ariadne’s thread

Figure 76 - Tourniquet
Monet’s Garden Project

Figure 77 - Garden’s overview

Figure 78 - The magic tree
Figure 79 - Question wall

Figure 80 - Animals in the garden
Space camp Project

Figure 81 - Space camp welcome point

Figure 82 - Space curls
Figure 83 - Mission starting point

Figure 84 - The space
Figure 85 - The moon

Figure 86 - The sun


