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Practical Learning in Virtual Worlds: Confronting Literature with Health Educators' Perspectives

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Abstract

In a radically changing educational world with rapid technological advances, educators need to adapt to new learning styles. This study investigates the use of Second Life (SL) within the Virtual World (VW) environment by healthcare educators as a method to enhance teaching and learning.

A case study design ascertained the views of healthcare educators to determine relationship variables of VW SL initiatives.

The findings reveal healthcare educators had limited expertise in using SL, but recognised its usefulness in bridging the theory/practice gap especially for nursing and midwifery training. The findings confirmed educators' confusion between VW and Web 2.0 / 3.0 technologies and recommends increasing technological competency. It highlighted educators' professional expertise of care standards in real-life situations but demonstrated a competency issue in their pedagogical style to deliver SL practice scenarios. Consequently, opportunities for developing critical thinking through SL scenarios remain stilted and solutions through problem-based learning scenarios remain underdeveloped.

1. Introduction

Educational delivery methods are changing in light of technological advances and educators need to adapt provision to meet upcoming generational requirements. These changes require diversification from traditional large economies of scale teaching methods to meet the challenge of change in healthcare provision. To accommodate continual professional development for busy professionals, unable to attend traditional classroom based provision, a variety of options such as distance learning, blended, eLearning, and Problem-based Learning (PBL) have evolved. Savery defines Problem-based Learning as "...an instructional (and curricular) learner-centred approach that empowers learners to conduct research, integrate theory and practice, and apply knowledge and skills to develop a viable solution to a defined problem." (2015, p.5)

The introduction of problem-based scenarios through SL within the VW has potential for developing critical thinking skills to deal with real-life realities. Gregory & Smith suggest the use of Virtual Worlds offers learning and critical thinking opportunities,

Virtual worlds are different from the current systems because they emulate face to face collaboration and critical thinking. Virtual worlds, in particular [Virtual World] Second Life, are an electronic presence that imitates real life in the form of personal presence [...avatar...] (2008, p.2)

This paper investigates the use of SL in the nursing and midwifery curricula within a Higher Education Institution's (HEI) Faculty of Health and explores educators' skills to implement scenarios to promote learning. In terms of healthcare education SL scenarios offer opportunities for risk free training (Bogardus Cortez, 2016); however, Ertmer et al. (1999) suggest that to integrate these into learning requires improvement in educators' knowledge and technology skills. This is especially relevant if students are to benefit from problem-based SL learning scenarios to develop critical thinking skills in relation to practice. Moreover, Greenhaw pointed out, "The application of [Virtual World] Second Life in the classroom [...] will allow students to execute complicated procedures in a simple, computer-simulated environment." (2008, p.1)

There is a paucity of data exploring healthcare educators' knowledge of SL usages. However, some authors have tried to make inroads into this, for example, Gorini, Gaggioli, Vigna & Riva (2008) outlined possibilities for SL for eHealth; Greenhaw (2008) highlighted uses of SL in nurse training; Murray, Grant, Howarth, & Leigh reviewed the use of simulation to support practice learning; Skiba (2009) commented SL nurse education perspectives; the Nursing and Midwifery Council (2011) provided advice on using social networking sites, and Tiffany and Hoglung (2014) outlined SL perspectives for future nurse educators, but further insights are needed to advance SL as a teaching resource.

This study gains healthcare educators' insights around using SL as an immersive learning method for students. The overarching enquiry was to discover whether healthcare educators had sufficient understanding of SL's benefits and challenges to support teaching and learning.

2. Method

A literature review and case study approach as a way of undertaking in-depth inquiry. Harrison, Birks, Franklin & Mills (2017) cite methodological usage of case study research provides practical in-depth ways of understanding issues across disciplines. Furthermore, the Merriam-Webster Dictionary definition (2018) states a case study approach as, "an intensive analysis of an individual unit (as a person or community) stressing developmental factors in relation to environment." Databases searched included: Google, GoogleScholar, JISC Infonet, ProQuest, and Educause. Secondary data included books, thesis, professional journals, and newspaper articles from

2000 to the present. Key words used, Second Life, virtual world, higher education, nursing and midwifery. The inclusion and exclusion criteria are as follows:

1. Inclusion

- Peer reviewed journals;
- Primary research, nursing journals and seminal literature – books; thesis;
- Secondary research (media; websites; professional bodies) related to VW SL healthcare education;
- Written in English with timeframe perimeter from 2000 to 2018

2. Exclusion

- Articles in non-refereed journals and reports on VW SL unrelated to healthcare education;
- Articles published on VW SL prior to 1999 unless seminal literature;
- Secondary data unrelated to healthcare education;
- Written in non-English languages.

A Boolean approach linking key words from the databases and the secondary sources produced the following data (Figure 1).

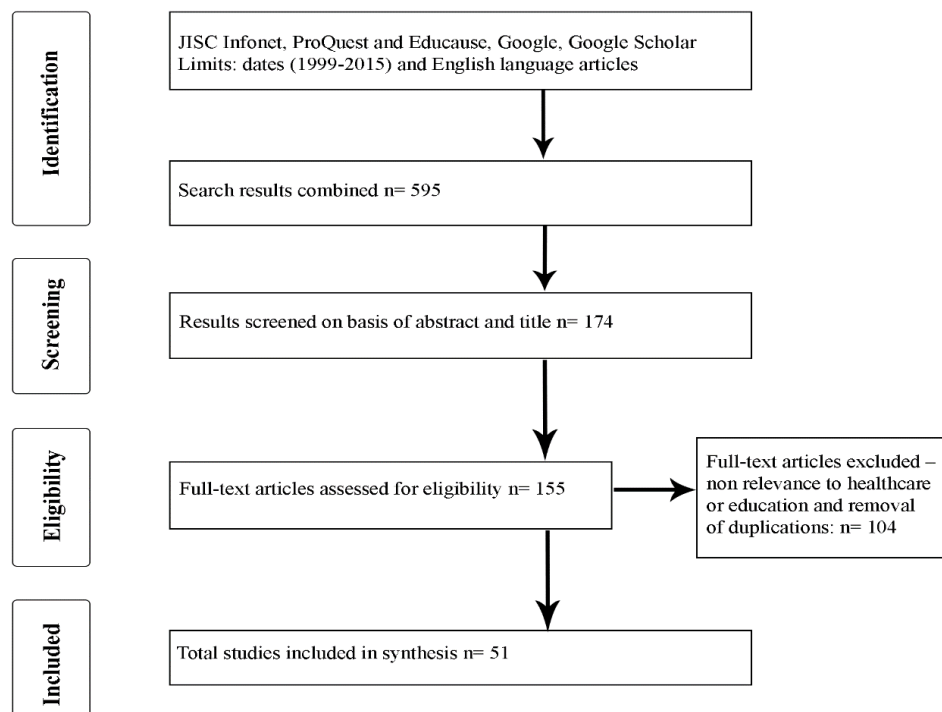


Figure 1: Prisma Diagram VW SL search selection process

The selected articles were summarized according to relevance along with a matrix of author(s), publication year, method, sample, location, and results. Data analysis used Graneheim and

Lundman's (2004) latent and manifest content analysis to uncover emerging themes. Latent content refers to obvious visible text aspects, whilst manifest refers to the relationship interpretation of the underlying meaning of text. Both latent and manifest content analysis clarified different interpretation levels of the qualitative approach.

The qualitative case study approach used purposive non-probability sampling from a cohort of healthcare educators' undertaking a VW SL course and was conducted using semi-structured interviews with open-ended questions. The interviews lasted up to 20 minutes and questions included (1) What are your perceptions of SL as a teaching resource? (2) What benefits do you think there are for using SL as an educational resource to train nurses and midwives? and (3) What challenges do you think you will face when trying to use SL as a teaching resource into the curricula? The following table summarises sample characteristics (Table 1).

Table 1: Demographic data

Participant data		Male Lecturer			Female Lecturer			Total
Age	Qualification	Nursing (Adult)	Nursing (MH)	Midwifery	Nursing (Adult)	Nursing (MH)	Midwifery	
35 - 64	PhD	1	0	0	1	1	0	3
	MSc	0	0	0	0	0	2	2
	BSc	0	0	0	0	0	2	2
Overall Total:								7

The justification for the small sample size resulted from the numbers attending a VW SL course. Morse (1995) and Patton (2002) highlighted ambiguities estimating sample size for qualitative research to achieve saturation, as there were no published guidelines. Casewell (2007) and Yin (2009) state case studies are challenging to categorize citing four to five cases, and six cases respectively.

The Institute for Learning University Ethics Committee granted ethical approval for this study.

3. Literature Review Findings

The literature review analysis highlighted the following emerging themes and subcategories: Theme 1: Knowledge of SL to support teaching and learning, with subcategories: Professional understanding of SL; Technological challenges of supporting teaching and learning. Theme 2: Awareness of the benefits and challenges of using SL in the healthcare curricula, with subcategories: Dealing with the unpredictable; Identity, presence, addiction and reluctance; Theory and Practice; confidentiality and professional fitness (Figure 2):

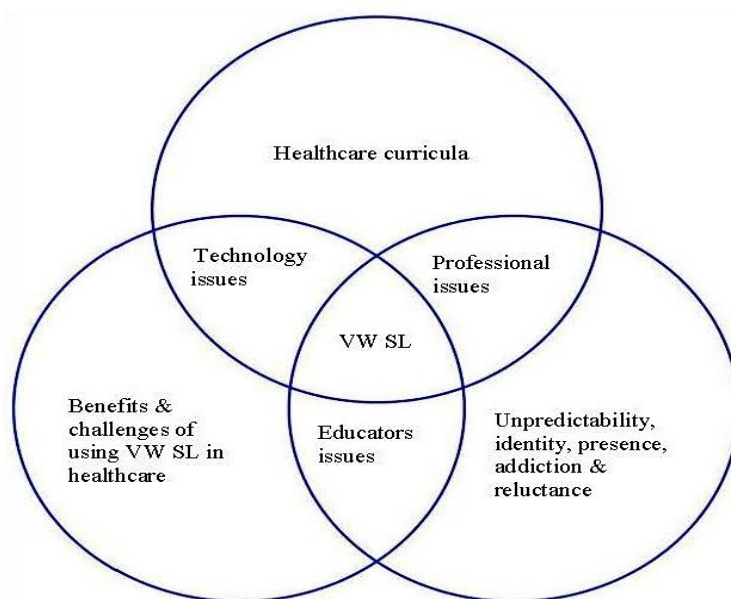


Figure 2: Diagram of VW SL emerging themes

3.1. Theme 1: Knowledge of SL to Support Teaching and Learning

Errington (2004) suggests exploration of educators' knowledge of SL prevents misperceptions about its pedagogical value as an educational technology. Calongne, (2008) adds that SL combines content and activity to support learners through auditory, visual, and kinaesthetic methods. Furthermore, Thompson (2008) and Belei, Noteborn & De Ruyter. (2009) assert SL offers educators the opportunity of providing immersive learning approaches by integrating simulation and real-life scenarios so students can explore practice options. To instil pedagogical change Calongne (2008) recommends implementing new technologies to raise technological awareness, scenario development, and to instil assessment and evaluation strategies. Furthermore, Thackray, Good, & Howland, (2010) suggest changing teaching practice by implanting scenarios that embrace student experimentation so they can discover solutions without fear of real-life consequences.



Figure 3: Second life Stomach Museum

Another dimension offered by Jarmon (2009) outlined “embodied social connection” (p. 5) and immediacy of social co-presence as an advantage of SL. This interconnectedness and cooperation is central to integrated healthcare provision. Skiba (2009) highlights SL as a useful teaching resource for educators as, “[...] users interact and construct knowledge” (p. 156). The importance of how students construct and use knowledge to develop skills is evident to educators in student evaluations. In this instance, student evaluations highlighted limited opportunities to understand clinical skills before undertaking clinical placements and their fearfulness of making mistakes with patients. Savin-Baden (2010b) contends immersion into SL scenarios promotes emotional engagement and improved learning, for example “The Stomach Museum” (Figure 3) provides an interactive three dimensional illustration that may be useful to students learning about human anatomy and physiology or nutrition (Second Life, 2011). Conversely, overexposure to SL scenarios runs the risk of lowering empathy levels through cognitive desensitisation, but simultaneously offers the opportunity to learn from mistakes and raise awareness of best practice outcomes. Savin-Baden (2010b) claims SL scenarios have the potential to minimise fears as, “Simulations are very effective for trial and error - where skills can be gained through practice [...] across contexts.” (p. 56) Bogardus Cortez (2016) and Thackray et al., (2010) concur stating SL offers opportunities to practice healthcare procedures without risk.

3.1.1. Professional understanding of SL

Camargo (2007) stresses the importance of SL training and support to enhance take-up and avoid resistance to change, while Galik (2008) recommends alignment with management processes to promote its value and educational benefits to educators. Ball and Pearce (2009) and Savin-Baden (2010a) highlighted how SL enabled students to learn and reflect on their practice through trial and error learning. Savin-Baden (2010b) suggested educators' allocation of avatars to students to remove potential peer pressure, and Ellaway and Topps (2010) suggest that anonymity increases interactive participation.

3.1.2. Technological challenges of supporting teaching and learning

Baylor and Ritchie (2002) outlined the need for appropriate training for immersive environments to aid learning, “[...], technology will not be used unless Faculty members have the skills, knowledge and attitudes necessary to infuse it into the curriculum” (p. 4). O'Toole (2006) added another dimension around age profiling citing younger students found SL easier, and Lamont (2006). Lamont (2006) states, “The biggest obstacle to [Virtual World] Second Life taking off is the learning curve involved. If you are not ‘Net savvy or game savvy’, be prepared for a very frustrating experience” (p. 1). Anderson (2009) highlighted the need for educators' to recognise the steeper learning curve for older students. Wood (2010) concurs, claiming older students are more likely to question the validity of such a technology and be more apprehensive about using it. In terms of the staff profile, Jegede, (2009) noted older educators were less at ease with ICT and SL hence staff age profiling was needed to promote learning and engagement. Many educators are computer literate but not necessarily experts in online teaching to prepare students for the new learning environment. Additionally, Carr, Oliver & Burn (2010) suggest students had trouble due to their lack of confidence in technical abilities, knowledge of the equipment and time constraints.

Additionally, Broadribb, Peachy, Carter & Westrap (2009) outlined security issues arising from using University and NHS systems and the need to maintain firewall requirements for data protection. Protecting patient information and technology systems within the NHS is essential in meeting privacy and confidentiality of personal information, but the unintended consequence is that access to data for functional usage is restricted. They also outlined the need for investment in high quality graphics cards so SL scenarios could be utilized on campus computers. Galik (2008) asserts SL requires technology, bandwidth, and financial input and poses difficulties in times of financial

crisis in Higher Education and National Health Service sectors. Atkins and Caukill (2009) stress challenges for individuals living in remote areas with slow Internet access and Sant (2009) concurs, "As with any other synchronous communication over the Internet, lag or signal delay is a serious problem that can get in the way of planned events and hinder the execution of live online performance" (p. 146). Atkins and Caukill (2009), and Hewitt, Spencer, Mirliss, & Twal (2009) raised concerns around operating system compatibility. Galik (2008) claims management awareness of the long-term benefits of technology needed an emphasis on human and financial levels for it to become an invaluable teaching resource. Love Ross & Wilhelm (2009) concur noting the funding for such projects is often missing within HEIs. Hence to be successful more work is required on the infrastructure and management of these technologies as, once installed, maintenance of a SL environment becomes relatively inexpensive (Thackray et al., 2010; Savin-Baden, 2010b).

3.2. Theme 2: Awareness of the Benefits and Challenges of Using SL in the Healthcare Curricula

There were various pedagogical advantages cited around understanding SL and its educational value as outlined by Errington (2004) and Savin-Baden (2010a). However, to achieve this Heiphetz and Woodill (2010) and Savin-Baden (2010b) explain that establishing a viable SL system requires experienced technologists to train the trainer. Aldrich (2009) and Thackray et al., (2010) state educators need guidance, tutorials, and a code of practice to teach students SL protocol, before engaging students as peer guides. Furthermore, Molka-Danielsen (2009) outlined differences in students' technological backgrounds and the necessity to provide user support roles. Lu (2011) concurred stating the need to provide students with individualized assistance. Hence, implementation requires technical training, plus continuing learning activities to support success.

3.2.1. Dealing with the unpredictable

Turkle (1999) highlighted problematic dimensions of online identity and autonomy within SL as, "*Identity comes to be thought of in terms of multiplicity and flexibility*" (p. 643). Salmon (2003) suggests that anonymity associated with eLearning led to students flourishing, especially those normally quiet in traditional teaching environments. Being able to deal with the unpredictable to manage the class is important to educators (Oliver and Reschly, 2007) as they have legal and ethical responsibilities towards students when using SL (Bugeja, 2007). Calongne (2008) claims students are rarely anonymous, despite their use of aliases within SL as they have a shared sense of community to complete their work. Gorini et al., (2008) suggested,

Compared with conventional telehealth applications such as emails, chat and videoconferences, the interaction between real and 3-D virtual worlds may convey greater feelings of presence, facilitate the clinical communication process, positively influence group processes and cohesiveness in group-based therapies, and foster higher levels of interpersonal trust [...] (p. 6).

Collins (2008) cites difficulties around technical hurdles in securing identity and authenticity. While Richardson and Molka-Danielsen (2009) assert there are no widely available ways to establish an individual's identity online. However, digital mechanisms can identify students through student numbers to verify their in-world identity thus enabling a matchup of avatars with real-life identity for assessment purposes. Nevertheless, Richardson and Molka-Danielsen (2009) question the validity of in-world assessment due to identity fraud possibilities. Consequently, educators need control mechanisms in place to adhere to ethical guidelines (Carlowe, 2009; Dudeney and Ramsay, 2009; NMC, 2011). Burke and Stets (2009b) explain, "[...] understanding the shifts and changes of identity in the context of teaching in Second Life and the impact that these are having on staff roles have not yet been explored in-depth" (p. 74). Furthermore, privacy issues are resolvable by restricting public access through encryption, usernames, and password allocation within HEIs (Savin-Baden, 2010b).

3.2.2. Identity, presence, addition, and reluctance

Concern expressed by Savin-Baden (2010a), around online identity involved the choice of an avatar: "It is noticeable that almost everyone chooses to be young and beautiful in [Virtual World] Second Life" (p. 59).

This is significant as identity-related issues revolved around the length of time students spent on changing their appearance and image within SL, rather than on using the system as a learning resource. Dev, Youngblood, Heinrichs & Kusumoto (2007) suggested the use of SL role-play scenarios aided development of decision-making processes and enabled effective learning and transferability into real-life experiences. According to Johnson (2010) and Love et al., (2009), the advantages and challenges of online identity include students' self-awareness, personal image (their avatar), attitudes to 3D simulations, and non-participation. The issue of mistaking self-identity with online identity also arose in literature, for example, Kelly (2004) suggested individuals could suffer from Internet Addiction Disorder (IAD). However, Thackray et al., (2010) claimed the number of students becoming over-involved in SL for educational purposes was minimal.

Belei et al., (2009), Ball and Pearce (2009), and Savin-Baden (2010b) highlighted workload pressures relating to setting up and maintaining a new teaching environment and keeping up to date with continually changing technologies. Anderson (2009) and Wood (2010) questioned the value and feasibility of SL as a teaching resource, while Thackray et al., (2010) suggested educators remained reluctant to explore its potential because they were unsure of its pedagogical value.

3.2.3. Theory and Practice; confidentiality and professional fitness

Concern around breaches of confidentiality was prominent when dealing with patient safety and educators being unsure of surveillance procedures as breaches lead to automatic assessment failure and raise fitness to practice issues. Carlowe (2009) stresses the consequences of confidentiality breaches on social networking that can result in disciplinary action and professional deregulation, even if breaches occur when the nursing and midwifery students are either on or off duty. These aspects are important as breaches, before or after professional qualification, could bar them from registration as the Nursing and Midwifery Council (NMC, 2011) regulatory body sets strict parameters on standards of conduct on social networking sites. Educators, therefore, need to emphasize to students the consequences of inappropriate online discussion during and after their professional training. Murray et al., (2008), Aldrich (2009) and Savin-Baden (2010b) suggest SL usage as an additional teaching resource, for example in medical education, and not as a replacement for real-life clinical placements.

4. Interview Findings

Conclusions from the literary themes and the educators' qualitative data were consolidated and further synthesized under two overarching themes. Theme1: Knowledge of SL to support teaching and learning. Theme 2: Awareness of the benefits and challenges of using SL in the healthcare curricula.

4.1. Theme 1: Knowledge of SL to Support Teaching and Learning

In terms of the theme knowledge of SL to support teaching and learning the respondents' perceptions of it as a teaching resource concurred with those of Errington (2004), Calongne, (2008), Thompson (2008), and Belei et al., (2009) by highlighting SL's appeal and flexibility in meeting student needs, "Colourful multimedia engages them. It's not just [Virtual World] Second Life; other tools can have that same appeal to that generation" (R1).

In its ability for continuing professional practice, “You could put it into programmes at different points” (R3).

They also discussed the need to introduce new technologies to implement pedagogical change as outlined by Calongne (2008). They also recognised the need for upscaling their technological awareness to develop suitable scenarios as noted by Thackray et al., (2010) to explore practice development opportunities.

It embraces new ways of working, “It could increase the reputation of a University as being up to date with technology and not lagging behind” (R5).

It enables exploration of new experiences, “They learn in an innovative way they may not have experienced before” (R7).

Respondents suggested it was a way to embrace: Jarmon’s (2009) embodied social connection dimension; Skiba’s (2009) notion of knowledge construction and usage; Savin-Baden’s (2010b) emotional engagement in learning; and Thackray et al., (2010) risk aversion practice.

“You could use it for clinical procedures; practice without exposure [...] gain more confidence prior to going into clinical practice” (R2).

“It would provide an environment where students would feel safe” (R3).

These statements acknowledge SLs teaching resource usefulness in increasing student practice skills and confidence in a risk-free environment.

Regarding professional understanding of SL some respondents’ highlighted resistance to changing tried and tested teaching methods to make way for new innovative approaches. Solutions offered by Camargo (2007) stressed the importance of training, while Galik (2008) recommended management interventions to outline its educational benefits for students and staff. All the respondents understood SL processes, as being a virtual environment where members created profiles, avatars, and settings. “It’s a virtual environment where you [...] create an avatar [...]” (R1). “It’s like a virtual town; you create your profile [...]” (R2). “It uses characters and different/changing environments” (R3). “[...] people can create their own avatars, be what they want to be” (R6).

In relation to benefits for using SL as an educational resource to train nurses and midwives, one respondent recognised its usefulness as a teaching resource for critiquing practice, “An artificial environment online, used as a teaching tool, and can replicate issues seen in clinical environments and within educational institutions” (R7). Additionally, the respondents suggested a clinical skills teaching environment within SL could improve skill sets and bridge theory/practice gaps and this concurs with Ball and Pearce’s (2009) and Savin-Baden’s (2010a) reflections on trial and error learning. Continual professional development in nursing and midwifery is an essential part of quality assurance requirements and the use of SL has the potential to influence the best practice.

Respondents raised aspects of confidence development and risk taking opportunities through using SL avatars to protect students’ real identities and avoid peer embarrassment, as summarised by two respondents, “It gives more confidence to talk and interact” (R3), “It’s a safe environment to explore issues without peer pressure” (R7). This concurs with Savin-Baden’s (2010b) suggestion for educators to allocate avatars to students to remove potential peer pressure. Other respondents felt SL increased participation and development of transferable skills for clinical interactions, hence linking into Jarmon’s (2009) social connection theory. Another aspect highlighted its ability to promote student confidence in those less likely to engage in face-to-face classroom interactions. Ellaway and Topps (2010) suggest that anonymity increases interactive participation and respondents recognised SL as an interactive anonymous teaching environment to, “[...] facilitate students’ learning” (R1). “[...] make eLearning more fun and engage students with it” (R2), through, “A virtual learning tool with characters” (R3). Respondents felt it facilitated competency in their pedagogical style to deliver

SL practice scenarios by building confidence, as outlined in the following quotes, “Being able to speak within [Virtual World] Second Life is a great opportunity within eLearning. It’s more natural communication and can suit learning styles of mature students or those who lack confidence” (R4). Moreover, “A virtual world, with avatars, [...] some HEIs use for teaching” (R5).

The majority of respondents compared SL to learning through motivational play, but one widened this to bring in issues around different contexts and age concepts of social networking, “You could interact with people [...] travel to all sorts of interesting places [...] it will appeal to generations brought up with technology, who interact with multimedia and gadgets” (R1). This concurs with O’Toole’s (2006) assertion that younger students find SL easier, as well as suggestions from Lamont (2006), Tiffany and Hoglund (2014) and Anderson (2009) about the need for educators to recognise the steeper learning curve for older students. Additionally, Jegede (2009) and Wood (2010), observations that older educators were uncomfortable with ICT and SL, and older students being more likely to question its validity, was echoed by the respondents. One specifically reaffirmed age related student concerns, “[...] their first experience of IT and digital environments. You have to remember that 25% of pre-registration students are approaching the age of 40” (R4).

The technological challenges of supporting teaching and learning by introducing SL into the curricula raised a number of concerns. For example, there was an expectation for nursing and midwifery students to use computers to access Sakai (virtual learning environment) for their assignments, but at the same time are unable to access computers with high quality graphics and fast broadband service from home. Thus, compromising students living in remote areas, because of inadequate Internet service leading to access problems and computer lags that interfere with group discussion continuity.

The technology system compatibility and broadband affordability requirement outlined by Atkins and Caukill, (2009), and Hewitt et al., (2009) and firewalls (Broadribb et al., 2009) were reflected on, as were issues of equality and access, “The firewall within the NHS would restrict access [...]”. Students’ operating systems and ISP would need to be compatible” (R4). “Some students may be poorer than others and won’t be able to afford broadband, which is needed for [Virtual World] Second Life, or they don’t live in an area where there is a broadband provider” (R5). “Ensuring that all students have the requisite computer access [...]” (R6). Respondents raised concerns about overcoming challenges of ICT skills to enable adoption of new technologies for teaching and learning. These concerns highlighted financial issues, lack of technology familiarity, as well as difficulties in Internet access and broadband costs. Respondents cited these factors combined with unrealistic expectations led to student anxieties, “You can’t add too many things. There could be a low knowledge base/experience. You could exclude someone because of his or her skill set. They are not used to Facebook or online chats [...] may have problems creating their avatar” (R4). “Student IT skills may be a problem. The digital generation will be OK, but can we teach the older generation? If students are incapable of finding something on Sakai, what chances do they have with [Virtual World] Second Life? It is all down to the ability of the educator” (R5). “It could cause anxiety for some students [...] I guess we could get around that by making the use of [Virtual World] Second Life optional” (R6). Lamont’s (2006) learning curve, alongside Galik’s (2008) financial implications and expectations of nursing and midwifery students to learn a variety of different systems, could be overwhelming and lead to student attrition.

Half the respondents raised issues of financial and manpower costs associated with setting up and maintaining SL, as funding, in the current economic climate, may negate its implementation. One respondent asked, “What about the cost implications?” (R2). While another suggested it could be a loss leader for future benefit, “Management will see it as a costly tool, but it’s only initial costs. The benefits come later” (R5).

4.2. Theme 2: Awareness of the Benefits and Challenges of Using SL in the Healthcare Curricula

In terms of balancing benefits and challenges all respondents viewed SL as 'another teaching tool' with potential benefits for staff and students, with as one specifically stating it was more than simply engaging students' learning through interactive multimedia learning scenarios, "[...] the benefits are not around [Virtual World] Second Life itself. It's another tool for teaching" (R1).

Respondents concurred with Errington (2004), Slachta (2018) and Savin-Baden (2010a) concerning pedagogical advantages as evident in respondents' comments around classroom management, student feedback, and its versatility to being adapted to different learning styles, through distance and visualisation processes, as follows, "Not being in class and having to discipline students who don't want to be there" (R1). "[...] it's not threatening, they all learn in different styles" (R2). "It provides a visual aspect to learning [...]" (R3). "[...] you can upload presentations is very useful" (R4). Additionally one respondent highlighted the importance of facilitator training, "The environment will only be of any benefit if the facilitator can interact with it. We need to make it interesting for them" (R1). Respondents thought SL was advantageous for a certain generation of students, thus reflecting O'Toole's (2006) position on younger generations being more technologically astute. They also noted the advantages of learning through games, enjoyment of interactive learning, "It's not like learning [...] it's not structured. It's a hobby, a relaxation" (R2). Several respondents referred to savings in time and money, "...able to access information and teaching material without having to travel" (R1). "[...] it's re-usable, for long distance learners, a wider audience. You can therefore teach more students" (R3). "[...] save with travel expenses and time if you hold an online meeting within [Virtual World] Second Life" (R4).

The respondents considered they had management skills for Sakai sites, but lacked SL navigational knowledge and this reinforces the assertions by Aldrich (2009); Thackray et al., (2010); Savin-Baden (2010b) and Heiphetz and Woodill (2010) around the need for technologists to train the trainers so they are able to offer specialist support advice to students. Hence, implementation requires technical training, plus learning activities to support success.

4.2.1. Dealing with the unpredictable

Respondents were concerned about being unable to identify or deal with students' potential in-world problems, especially with those unprepared for the unexpected, as highlighted by this respondent, "With Blackboard you can monitor student participation [...]. You can therefore spot those who struggle and fall behind. I have my doubts about being able to do that in [Virtual World] Second Life" (R4).

The problematic dimensions of online identity outlined by Turkle (1999) and Salmon (2003) were recognised by respondents but they also referred to the phenomenon of 'lurkers' (non-participating students' in online sessions) and suggested this was due to fear of posting mistakes and being open to criticism in the SL environment. They claim that making a mistake in a face-to-face conversation is different to online mistakes as once posted online, was there forever. As Oliver and Reschly (2007) and Bugeja (2007) pointed out dealing with the unpredictable is an important aspect for educators in terms of their responsibilities for students using SL (Bugeja, 2007).

4.2.2. Identity, presence, addition, and reluctance

Respondents thought identity and avatar design were major issues around self-awareness and overt sexualisation of avatars. One respondent stated, "You can choose your colour, size. It could promote self-analysis, self-awareness but not in a positive way" (R3). While another stated, "Avatars I've seen in [Virtual World] Second Life have often been overtly sexualised [...] an uncomfortable

pretence about people's true nature" (R6). Another respondent hypothesized this could result a false sense of security as, "It may give the students a freedom and a false sense of confidence. It could be a good or bad thing" (R3). Role-play unpopularity was an issue amongst students, "We [...] have to complete role-plays, something that not many people seem to be keen on" (R6). Three respondents claimed students could be anxious and suspicious in 3D immersive environments, "Students tend to be paranoid about adding comments on forums. They are more nervous about getting it wrong and looking stupid" (R3). "It could cause anxiety for some students" (R4). "Some students might be quite uncomfortable with the simulated realism [...]" (R6).

Respondents acknowledged both advantages and challenges of online identity and recognised the psychological with one commenting on how SL could produce unforeseen consequences such as underdeveloped social interaction skills, "I have a colleague who finds it much easier to interact with people in Second Life than in real life" (R4). Another concern expressed by the respondents was that individuals could mistake immersive environments as 'the real thing' and represent themselves through their avatars. A respondent referred to this as the power of illusion preventing individuals from distinguishing between real and unreal during immersion in SL and the medical consequences, "People who could not switch back to real life [...] they could run into trouble if they go to the extreme" (R4). The importance of finding a balance between the real world and virtual worlds was also highlighted, "If the user is not strong, they could not survive very well" (R5).

Workload pressures were highlighted by Belei et al., (2009), Ball and Pearce (2009), and Savin-Baden (2010b), and these concerns were replicated by respondents involved in setting up and maintaining a new teaching environment and keeping up to date with continually changing technologies, "Things change so quickly, you're always playing catch-up" (R4). "You have to constantly keep up to date with technology" (R5). "In reality, setting up virtual environments is incredibly taxing. It requires planning, expertise and hard work, as well as significant time to set up and maintain such a site" (R6). Evidence from literature also questioned the value and feasibility of SL as a teaching resource (Anderson, 2009; Wood, 2010), and some respondents held similar concerns, "I'm not sure whether the same things could not be achieved with the use of real actors" (R6). "Students may perceive [Virtual World] Second Life as a cheaper and more convenient alternative [...]. They think we can't be bothered to get patients in [...]. They may question how valid the whole thing is" (R7). Half the respondents expressed reluctance to using SL as a teaching resource believing it detracted from educator/student interaction when teaching clinical skills. One respondent's reluctance towards using SL in their teaching was because they wanted validation of its value from other users first, which reflected Thackray et al.'s (2010) concerns about educators reticence of using SL as a teaching resource.

4.2.3. Theory and Practice; confidentiality and professional fitness

Respondents outlined issues around controlling confidential information and its impact on fitness to practice. This concern revolved around potential breaches of confidentiality involving patient safety and educators being unsure of surveillance procedures, as expressed by one respondent, "It's data in a computer even if it's protected I don't know how that would be managed. Someone emails somebody about something. Even if it's deleted [...] Computers don't delete data" (R1). Breaches in confidentiality lead to automatic assessment failure and raises fitness to practice issues. Respondents thought SL posed significant challenges and risks that required firm management protocols to avoid breaches. An example by one respondent cites interaction difficulties, "It might encourage an exchange of information that shouldn't happen" (R3). However, these exchanges could occur in paper-based systems as well as other online environments such as Skype, Sakai and Facebook. One respondent's concern was based around classroom management and the ability to supervise students, "I'd worry about policing it [...] I can't supervise it like I can face-to-face" (R3). This highlights issues around monitoring especially around the possibilities of

confidentiality breaches and the professional consequences of students participating in SL. One respondent highlighted the need for more clarification around social networks, especially in light of NMC guidelines on professional behavior, "What would be accepted on site? Should we be encouraging more social networking?" (R3).

Another concern raised was whether SL would replace the current HEI Centre for Clinical Skills training, "A threat would be the idea of losing the real world context of midwifery education. A simulation should not replace the real world experiences that students can and should be having" (R6). Some respondents viewed SL as a potential threat rather than a blended learning approach. Other respondents perceived SL as an effective resource to enable students to practice processes prior to real-life clinical practice. One respondent referred to SL usage as a nursing and midwifery training resource to bridge gaps through illustrating certain procedures and illnesses. Two respondents referred specifically to labour and ventilation processes, "[...] use [Virtual World] Second Life to look at the process of labour: the descent of the foetus during labour, the cervix dilates, the baby rotates down the pelvis [...]. Those complicated processes [...] show it in 3D [...] help students [...] help women more in labour [...] they could have a better understanding of what they need to do for the women" (R1). "You could explore different ways you ventilate patients" (R7).

Two respondents highlighted SL as useful in assessing student competence in recognising certain illnesses they may not encounter in practice, "You could assess a competency that the students can't always achieve in practice" (R2), while another respondent suggested it could help, "Identify hazards, especially in a health environment" (R7). Additionally respondents felt SL could be helpful in integrating theory and safe practice, "I'd use it for anatomy and physiology because it would be safe" (R3). "Body organs: the way they interact, it would be a nice way to see how they interact. It takes you close up" (R7).

While findings illustrate some enthusiasm towards using SL within the University's clinical skills, they also suggested it could be effective in other areas, such as softer skills and group work, a theory supported by Thackray et al., (2010). When asked about how they would use SL in their teaching, respondents stated they would use it for self-directed learning or group activities, "I'd give the students some self-directed study prior to a lecture to get them to think through processes. I'd use it as a group activity, set scenarios" (R2). "You could use it as a discussion forum" (R3). "I'd set some questions and students could answer them/research them online. It really helps with the lecture when students have done some pre-session work" (R4). Further softer skills development approaches could be, "The opportunities of using a system like [Virtual World] Second life is the possibility of engaging and interesting virtual learning, where 3D simulations could be used remotely (or in a classroom setting/using a computer lab) to teach students specific [...] communication skills. There is a potential for replicating realism, using simulated patients/actors" (R6).

Galik (2008) and Calongne (2008) stressed the need for an implementation strategy to demonstrate its potential. This aspect is pivotal as although the respondents were enthusiastic about the development of SL, they highlighted confusion between SL and other digital technologies.

5. Discussion

The use of SL as an educational resource in healthcare is challenging but could have significant benefits if integrated correctly into the curricula. According to the literature and respondents' findings, there is confusion around the use of SL in eLearning environments and social networks. These perceptions affect educators' willingness to introduce SL as a teaching resource.

Respondents viewed SL as a new teaching resource and expressed concern about its potential impact on their role as educators and on students' learning. These concerns included dealing with the

unpredictability and intrusion by outsiders in teaching scenarios. Additionally, there was a concern around student addiction to the immersive environment, as well as difficulties around controlling conversations that might affect professional suitability. Interview evidence confirmed that educators saw the value in using SL as an eResource so that students could practice scenarios or clinical skills at their own pace, without fearing consequences of mistakes or conforming to peer pressure. Respondents concurred with Salmon (2003) around the financial and time advantages, although these advantages can also be associated with other forms of distance learning. Other benefits included classroom management issues, especially the discipline of younger students who use Web 2.0 (for example social media Facebook, Twitter, etc.) and 3.0 (such as 3D environments) resources on a daily basis to help them in understanding complex relationships and human interactions (Barassi and Tréré, 2012). These included the interactive and immersive aspects of the environment, the fact that SL makes learning 'fun,' and its appeal to generations brought up with technology. Some respondents implied using colorful multimedia and interactive tools is a necessity to keep younger students engaged.

The main advantage respondents associated with SL was its ability to simulate 'real life' scenarios from medical settings, without risk to patients or students. This confirmed Greenhaw's (2008) claim that SL could be utilized when adopting a behaviorist teaching approach, where students practice procedures until they become competent. Although the research identified educational benefits, it also highlighted challenges such as technological equipment and skill requirements on and off campus. These concerns also focused on accessibility from home, high bandwidth requirements, and recognition of these factors by HEIs management so SL could become an interactive learning opportunity. Implementing effective training for educators is essential for the successful implementation of SL, as this study confirms some educators confused VW SL with other eLearning resources. Some respondents expressed concerns about class control within SL, and replacing real-life practice with simulations, and wasting class time dealing with technical problems instead of teaching. Belei et al., (2009) assert these concerns can be alleviated by staff training, however staff training alone is insufficient, as continuing development in emerging technologies is required, plus the provision of peer support groups, taster sessions, one to one training, and adequate equipment for SL to be successfully integrated into the healthcare curricula.

Respondents identified barriers to investing in a new resource such as time management, training and the need for workload adjustments to implement the teaching resource into lesson plans. They also expressed concerns about the accessibility of SL on and off campus, based on security issues and institutional firewalls, and other barriers such as socio-economic concerns. Therefore, infrastructure changes and acknowledgment of these issues are required to provide educators with the technological expertise and social awareness to support student learning. Furthermore, work was required around online management identity as students often focused on avatar appearance in SL rather than on learning. Richardson and Molka-Danielsen (2009), Wood (2010) and Savin-Baden (2010b) assert educators are providing pre-defined avatars, so the emphasis is placed firmly on the learning experience could resolve these identity issues.

Respondents commented on SL advantages, particularly its ability to offer a safe environment for students to practice complicated scenarios without putting patients at risk and these findings concur with those of Galik (2008); Ball and Pearce (2009); and Savin-Baden (2010b). To integrate SL HEIs have to instill robust training for educators to manage the process, as well as implementing on-going training and support to ensure successful student learning. Consideration of these issues required so SL integration into the healthcare curricula can open up significant theory/practice opportunities.

6. Conclusion

This research took place in the United Kingdom, but replication is possible internationally to discover similarities and differences in SL application. The findings reveal educators had limited SL expertise but recognized its usefulness in bridging the theory/practice gap in nursing and midwifery training. It highlighted educators' confusion between SL and Web 2.0 and 3.0 technologies and recommended raising technological competency. This is because while the educators held professional expertise of care standards in real-life situations, they lacked competency in their pedagogical style to deliver SL practice scenarios. Consequently, even though challenging it is imperative, in an age of rapid technological change, for educators to keep abreast of developments and for institutions to encourage usage and provide structural support to maintain standards. Without these aspects being in situ opportunities for developing critical thinking through SL usage will remain stilted and solutions through problem-based learning scenarios remain underdeveloped.

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