

## Giving research students a ‘Second Life’

### Abstract

Higher Degree by Research (HDR) students need to develop, enrich and sustain up-to-date research skills, academic knowledge and meaningful relationships with peers and supervisors. The majority of such development and engagement activity continues to be conducted oncampus during business hours. This poses a particular challenge for the increasing number of off-campus and part-time HDR students who are inevitably isolated from the academic community of practice. Similar problems are also experienced by on-campus students who are enrolled in large multi-campus universities or spend significant time in research sites. While commonly adopted university strategies of regular email communications and video recordings of HDR workshops go some way to alleviating student isolation, they primarily position the students as consumers, not participants in the community of practice.

This chapter explores how the use of a three dimensional virtual learning environment (3DVLE) could support HDR student engagement with the academic community, specifically HDR workshops. It draws on data from a mixed method study undertaken at a major Australian University in which a diverse group of HDR students took part in multiple, simultaneous, synchronous HDR workshops in the virtual world *Second Life*. The research was guided in its design by literature relating to social presence and ‘authentic’ learning principles. Although the number of participants (n=18) and the highly complex nature of education, including the skills and approach of the lecturer, do not allow this chapter to make generalisable conclusions, nevertheless the data do support six propositions, or ‘lessons learned’, which can inform the design of future HDR 3DVLE workshops and related research. The lessons learned include: virtual environments are not just for on-campus, young, male ‘gamers’; the complexities of 3DVLEs require high levels of technical support; synchronous 3DVLE events are appreciated by geographically isolated students but do not resolve all attendance problems; the use of virtual worlds can support student perceptions of high social presence and reduce the sense of social and academic isolation; student perception of social presence increases with repeated 3DVLE experiences; the lack of non-verbal cues needs to be compensated by designing small-group interaction and developing text-message etiquette.

## Introduction

Higher Degree by Research (HDR) students need to develop, enrich and sustain up-to-date research and academic knowledge and skills in their field of study. This is often achieved through on-campus seminars, workshops and other activities, including general academic meetings, informal gatherings and ‘corridor conversations’ (Evans, 2002; Pearson, 1999). However, most of these learning opportunities are not readily accessible to the increasing number of off-campus and part-time HDR students (Monash Postgraduate Association, 2003, 2008, 2010), who are inevitably isolated from the academic community of practice. Similarly, on-campus students who are enrolled in large multi-campus universities or spend significant time in research sites also find they may be isolated from their peers, academic mentors as well as lack access to campus-specific events.

An obvious response has been the adoption of digital technologies, in particular, the use of asynchronous media such as email and video recordings, which provide HDR students with some connection to the academic community of practice. While serving a serious need, these practices often position the student as a consumer of the media and do not afford dynamic social and intellectual interaction with the academic community. For example, a video of a research workshop can provide students with a valuable resource independent of time and location, but does not support spontaneous questions or the development of formal and informal networks. This is a serious concern since both formal and informal networks with peers and other academics have been shown to enhance learning experiences, academic progress, resilience, and academic collegiality at the same time as sustaining the students’ emotional and psychological well-being (Beattie & James, 1997; Beckmann & Kilby, 2008; Devenish et al., 2009; Huijser, Kimmins, & Evans, 2008; Ladyshevsky & Gardner, 2008; Packham & Miller, 2000; Sandeman-Gay, 1999; Zuber-Skerritt, 1994).

As a consequence of non-participation, HDR students may also experience ‘intellectual and social isolation’ or ‘lonely researcher syndrome’ (Huijser, et al., 2008; Zuber-Skerritt, 1994). This problem is particularly acute for part-time and off-campus HDR students who undertake research in humanities and the social sciences where research is highly autonomous and individual when compared with science disciplines (Bazeley et al., 1996; Beckmann & Kilby, 2008; Moses, 1994; Sussex, 2008). It might be reasonable to assume that this isolation is ameliorated through a supporting student-supervisor relationship. However, research indicates that student-supervisor communication is typically inadequate and reinforces isolation and other problems (Grant, Graham, & Jones, 1994; Moses, 1994; Sussex, 2008; Zuber-Skerritt, 1994). The problem of student isolation has led researchers (for example see, Ladyshevsky & Gardner, 2008; Sussex, 2008) to call for “the richest possible means” (Sussex, 2008, p. 124) for creating and supporting relationships and communication between students and their academic mentors and peer networks.

While some researchers (for example: Sandeman-Gay, 1999; Zuber-Skerritt, 1994) have argued that encouraging participation in on-campus activities is the key to meaningful engagement with formal and informal learning communities, others have demonstrated that similar and just as valuable engagement can be facilitated through the careful implementation of online technologies (for example: Herrington & Herrington, 2006; Hew & Cheung, 2010; Ladyshevsky & Gardner, 2008; Littleton & Whitelock, 2005; Motteram, 2006).

Social presence theory supports the notion that relationships within social and academic as well as formal and informal networks can be enriched through digital social media, such as 3DVLEs. Social presence was defined by its progenitors, Short, Williams and Christie (1976), as the “degree of salience of the other person in the (mediated) interaction and the consequent salience of the interpersonal relationships” (1976, p. 65). Irrespective of the medium of communication, social presence refers to how real (Richardson & Swan, 2003) or three-dimensional (Stein & Wanstreet, 2003) a person or group is perceived to be. Although Short and colleagues (1976) argued that the medium influences social presence by its interactive limitations, such as the inability to convey non-verbal cues, subsequent research in the context of digital technologies has demonstrated that despite such limitations the communication can be facilitated so that the perception of social presence is increased which, in turn, greatly increases the ability to substitute virtual for face-to-face instances while achieving the same outcomes (Baskin & Henderson, 2005; Gunawardena & Zittle, 1997; Richardson & Swan, 2003; Stein & Wanstreet, 2003).

Consequently, it is possible that emerging and accessible technologies such as free multi-point video-conferencing, collaborative cloud-based documents and 3DVLEs can enable an increased level of social presence in student-supervisor and student-student relationships. This chapter explores how HDR student workshops conducted primarily through the 3DVLE, Second Life, can support and shape student engagement, including the perception of social presence.

## **Second Life (SL)**

SL is one of several hundred virtual worlds (Association of Virtual Worlds, 2008). A virtual world is typically a multi-user computer-based environment in which users inhabit and interact via avatars or digital representations of the user (Henderson, Huang, Grant, & Henderson, 2009). A 3DVLE is a particular type of virtual world which uses a three dimensional interface. SL users, through their graphical animated avatars, can interact through motion (avatar animation), text, voice, and the sharing of digital artefacts (eg. notecards, clothing, etc.). SL is not a game; it has no set objectives or game-like rules or rewards. While some authors (for instance Mayrath, Traphagan, Heikes, & Trivedi, 2009) argue that “SL is simply... a platform for users or avatars to create and/or explore places and spaces” (p.2), Henderson et al. (2009) suggest that “the agency afforded to users in this environment engenders user created diverse, changeable, and rich social environments which are far from simple” (p. 2). This is supported in a number of ways including the effect of synchronous communication and three dimensional simulation to provide discourse elements that enhance perceived physical and linguistic copresence, such as seen in the use of indexical language (*here, this*, etc.) (Henderson, et al., 2009; Schwienhorst, 2002). Another affordance is that SL allows students to engage in similar ways as if they were on the same campus, whether attending and collaborating in a HDR workshop or engaging in an informal and spontaneous conversation.

There is an increasing body of research literature in the field of educational uses, including pedagogical advantages of SL (for instance, Australian Flexible Learning Framework, 2006; Bradshaw, 2006; Campbell, 2009; Mayrath, et al., 2009; Roussou, Oliver, & Slater, 2006; Slater et al., 2005; The Schome Community, 2007). At a tertiary level, it has been reported that in 2008 over 300 universities had a SL presence in which they taught or conducted research (Michels, 2008). For instance, in 2011 at Monash University over 300,000 square metres of virtual land across six SL islands were used to support immersive learning

environments for students studying education, Chinese language and culture, pharmacy, nursing, psychology, law and information technology.

As a consequence of the affordances of virtual worlds the authors conducted a mixed method research project to explore if and how workshops conducted in a 3DVLE could meet on- and off-campus student needs, including facilitating social presence and thereby potentially reducing academic and social isolation.

### **The HDR student workshops**

This section includes a brief description of the sequence of activities and various key design elements. Prior to data collection, HDR students in the Faculty of Education at Monash University were invited, via broadcast emails, to participate in a series of workshops in SL. The subsequent 18 students who self-selected to participate embarked on a series of learning activities presented here as four phases: familiarisation with SL; workshop 1; ongoing asynchronous communication; workshop 2.

Phase 1 included a range of pre-workshop, orientation activities designed to familiarise students with the virtual environment and the controls required for interaction and collaboration. These activities included watching pre-recorded video tutorials as well as ‘in-world’ meetings with non-teaching technical support staff.

Phase 2 required students to choose one of two topics which would be simultaneously taught in SL at different locations, by different lecturers. The topics of the workshops had been advertised to the students prior to enlistment and were ‘how to write an excellent abstract’ and ‘applying for ethics approval from an ethics committee’. Prior to beginning the workshops, the students from both workshops met at a common location on Monash Island (see Figure 1) and then travelled together to their workshop locations. This had been purposely designed as a potential stimulus of collaboration and social presence. The workshops were designed by the research team to encourage frequent text and verbal communication with the lecturer as well as between participants, both in large and small groups. This was considered an important element as social presence theory indicates that communication facilitation increases the perception of social presence which, in turn, greatly increases the ability to substitute virtual for face-to-face instances while achieving the same social and academic outcomes.



*Figure 1.* Students are welcomed and given directions to their workshops

The workshops included discussions supported by slides on whiteboards located in the virtual environment, relevant scenarios, text examples such as research ethics application forms and examples of journal abstracts together with video footage. These artefacts and activities were based on the concept of authentic learning principles (Herrington & Herrington, 2006) and had real-world relevance. They required investigation by students over a sustained period of time, provided opportunities for students to examine the task from a variety of perspectives using a variety of resources and encouraged collaboration and reflection.

Phase 3 included a small online asynchronous collaborative project over four weeks which was designed to build on the activities undertaken in the first workshops. The students who attended abstract writing workshop wrote their own abstracts and uploaded them to the University's learning management system (Blackboard). The students were encouraged to read each others' abstracts critically drawing on the discussions from the first workshop, to comment and suggest amendments which in their opinion might improve the quality of the abstracts and finally to revise their abstracts taking into account the suggestions of their peers. The participants in the research ethics workshop emailed draft versions of their ethics application to the lecturer who provided feedback and if appropriate disseminated it to the rest of the workshop participants. In one case a student had already received ethics approval and offered to share the feedback of the real-world committee with the workshop group.

This phase was informed by the authentic learning requirements for sustained student investigation (Herrington & Herrington, 2006). It was designed to provide opportunities for students to maintain and enhance the collaborative relationships they had established in the first workshop series which, it was hoped, would enhance the communication and resultant social presence in the final phase of the investigation.

Phase 4 included two simultaneous and synchronous workshops in SL. The participants of the abstract writing workshop were invited to participate in a ‘conference panel’ role play based on the collaborative task from the second phase activity. This involved students in pairs discussing the merits of different students’ abstracts in separate, pre-determined, in-world locations and returning to a location with other students groups and the lecturer to discuss each pair’s thoughts as shown in Figure 2.



*Figure 2.* Students from the abstract workshop participating in the ‘conference panel’ role play

The participants of the ethics workshop were encouraged to adopt the perspective of a research ethics committee member and collaboratively discuss the appropriateness of the research projects from the ethics applications that had been shared via email as shown in Figure 3.



Figure 3. Students participating in the ethics workshop

These activities were, once again, influenced by Herrington and Herrington's (2006) work on authentic learning and particularly reinforced the notion that these activities had real-world relevance that provided opportunities for students to examine the task from a variety of perspectives using a variety of resources while encouraging collaboration and reflection.

Throughout the learning activities qualitative and quantitative data were collected. This included researcher and lecturer observations, student feedback via a questionnaire at the end of each workshop, videos of students' interaction in the workshops, and copies of the digital artefacts and communications during phase 3. Although the number of participants (n=18) and highly complex nature of education, including the skills and approach of the lecturer, do not allow this chapter to make generalisable conclusions, the data do support six propositions, or 'lessons learned', which can inform the research and design of future HDR 3DVLE workshops.

### Lessons learned

*Lesson 1 – Virtual environments are not just for on-campus, young, male 'gamers'.*

The data presented in Table 1 indicates that the heterogeneous characteristics of HDR student cohorts reported by the Monash Postgraduate Association (2003, 2008, 2010), including the Faculty of Education distribution of age and gender (with a female bias), are reflected in the students who participated in this investigation. However, the participants did not comprise a

representative sample since they had self-selected to participate in a synchronous HDR workshop and as such may not necessarily represent the most disaffected or isolated students. Nevertheless, Table 1 does indicate a spread of ages, gender, enrolment and attendance modes. It is important to point out that at Monash University the attendance mode “on-campus” is used to designate students who are within 50kms of campus. It does not imply that students come to campus or have timetabled events or other meetings on-campus. Of more relevance is the fact that approximately half of the participants were enrolled as part-time students. This means that the students are not provided with an office, computer or other on-campus services. Part-time students are usually in full-time paid employment and are rarely on campus.

Table 1  
*Demographic characteristics*

Characteristic		<i>N</i>
Age (years)	<35	6
	36-45	6
	46-55	6
Gender	Male	5
	Female	13
Course at Monash <sup>a</sup>	PhD	9
	Masters	5
	Other	3
Enrolment <sup>b</sup>	Full time	8
	Part time	9
Attendance mode <sup>b</sup>	On-campus	13
	Off-campus	4

<sup>a</sup> Three participants had completed or were completing postgraduate studies and were intending to soon commence PhDs. One participant did not provide a response.

<sup>b</sup> One participant did not provide a response to these questions.

The spread of participant demographics in this investigation suggests that a 3DVLE approach to HDR mentoring and training had a wider appeal than the expected profile of a young male gamer such as found in Yee’s (2006) research of 30,000 users where 85 per cent were male. The wide appeal of the 3DVLE workshops is reinforced by Table 2 which shows that the majority of students who self-selected to participate in these workshops had either rarely or never used a 3D online virtual worlds or an online multi-user computer game. This is a positive finding which allays some fears of such media disaffecting a large proportion of the HDR students simply because of an assumed avoidance of certain media. Nevertheless, the researchers noted that SL, and presumably other 3DVLEs, appear to draw heavily on the mechanics of avatar control and interaction from game genres which not all HDR students are familiar with.

Table 2  
*Frequency of participants’ 3D virtual environment use*

	One or more times a week	One or more times a month	Rarely	Never

Online multi-user computer games (n=18)	4	1	4	9
3D online virtual worlds (n=18)	2	4	3	9

The two workshop topics (abstract writing and ethics preparation) were each limited to 10 participants (20 in total) which is similar to on-campus workshops and were designed to support the higher degree of interactivity expected in such workshops. The first workshop was attended by 18 HDR students which was felt to be a good turn-out regardless of mode. However, the second workshop was attended by only nine HDR students. Of the nine students who did not continue, three indicated that it was primarily due to technical problems (hardware, software, or technical ability) and five students indicated that they could not continue due to a conflict of time. The remaining student did not provide a reason. The reasons for attrition are discussed later in this chapter.

Table 3 confirms that the majority of students felt the workshops in Second Life were useful and that they would be willing to participate in another workshop using the 3DVLE. As a triangulating exercise, the students were also asked questions such as their degree of engagement in the learning activity, and whether SL was a waste of time. These and other questions verified the overall positive impression for the technology and the workshops.

Table 3.

*Satisfaction*

		Strongly agree	Agree/Partly agree	Partly disagree	Strongly disagree	No response
I would take another seminar that used Second Life	Workshop 1 (n=18)	11 61.1%	4 22.2%	1 5.6%	0 0%	2 11.1%
	Workshop 2 (n=9)	3 33.3%	4 44.4%	1 11.1%	0 0%	1 11.1%
Participating in Second Life was a useful experience	Workshop 1 (n=18)	10 55.6%	4 22.2%	1 5.6%	0 0%	3 16.6%
	Workshop 2 (n=9)	5 55.6%	3 33.3%	0 0%	0 0%	1 11.1%

However, there is a need for further research. There may be some ‘novelty value’ at play since the percentage of students who strongly agreed with the idea of participating in additional SL seminars halved when comparing responses from the first and second workshops. This is despite the fact that the students who participated in the second workshop were more comfortable in the medium (this is discussed in greater depth late in the chapter).

*Lesson 2 – The complexities of 3DVLEs require high levels of technical support.*

Many of the students initially experienced problems relating to software and hardware including their ability to manage peripheral devices such as microphones and to control their

avatars. These problems are well-known issues when inducting new users of SL and consequently from the outset two researchers had adopted the role of support technicians. They provided email instructions, video-based tutorials, pre-workshop training meetings in SL as well as a training workshop in an on-campus computer room. In addition, during the workshops they were on hand to help students as problems arose. Despite this support, three participants withdrew after the first workshop citing technical difficulties as the reason. Other students noted that the technical hurdles made it more difficult for them to engage with the workshop content and conversations. For instance, one student indicated that he felt “frustration at not being able to master the mechanical aspects” and that it “detracted from the learning experience somewhat”. Nevertheless the same student persisted and unsurprisingly all of the participants reported fewer problems in the second workshop.

Clearly the technical requirements of SL contributed to some students withdrawing from the workshops, in addition to initially distracting others from the learning activities. However, these technical difficulties do not seem to have dictated the overall success of the workshops. Only 16 per cent of students reported that these problems were the cause of their leaving the workshops. In addition, approximately 80 per cent of the students in both workshops indicated that they would take another workshop in SL. Also, several students commented that the 3DVLE actually enhanced their learning: “It helps me to concentrate more than the real [workshop]” and “I feel I am able to focus more on the content of the interactions because I am less conscious of myself in a group situation”.

From the researchers’ perspective it is unlikely that any additional technical support than that provided could avert this problem. Nevertheless, the need for technical preparation, pre-workshop training and ongoing support is undoubtedly an important lesson learned. However, since the attrition in student numbers does not appear to be wholly attributable to technical difficulties it is useful to consider other reasons why students withdrew and the reasons for persistence.

*Lesson 3 –Synchronous 3DVLE events are appreciated by geographically isolated students but do not resolve all attendance problems.*

Low attendance at HDR events, especially by part-time and off-campus students is a constant worry. The provision of a synchronous 3DVLE series of workshops, conducted in the early evening to avoid standard work hours, could be the answer to this problem. The results reported in this chapter show a pleasing number of part-time and off-campus students when compared with typical on-campus HDR training events.

All of the students, including full-time students, noted that the 3DVLE workshop was convenient and saved travelling time and money. This was despite a marked preference by several students for face-to-face contact: “I’m old and prefer real life contact (but don’t like driving to the city)”. Other students supported this viewpoint stating, “I was so happy to be able to attend even though I was on holiday in at the time of the lecture” and “it allowed me to participate in the workshop without having to travel to Clayton”. One student explained that the workshop was also convenient because it meant the classroom came to her own preferred learning space, her home: “I can spread myself out on my desk at home and have everything placed where I need it. I can record things if I need to or look up chat logs for things I missed. I feel much less self-conscious (although still a little nervous in the presence of others)”.

While the use of SL overcomes the issue of location, and is valued for its convenience, the problem of time is still acute, especially for group sessions. For example, five students (27.7% of the 18 students who completed the first workshop) notified the researchers that they were unable to attend the second set of workshops due to their work or personal commitments which conflicted with the workshop time. This is despite the fact that the second workshop was advertised a month in advance and conducted at the same time and on the same weekday as the first workshop. The attendance requirements of many HDR workshops, including this series of activities, were not compulsory components of HDR study which created additional challenges when analysing the factors affecting attendance. But the findings from this study indicated that the use of virtual worlds for HDR student interactions is not a ‘magic bullet’.

*Lesson 4 – The use of virtual worlds can support student perceptions of high social presence and reduce the sense of social and academic isolation.*

In the goal of supporting student engagement in an academic community the learning activities were designed to provide students with an authentic purpose to communicate and collaborate in formal and informal situations. While researcher observations and video recordings of student interactions confirmed that the students were participating in the activities, social presence theory states that a high level of interaction does not necessarily mean that students perceive the salience of others or the implicit relationships (Picciano, 2002; Stein & Wanstreet, 2003). Consequently, at the end of each workshop the students were asked about the degree to which they felt the others were real (Richardson & Swan, 2003), could express themselves, and were comfortable in communicating with others (Tu, 2002; Tu & McIsaac, 2002). These data are presented in Table 4.

Table 4  
*Interaction and social presence*

		Strongly agree	Partly / agree	Partly / disagree	Strongly disagree	No response
I felt as if I was communicating with a real person in Second Life	Workshop 1 (n=18)	7 38.8%	5 27.8%	3 16.7%	1 5.6%	2 11.1%
	Workshop 2 (n=9)	6 66.7%	3 33.3%	-	-	-
I was able to be expressive in Second Life	Workshop 1 (n=18)	2 11.1%	7 38.9%	6 33.3%	1 5.6%	2 11.1%
	Workshop 2 (n=9)	2 22.2%	4 44.4%	2 22.2%	-	1 11.1%
I was comfortable interacting with other participants in Second Life.	Workshop 1 (n=18)	2 11.1%	8 44.4%	4 22.2%	1 5.6%	3 16.7%
	Workshop 2 (n=9)	4 44.4%	5 55.5%	-	-	-

Table 4 indicates that students who had difficulty in perceiving the others as real, and who felt less expressive and comfortable in communication were more likely not to persist in the workshops. However, this relationship needs to be explored further since students who were more positive also suffered from a relatively high rate of attrition and as previously discussed there are other potential explanations.

The majority of students reported that they felt as though they were communicating with real people in the 3DVLE. The percentage of students strongly agreeing with this notion of social presence increased following the second ‘in-world’ workshop. While not generalisable to other cohorts, the data lend credence to the idea that SL may be able to support student engagement with the academic community through facilitating communication and a degree of salience of the presence of others. This conclusion was also supported by other student feedback:

[I] felt like I was part of my Higher Education Research community when often as a full time employed person I feel I am missing out by not being at uni every day. The fact that other students rated my abstract high because they thought the study was worthwhile really validated the work I am doing!

The opportunity to engage with others in a meaningful and authentic way supported this participant’s sense of social presence and perceived community engagement. In addition, a different student also pointed out that in comparison with a text-based platform (eg. Blackboard) the three dimensional interface helped to facilitate social presence:

I thought it [SL] was better than just a Learning Management system. I felt more like I was interacting with real people because of the 3D environment that includes walking talking avatars. I actually like the virtual environment better than a real life class.

This participant’s preference for SL over a real-life class resonates with social presence theory which states that the media, including rich communicative environments such as classrooms, do not guarantee a high degree of social presence. This research supports the understanding that a workshop embedded in a 3DVLE helped on/off campus as well as full/part-time HDR students to connect with the academic community and by extension reduce the risk of isolation. Indeed, one student actually commented: “I could see [the] advantages - especially for part time and distance students. It allows a more personal interaction between HDR students who are feeling isolated”. That student also provided an example illustrating how the environment could be used for informal study groups.

*Lesson 5 – Student perception of social presence increases with repeated 3DVLE experiences.*

Observations during the second workshop indicated that the communication between students, and with their lecturer, was more engaged and active. Table 5 presents the data from seven students who completed both workshop surveys and which could be matched via their avatar names. It is apparent that by the end of the second workshop the students felt more positive about the degree of salience of the other workshop participants, ability to be expressive and comfort in interacting.

Table 5  
*Interaction and social presence (matched questionnaires)*

		Strongly agree	Partly / agree	Partly / disagree	Strongly disagree
I felt as if I was communicating with a real person in	Workshop 1 (n=7)	3	4	-	-
	Workshop 2	4	3	-	-

Second Life	(n=7)				
I was able to be expressive in Second Life	Workshop 1 (n=7)	1	2	4	-
	Workshop 2 (n=7)	2	3	2	-
I was comfortable interacting with other participants in Second Life.	Workshop 1 (n=7)	1	3	3	-
	Workshop 2 (n=7)	3	4	-	-

Familiarity with the media is one possible explanation: “I tended to engage more during the second session. I think familiarity with the interface during the first session helped”. While the attrition of students also meant that the second workshop was far more intimate. Finally, and significantly, the design of the learning activities in the second workshop heavily relied on the participation of students in pairs as well as with the whole group. Both the abstract writing and ethics preparation workshops encouraged students to adopt a role and use their knowledge from the previous month of activities to engage with each other.

This provides us with the lesson learned that students need to be supported in their engagement over time. Nevertheless the exact relationship between social presence and time needs to be further explored. For instance, is social presence strengthened by repeated engagement with the technology and the other participants, or is the students’ persistence in continuing with the technology a result of the salience of the relationships with the others.

*Lesson 6 – The lack of non-verbal cues need to be compensated by designing small group interaction and developing text message etiquette.*

Students and lecturers reported that the lack of non-verbal cues in SL posed a number of problems. For instance a participant stated: “I tend not to talk to as I find it difficult to know when it is best to talk” with another student saying: “I was unsure about the etiquette for turn taking when wanting to speak”. A third student further clarified the issue stating: “the lack of visual cues made it difficult to recognise when others wanted to take a turn in the discussions. I’m sure there are some second life alternatives but as a newbie I’m not sure what they are or that I would readily recognise their use”. The lecturers were made aware of this problem when they called for students to answer questions or participate in the conversation. Students would sometimes speak over each other since there were no cues to indicate that someone was about to speak.

Typically the variables for the turn-taking mechanism include non-verbal cues such as hand gestures, posture shift, eye gaze and head direction or changes in ‘body motion’ (Duncan, 1972). While avatars in SL can be animated when using verbal communication, these gestures are beyond many users, particularly those new to the environment, and can be easily missed by participants whose field of vision may be focussed elsewhere. When compared to face-to-face interactions in the real world, the paucity of non-verbal ‘conversational sign posts’ in SL requires both educators and participants to develop different strategies.

The second workshop clearly had a smoother flow of communication, with more turn taking and less problems such as verbal overlaps. There are a number of reasons for this. First, the

participants and lecturers were more familiar with the technology. Also, there were fewer students. However, the workshop was also designed to facilitate ease of communication through clearly signposting student turns through asking specific students to answer questions, and through the design of activities for pairs of students to work together. Another successful strategy was the use of the text conversations (chat) to flag that a student wanted to speak or ask a question.

## **Conclusion**

Increasing diversity in HDR student cohorts and subsequent changes to HDR course structures offered by tertiary institutions provide academics with the opportunity to trial new forms of digital media. The affordances of emerging technologies such as 3DVLE have the potential to enable postgraduate students to interact with elements of university life that may otherwise be inaccessible due to geographic remoteness, professional or personal commitments.

This chapter has described a different approach to engaging HDR students in learning about important HDR skills at the same time as facilitating their connection with other students as well as with academics who are not their supervisors. The 3DVLE workshops were designed according to 'authentic' learning principles and informed by social presence theory. The results were positive but due to the limited number of participants and complex nature of education, they are not generalisable. Nevertheless, the chapter has outlined six 'lessons learned' which provide insight into and in some cases guidance for the instructional design of 3DVLE postgraduate education. These are:

Lesson 1 - Virtual environments are not just for on-campus, young, male 'gamers';

Lesson 2 - The complexities of 3DVLEs require high levels of technical support;

Lesson 3 - Synchronous 3DVLE events are appreciated by geographically isolated students but do not resolve all attendance problems;

Lesson 4 The use of virtual worlds can support student perceptions of high social presence and reduce the sense of social and academic isolation;

Lesson 5 - Student perception of social presence increases with repeated 3DVLE experiences;

Lesson 6 - The lack of non-verbal cues needs to be compensated for by designing small group interaction and developing text-message etiquette.

Despite learning six key lessons, further investigation is required into the use of virtual environments in HDR courses. In particular, the researchers highlight the need for future research into emerging 2D and 3D virtual spaces and their integration with other cloud-based, collaborative applications such as Google+. The possibilities offered by simultaneous interaction utilising a variety of digital media in this type of application have the potential to enhance formal and informal social networks between supervisors and students whilst providing additional platforms for the support of 'serious' academic rigour.

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