

Multidiscipline role-play in a 3D virtual learning environment: Experiences with a large cohort of healthcare students

Marcus McDonald

School of Health Sciences
RMIT University

Tracii Ryan

School of Health Sciences
RMIT University

Jenny Sim

School of Medical Sciences
RMIT University

Jennifer James

School of Health Sciences
RMIT University

Philip Maude

School of Health Sciences
RMIT University

Sheila Scutter

School of Medicine & Dentistry
James Cook University

Denise Wood

School of Communication, International Studies and Languages
University of South Australia

Three-dimensional virtual learning environments (3DVLEs), such as Second Life, have been used in education for some time. Although many writers have addressed where, how, and why 3DVLEs are applied in education, only a few articles have concentrated on the coalface of running a learning project within them. This paper looks at the experience of using Second Life to conduct a multi-discipline healthcare role-playing project with a large cohort of university students. It aims to add to the body of evidence highlighting the technical and logistical difficulties in running such a project, and attempts to offer solutions and advice on directions of problem solving. This paper will also add to best practices concerning the use of 3DVLEs in higher education.

Keywords: Second Life, 3DVLE, interdisciplinary, net generation, education, healthcare, technical issues

Introduction

Background

The use of three-dimensional virtual learning environments (3DVLEs), such as Second Life, within tertiary education is becoming more and more common (Inman, Wright, & Hartman, 2010). Educators quickly recognised the potential that early renditions of Second Life offered for hosting educational activities such as lectures (Baker, Wentz, & Woods, 2009), student building projects (Jarmon, Traphagan, Mayrath, & Trivedi, 2009), simulations (Rogers, 2008) and student interactions (DeLucia, Francese, Passero, & Tortora, 2009). While the use of Second Life for educational purposes is associated with several benefits, such as increased student engagement (Baker et al., 2009) and flexibility (Hansen, 2008), it is important to acknowledge the many challenges that may be encountered when using such technologies (Baker et al., 2009; Bhati, Mercer, Rankin, & Thomas, 2009; Dudeney & Ramsay, 2009; Warburton, 2009).

The purpose of this paper is to highlight and describe the technical and logistical problems that arose during a project where Second Life was used as a simulated role-playing tool amongst a large cohort of Health and Medical Sciences students. In doing so, this paper will add to the body of evidence on best practices for using Second Life for educational purposes. While there is no doubt that the experience of using a 3DVLE like Second Life in education would surely vary from institution to institution, or even from student group to student group, the current paper will be of assistance for educators planning on implementing a 3DVLE in a Healthcare Education framework.

Project description and objectives

The project discussed within this paper took place during Semester 2 of 2011, and included 185 students from multiple healthcare disciplines across the Schools of Health and Medical Sciences at RMIT University. The disciplines involved were Chiropractic [$n = 93$], Medical Imaging [$n = 17$], Mental Health Nursing [$n = 32$], and Midwifery [$n = 43$]. The aims of the project were to enhance student communication skills in the context of patient history-taking, and to provide opportunities for interdisciplinary learning.

Students worked in intradisciplinary groups of three (or two if necessary) and were expected to simulate a patient-practitioner interaction during a health case history, which was recorded via screen recording of the Second Life viewer. The resultant videos, referred to as machinima in virtual world terminology, were then submitted for assessment purposes. Students were given only a basic level of detail concerning the 'patient' and there were no scripts, actors or pro forma to follow. While the case spanned the four disciplines, as the 'patient' role was referred from one practitioner to another, the case histories performed within each discipline were independent of each other. Students in each discipline were expected to play each one of three roles in turn, which will henceforth be referred to as *practitioner*, *patient*, and *peer*. Students were also given interdisciplinary activities to perform in the hope that this would foster a sense of interdisciplinary awareness and understanding.

Student assessment tasks

There were multiple forms of assessment used within the Second Life module. Firstly, students completed and electronically submitted the machinima of their patient-practitioner role-play. As stated above, students were expected to assume three different roles for this activity. Each of these roles was designed to allow students to experience a slightly different perspective of the practitioner-patient interaction.

The role of practitioner is most familiar to students, as this is the role they are used to adopting throughout their disciplinary programs. Playing this role allows students to practice their patient history taking skills in a safe environment, without being exposed to real patients. The patient role allows students to use their practitioner knowledge, but they are required to reframe it in order to take the perspective of a client. Qualitative data collected from students indicated that this role was highly beneficial, as several students felt that playing the role of patient enabled them to develop a greater sense of empathy with their own patients. The peer role, on the other hand, allowed students to watch a practitioner-patient interaction with a sense of objectivity. This role gave students the opportunity to learn from the history-taking skills of their peer practitioners, and to give them feedback as to areas of strength and weakness. Students playing the peer role were also able to act as the "camera" by capturing the audio and video of the other two students while they interacted within Second Life to produce the final machinima.

The second form of assessment required students to complete a written critical self-reflection of their three role-plays as practitioner, patient and peer. This assessment allowed teaching staff to obtain a sense of what the student had gained from the role-play experience. The following quote, taken from a Chiropractic student's self-reflection activity, clearly demonstrates how the role-play activity has been valuable to them:

I can see some areas in which I could improve. My language definitely needs to improve. I seem a little casual at times and need to display more empathy towards the patient. I also feel I could improve the flow of my history and control the content a little more. At times I may have gotten not enough information while at others I may have let the patient go on for a little too long. It was good to see how other students of the same discipline went about the activity. By doing this I was able to get some good ideas about how to improve my own performance but I was also able to realise what I did well.

The third form of assessment was designed to promote interdisciplinary knowledge and understanding. To this end, students were expected to access and read introductory material about each of the involved disciplines within Second Life. They were then asked to write about what they had learned from this material. Students also watched the recorded role-play of a student practitioner from another discipline and completed an interdisciplinary critical reflection on that patient history.

Benefits of the project

The project described here focused on the type of interaction that 3DVLEs like Second Life do well; human interaction. Although this interaction is limited to vocal and visual exchanges between avatars in Second Life, it would be inappropriate to call it 'simulated human interaction', for it is only the appearance of physical presence that is simulated here. The interaction occurs fundamentally between two or more people in real-time, and the use of voice chat throughout the role-play supports this. This allowed students to feel engaged in the virtual environment when they were performing their role-plays in Second Life:

[The] creation of an avatar to portray myself as a qualified radiographer was definitely an engaging method for developing interdisciplinary interactions and patient communications.

One of the greatest things that a 3DVLE affords well is flexibility. Online learning platforms allow students to access their learning materials at their own convenience, which makes them extremely useful for conducting collaborative learning activities with distance education students (DeLucia et al., 2009; Eschenbrenner, Nah, & Siau, 2008; Hansen, 2008). This was definitely the case in the project discussed here, as the following quote from a Medical Imaging student shows:

The ability to connect and learn via the internet gave us much flexibility in where we undertook our learning, be it the couch at home, the local coffee shop, or the university library, we could access and utilise the online 3D simulated environment anywhere with a network connection.

Furthermore, this project was also designed to afford students flexibility in the way they completed their assessments. They were able to come and go from Second Life, and to practice and refine their role-play performance as many times as necessary until they were ready to submit their machinima for peer-review. Several students pointed out how beneficial this aspect of the project was for them, as reflected in the following comment from a Medical Imaging student:

I would rate the ability to complete the activities at my own convenience very high. It means I can complete tasks in my own time and practice the role-play as much as I would like to.

As the final recording was performed in the presence of peers, it allowed for immediate self and peer reflection. The following Chiropractic student identified this as an area of value to them:

All in all the Second Life exercise has been a valuable experience, via listening to ourselves [and] others conduct [a] history on the same patient has allowed [me] to identify key [mistakes] which I have made, and to see how others do the same thing and pick up on areas in which I can improve, and to give and get reflection on the task is invaluable.

The flexibility of the 3DVLE also provided opportunities for interdisciplinary interaction between students. Due to factors such as timetabling differences and being sent out on external clinical placements, opportunities for on-campus interdisciplinary interactions are rare. However, while completing the learning activities in Second Life, some students were able to interact virtually with students from other disciplines. Qualitative data showed that when these chance meetings occurred, students reported them favourably. For instance, one chiropractic student offered the following anecdote:

Whilst roaming the streets in the Second Life location I met a girl in the mental health profession. We discussed different ways we would approach the maternity case we were given and it made me realise that although we go through psychology in class, its not quite to the extent that a mental health patient is taught. The interaction with this student made me see the benefits of referring a patient out if I thought that they had a psychological element to their history.

If the course of study is to be run across disciplines synchronously, the encouragement of such interactions within the 3DLVE could be a desirable approach.

Another benefit of this project stemmed from the role-playing activities. The activities used with this project allowed for a range of roles to be played by the learners. An ability to strongly emphasise reframing, specifically in the patient role, was also presented. In the Second Life module described here, scripts, actors, or automated responses were dispensed with in favour of students being expected to engage with the material in an educated way. This allowed them to reframe the knowledge they have acquired from the perspective of a practitioner in order to play the role of patient.

The peer role added an opportunity to objectively reflect on a performance. This is also true of one of the major components of the project; the interdisciplinary interaction. If more than one involved discipline runs their projects at the same time, and lines of communication are efficient, students from one discipline could act as a peer for students from another discipline. This would allow a unique insight into the workings of another discipline concerning the same patient. If the courses from each discipline are not running in synchronisation, role-play machinima from one discipline can serve to act as material for peer review. In the current project, the latter arrangement was the case. In the event that a discipline does not have a bank of machinima to contribute, interdisciplinary roles can still be assessed by students if the instructors of both disciplines come together to make a range of “exemplar” interactions. This would also facilitate the use of rubrics to assess student reflections. This approach would be of great benefit, not only when the project is used asynchronously, but also if a “patient” does not cover an area of interest within one of the discipline’s course of study, but does for another.

Difficulties with the project

The venue

The location where students and staff are to access the 3DVLE seems to greatly influence the resultant difficulties and hurdles, sometimes in quite paradoxical ways. The use of 3DLVEs would be most appropriate where minimal (or a complete absence of) campus presence is used in the delivery of the course of study. The project described here involved a varied mix of distance educated/off-campus students, students who spent some time on campus before heading out on external placements, and students educated on-campus. This meant that allowances had to be made for the place and means by which students wished to conduct the learning tasks and related activities.

Students were encouraged to perform the assessment tasks off-campus using their own equipment. They were given a detailed set of instructions on setting up the Second Life 2 viewer, and also in gaining access to the Second Life island (a purchased area of virtual land, usually bounded by virtual water) where the tasks were to take place. The qualitative data gained from the project indicates a wide spread in the success of this. Some students had little to no problem in installing, configuring and accessing the required software for use at home. There were others however, who had great trouble in getting the required software working. For instance, one student commented:

My computer was quite old, so downloading the software was much more difficult than it should have been.

As the above quote highlights, the reasons given by many students centred around insufficient computer specifications, though these are quite undemanding on lower (but still usable) settings of the viewer, especially for use in the confines of a virtual office environment. There was also some difficulty with accessing the island within Second Life, which some students perceived as a technical issue:

The downside was the technical difficulties such as getting an invite by the administrator, and particularly getting into the clinic.

One of the great difficulties in managing software for a Second Life project is the huge range of variables that are at play. Such variables include the type of platform (PC/Mac/Linux), the operating system and version of said, the configuration of the system, and the firewall rules of the off-campus Internet access. Quantitative data collected from students showed that the majority used a computer “often” or “frequently”, however most of the students who experienced difficulties seemed incapable of seeking a solution themselves, or using the vast online resources available concerning the use of Second Life. This would seem to indicate a culture of Technology Consumers rather than Users. In support of this, Selwyn (2009) challenges the view that the current generation are “digital-natives” or talented users of technology, and argues instead that their use is unspectacular. Perhaps one could say that such Users consume technology when it is presented in a user-

friendly, or palatable, form, but find difficulty when they must use it in a way that involves a deeper level of understanding.

On-campus access to Second Life can result in more control over the aforementioned variables, but this may be incumbent with its own difficulties. One can, to a certain degree, ensure the minimum requirements to operate 3DVLE software are met, as most office computers should fall within the minimum system requirements needed for Second Life. There is the matter, however, of IT support at the host institution. Each location (computer/workstation) needed for 3DVLE access must have the required viewer installed, and be maintained and updated regularly. This last point is crucial, as when updates are released, older versions may cease working. In a small institution where one computer lab is maintained, this may be an easily managed task, however once multiple labs, differing user groups, and increasing administrative complexity are involved, this task can be a real risk to the success of the project. Linden Labs, the proprietors of Second Life, have a detailed guide for system administrators and IT security, which should aid in matters of configuration and firewall measures (Linden, 2012). In the experience of this project however, it is apparent that they may require the approval of newer rules than are already in place. This was the cause of several delays, and a degree of staff and student dissatisfaction during the project.

Along with basic firewall settings, audio settings such as default enabling of the microphone and speaker ports, and configurations such as proxy settings, are also important. The viewers used in 3DVLEs access the Internet via different streams of traffic, therefore in-world access to multimedia and the Internet may involve a proxy. Furthermore, voice chat may use a different path than the rest of the Internet traffic generated by the viewer. Once again, tight restrictions can cause problems in the function of the viewer, which can affect the completion of the assessment tasks and reduce student satisfaction. In the experiences of this project, increasing IT administrative complexity led to increasing division. Moving from one lab to another, or one campus to another, sometimes resulted in moving to an area where the configuration rules had not been changed to allow the Second Life specific traffic, which once again limited access and usability. A very clear and definite list of requirements to IT administrators will go a long way to alleviate this, but such complicated bureaucracy can be a very real and ongoing danger to such projects.

As the use of 3DVLEs would preferentially involve real-time voice chat between the participants, there is a desire to provide an on-campus environment to support it. It was notable in the feedback from our students that a general computer lab environment was not ideal for this purpose. Students reported that sharing the lab with general users made it difficult to secure a computer when they wanted to use it (groups of three were needed for the tasks in world). In situations where students were able to secure computers, they felt that environment was too noisy to converse freely using headsets or concentrate on the interaction. So too, when it was time to record the machinima for the purpose of assessment, as this Medical Imaging student points out:

[One] problem was the limited amount of computers available to complete the assignment. [The on-campus computer lab] is very busy during uni hours and recording was difficult with the background noise. This resulted in staying back at uni till late to attempt to record the role-play.

It is likely that other users not engaged in the Second Life task would also find students conversation a distraction. This is yet another reason that it is advisable to encourage students to conduct the tasks off-campus.

Virtual space

One of the first challenges when using Second Life is making sure that there is a private area, such as an island, available in order to conduct the learning activities. If an institution does not have an island, and a grant does not allow for purchasing one (and there is no budget to support same), there are cheap alternatives available such as ReactionGrid and OpenSim. Discussion regarding which of these platforms is best is, unfortunately, outside the scope of this paper. However, a 2010 pilot project at RMIT University, in partnership with the University of South Australia, used ReactionGrid. In the project discussed within this paper, the provision of University funding meant that a Second Life island could be purchased.

Whichever platform is chosen, the project is going to need at least one Second Life architect. This person is necessary for building an environment that is suitable for use in the tasks. This may be as simple as a room with chairs, or as complex as multi-discipline polyclinic (a medical clinic housing several disciplines). The latter was employed for the project discussed here, and a follow up project conducted by the same research team in 2012 will use an updated and expanded version of this facility.



Figure 1: Polyclinic facilities designed for the 2011 project

As well as an architect(s), or perhaps as part of their role, a Second Life administrator is also needed. It is not within the scope of this paper to get bogged down in any legal or ethical responsibilities that an institution has for their students' behaviour or experiences while using a 3DVLE (Grimes, Fleischmann & Jaeger, 2010). Suffice it to say, though, that it is in the best interests of students involved in such projects that an administrator locks down access to an island, or an area of an island, to the relevant staff and students involved.

A necessary outcome of locking down an island is that the island administrator must ensure that the appropriate users are able to gain access to the restricted area. There are two ways of approaching this task; sending invitations to join an access group or manually adding usernames into an 'allowed residents' list. If using the invitations method, the administrator is required to send a personal message within Second Life to all of the relevant staff and students. One disadvantage with this method is that users must be aware that they need to look at their Second Life notifications and click 'Join' to agree to be part of the group. If they fail to go through this process, additional invitations need to be sent until this task is achieved. On the other hand, if manually adding users to a list of 'allowed residents' (Second Life user accounts), there are limitations on the number of avatars allowed to access the area. Furthermore, when using this method, it is not possible to enforce access restrictions on a 'per region' basis. Instead, restrictions apply at the estate level and this will affect all regions within this estate.

Due to the drawbacks associated with the manual addition method, students recruited in the 2011 project were given access to the polyclinic using the invitations method. Unfortunately, this process was not without difficulties, and many students reported not being able to access the required areas of the island. One of the most common factors associated with these accessibility problems was inaccurate usernames. Ideally, each student would sign up via the Second Life webpage, then supply their exact username to their lecturer. The lecturer would then pass this information on to the island administrator, who would invite the user onto the island within Second Life. However, when students did not supply their exact username to their lecturers, the island administrator had to spend time looking for them. In some cases, the administrator failed to find the user, and this was far from an ideal scenario.

Another commonly cited reason for difficulty accessing the island was trouble with invitations. On some occasions, students had been invited to access the island, yet they still claimed they could not gain access. This was sometimes merely a case of the student failing to accept the invitation. One unfortunate feature of the release version that was current to the project (2.x.xx) was that users entering in "basic" mode (the default) could not see messages including invitations. This is no longer a problem in later versions (3.x.xx) of Second Life software. Invitations do need to be accepted if they are offered, but if they are not accepted and the user logs out, the invitation will be permanently removed. Unfortunately, this causes another problem, as multiple invitations may need to be sent to users who log out before accepting their initial invitation. As a problem solving measure in the 2011 project, one of two staff members with administrator access met in-world with students who had had accessibility problems. In these instances, the staff member was able to add students to the access group manually by right clicking on their avatar, and selecting 'invite to group' from the context menu. As a result, the user's accessibility issues were immediately solved.

In the 2012 project, it is planned to use more strict logistics surrounding accessibility. In most cases, teaching and technical support staff will run face-to-face tutorial sessions to walk students through the following activities: signing up to Second Life, gaining entry in-world, arrival at the open access area, accepting invitations to the group, and obtaining access to the restricted areas of the island. In large groups ($n = 90+$), or in cases where students are enrolled in off-campus programs, a variation of the 2011 method will be used. This will require students to sign up for Second Life, then lodge their username with the appropriate teaching staff member who will then verify the student's identity and pass it on to an island administrator. Certain times shall be scheduled where an island administrator can be present in-world to assist students having difficulty and invite them in to the restricted island areas. This process will provide students with immediate access, rather than the ad hoc stopgap method used in the 2011 project. While this may entail walking them through some of the processes, it is hoped that the number of students needing such assistance will be low.

The provision of extra funding in 2012 has seen the RMIT University island gain an improved welcome and orientation area. This will help with some of the accessibility issues mentioned above, as this area will not be restricted access. Students will therefore be able to gain experience in-world while they are waiting to be permitted entry to the restricted access area. This addition was made as a small proportion of students from the 2011 cohort became lost in-world, despite being given a SLURL (Second Life URL: an address for a location in-world, used the same as one would a web address). Having this extra space should also decrease student frustration, as in one session they will be able to visit and explore Second Life in an area owned by RMIT University, even without access to the restricted area. Providing the SLURL is still a suggested measure however, as it can facilitate students' movement to the task area. It is recommended that it is made as easy as possible for students to get to a host institution's area in order to minimise unwanted contact from outside users. While this does mean that users who are not from the participating institution will have access to these unrestricted areas, it at least protects students from exposure to highly public areas.

As one may have already concluded, island access problems are almost exclusively due to user/student error. It is the belief of the authors that a clear set of instructions and rigid logistics will go a long way to managing these types of errors.

Expectation

As mentioned earlier, there were a number of students across the disciplines that reported dissatisfaction and frustration at their inability to complete various stages of the tasks. These frustrations were reflected in both the qualitative and quantitative data. It became quite evident to support staff, however, that these students were often making their first contact late in the timeline, as the following quote reveals:

The recording process was a technical nightmare. Not having the required hardware on my PC to enable my peers to hear my voice in avatar, and my PC crashing every time I entered one of the clinics was very frustrating, this with the fact of leaving it to the 'last minute', much like many of my peers did not help my cause.

This area of failed student expectation - that they would be able to set up and configure their workstation, sign up, gain access, enter the task area and perform the task in one sitting - is grossly inappropriate. One could liken this to having a written assessment due at the close of a business day and choosing to go and buy a computer that same morning, expecting to be able to finish in time. The root of the concern then is a combination of user error, apathy and procrastination. However, some student feedback indicated the root was in the project itself:

With the large amount of technical difficulties experienced, this limited our time in Second Life which also limited the possibility of interacting with other disciplines. The technical issues took up approximately 50% of the time during the assignment and [were] a major limiting factor.

These sources of frustration for all concerned would seem best eradicated by a strict timeline and well planned times for support, especially for off-campus students. It appears that a confounding factor in this is students' familiarity with computers at a user level. Our data revealed a clear relationship between the amount of students reporting that they have used 3DVLE/MMPORGS and the amount of students reporting that they had little problem in setting up for the project. It is not the intent of this paper to lay blame but, as mentioned earlier, it may be that our cohort consisted of many Consumers rather than Users of information technology. With approximately 80% of the participants being members of Generation Y, this would support Bennett, Maton and Kervin's (2008) stance that this generation, often referred to as the "net generation", is misconceived as being tech-savvy, high-end users.

Assessment and evidence of learning

As part of their assessment, students were required to submit a machinima of their role-play interactions. Unfortunately, the Second Life viewer has no inbuilt process for capturing video or audio, so a third-party application had to be used. This presented its own difficulties. The available software to easily capture screen content, with both audio from the host computer and audio originating from another source (referred to as capturing audio from microphone and speaker) is not cheap. Again, if running a small computer lab, this may not be an unsurmountable problem, as not all participants need to perform screen captures at the same time. However, in a large institution running a project with a high number of students, it can become very expensive to achieve this. The problem that occurred during this project was in using the free software, CamStudio. It has certain eccentricities and, while quite usable, was not user friendly. This was another source of much student dissatisfaction, as the following quote demonstrates:

When it came to recording the role-play we also had several technical problems. First two of the people in my group couldn't even use the screen capture software on their computer, and when the third person could, it would only capture audio and not the visual. Again this wasted a lot of time fiddling around and doing the role-play multiple times.

Because not all participants needed to capture at once, (indeed only one out of a group of three need act as "camera") a site licence for a commercial product such as Camtasia, while not cheap, seems the best option and offers a cross platform solution. However, this licence would only be available for on-campus use, and so leaves the question of what the students would use off-campus. At the time of publication, Camtasia offer a free trial period of 30 days, though it may, (as is the case at RMIT University), be against the policy of the institution to require students to use trial software. Mac users who have Quicktime 10.x can record from their screens natively, but they cannot record both speaker and microphone audio. Again, there are workarounds for this but they are far from ideal. Whatever the chosen program, it should be able to output audio and video to set parameters that would suit electronic transmission and storage. Students may also be given instructions on compressing and converting their file for electronic transmission. However, this is another step in the workflow and is fraught with the same problems related to unfamiliarity.

In the project discussed in this paper, it was unfortunately the case where providing the evidence of learning (the machinima) became a distracting frustration for students (and staff). There were times where CamStudio's eccentricities were too much for some students to overcome. In desperation, some offered audio only recordings, which led to fewer technical issues than the machinima. On occasion, the problem was reported as being with Second Life's voice chat not activating. This can be an issue with Second Life itself, or run of the mill server dropouts, but was found to be less of an issue when off campus. Some students bypassed this altogether by using a mobile phone or Skype audio. Skype is only a slight compromise, mainly in that it requires yet another application to be downloaded and installed. However, in the 2010 pilot project, Skype was used due to a lack of native audio in ReactionGrid, and it was found to be quite adequate.

Once again, it cannot be stressed highly enough that, on many occasions, student frustration was compounded by the expectation that they would log on, complete the tasks, and log off. It is the intention in the 2012 project to encourage students to do "sound checks" before they intend to sit down and record their final interaction. It is hoped by overtly instructing students to test their settings early in the timeline, that by the time they come to finalise their performance any problems will be sorted out.

Dissemination

The very final part of the puzzle is dissemination. Once the student has recorded their performance how do they then share it with other students and teaching staff for the purpose of reflection and assessment? The host institution itself would best answer this, as it depends on the details of the project in question. The 2010 pilot project relied on physical media such as DVD/CD and USB devices, though it was apparent this would work only for small cohorts and those with easy campus access. The 2011 project used RMIT University's official dissemination tool, myRMIT, which is powered by Blackboard. Unfortunately, this medium has a known disadvantage as it uploads files via a HTTP interface, which slows the speed of uploading and does not give the user an indication of progression of the upload. Whichever vector is chosen for dissemination, it should be able to handle file sizes needed for the machinima, allow access across different disciplines or departments, and be secure. Another possible avenue is uploading to YouTube via private links. The resultant uploaded machinima can then be accessed only by clicking on a private link, and not through search or browsing. YouTube links can be shared easily via email, or whichever means is suitable for the project in question. However, when selecting

a vector for dissemination, it is important to consider the given institution's rules of storage for student work. At RMIT University, the use of third party vectors, such as the aforementioned YouTube, is forbidden for official student work. This is an unfortunate barrier for the 2012 project, as being restricted from using the most suitable solution may again impact on student satisfaction.

The difficulties that students had with recording the machinima, which were discussed earlier, were compounded when it came to dissemination. It was crucial to the tasks, namely the interdisciplinary reflections, to be able to view machinima of other disciplines interactions. When there were delays in recording (which consequently led to delays with dissemination), many students felt severely frustrated at not being able to complete the necessary reflection tasks, as the following quote from a Chiropractic student clearly shows:

It was required that we had to listen to a recording from another discipline as well as from our own [by] a certain due date. It was unfortunate that we were the only discipline in our group that actually uploaded anything by the due date, so we were unable to comment on someone's video from another course.

Suffice it to say that the above is, of course, a problem with the recording process and not with dissemination.

Points of interest

The project described within this paper afforded a great learning opportunity, not only for students, but also for the project team members. Throughout the implementation of this project, much was learnt about how best to conduct learning activities using a 3DVLE such as Second Life. The main purpose of this paper, therefore, is to provide advice for educators who are thinking of using an online learning platform for the purposes of learning and assessment. The main points of advice given within this paper are reiterated below:

- It is advisable to specifically instruct IT security of the project well in advance, and have staff perform tests at all stages.
- Use software vendor's instructions if the IT department will accept them.
- Encourage students to use their own resources off-campus. Where an on-campus venue is required, attempt to make it a quiet and contained space - preferably several small venues with a small number of workstations.
- Make sure you have technical support, both to build your virtual space and to administrate it, even if via a funded project.
- The land should be able to be used by several groups collaboratively or in isolation.
- Video and audio capture to produce machinima is difficult, and there is no one solution to meet all needs.
- Allow students plenty of time for set-up and testing, but instruct them to do it sooner rather than later. This leaves more time to go in-world and become familiar with it before trying to produce quality assessable evidence.
- Make sure participants have a clear and reasonable expectation of their ability to produce quality assessable evidence.
- Have a restricted area for students, but allow them to explore a custom-built area while access to the restricted area is arranged.
- Get students in-world and to the project area as quickly as possible.

Conclusion

The experience of this project has shown that, even with unfamiliarity and technical issues, students find 3DVLEs such as Second Life useful and engaging. They are of great use when conducting simulated face-to-face interactions in role-plays concerning a practitioner and a patient. They facilitate interdisciplinary interaction, above and beyond what can and does occur in real world clinical settings. 3DVLEs also allow a great opportunity for reframing of knowledge, and immersing students in content through the perspective of different roles. Despite these benefits, this paper clearly shows that the utilisation of 3DVLEs is not without difficulties. However, it is the opinion of these authors that, with careful planning and subsequent efforts with the same cohort, these issues can be lessened or avoided.

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References

- Baker, S. C., Wentz, R. K., & Woods, M. M. (2009). Using virtual worlds in education: Second Life as an educational tool. *Teaching of Psychology*, 36, 59-64.
- Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology*, 39, 775-786. <http://kimhuett.wiki.westga.edu/file/view/The-digital-natives-debate-A-critical-review-of-the-evidence.pdf> [viewed 27 June 2012].
- Bhati, N., Mercer, S., Rankin, K., & Thomas, B. (2009). Barriers and facilitators to the adoption of tools for online pedagogy. *International Journal of Pedagogies and Learning*, 5, 5-19.
- De Lucia, A., Francese, R., Passero, I., & Tortora, G. (2009). Development and evaluation of a virtual campus on Second Life: The case of SecondDMI. *Computers & Education*, 52, 220-233.
- Dudenev, G., & Ramsay, H. (2009). Overcoming the entry barriers to Second Life in higher education. In C. Wankel & J. Kingsley (Eds.), *Higher Education in Virtual Worlds: Teaching and Learning in Second Life* (pp. 11-28). Bingley, UK: Emerald.
- Eschenbrenner, B., Nah, F. F., & Siau, K. (2008). 3-D virtual worlds in education: Applications, benefits, issues, and opportunities. *Journal of Database Management*, 19, 91-110.
- Grimes, J. M., Fleischmann, K. R., & Jaeger, P. T. (2010). Research ethics and virtual worlds. In C. Wankel & S. K. Malleck (Eds.), *Emerging Ethical Issues of Life in Virtual Worlds* (pp. 73-100). Charlotte, NC: Information Age Publishing
- Hansen, M. M. (2008). Versatile, immersive, creative and dynamic virtual 3-D healthcare learning environments: A review of the literature. *Journal of Medical Internet Research*, 10, 3, e26. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2626432/>
- Inman, C., Wright, V. H., & Hartman, J. A. (2010). Use of Second Life in K-12 and higher education: A review of research. *Journal of Interactive Online Learning*, 9, 44-63.
- Jarmon, L., Traphagan, T., Mayrath, M., & Trivedi, A. (2009). Virtual world teaching, experiential learning, and assessment: An interdisciplinary communication course in Second Life. *Computers & Education*, 53, 169-182.
- Linden, B. (2012). Using Second Life with a Firewall. <http://community.secondlife.com/t5/English-Knowledge-Base/Using-Second-Life-with-a-firewall/ta-p/1304539> [viewed 27 June 2012].
- Rogers, L. (2008). Virtual Worlds: A New Window to Healthcare Education. Poster presented at ascilite 2008, Melbourne, Australia. <http://www.ascilite.org.au/conferences/melbourne08/procs/rogers-poster.pdf>
- Selwyn, N. (2009). The digital native – myth and reality. *Aslib Proceedings*, 61, 364 – 379. <https://comminfo.rutgers.edu/~tefko/Courses/Zadar/Readings/Selwyn%20dig%20natives,%20Aslib%20Proceedings%202009.pdf> [viewed 27 June 2012].
- Warburton, S. (2009). Second Life in higher education: Assessing the potential for and the barriers to deploying virtual worlds in learning and teaching. *British Journal of Educational Technology*, 40, 414-426.

Author contact details:

Marcus McDonald, marcus.mcdonald@rmit.edu.au
Tracii Ryan, tracii.ryan@rmit.edu.au
Jenny Sim, jenny.sim@rmit.edu.au
Jennifer James, jennifer.james@rmit.edu.au
Philip Maude, philip.maunder@rmit.edu.au
Sheila Scutter, sheila.scutter@jcu.edu.au
Denise Wood, Denise.Wood@unisa.edu.au

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