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An Analysis of Nursing Education's Immersion into Second Life, a Multi-user Virtual Environment (MUVE)

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Abstract

Second Life (SL) is a multi-user virtual environment (MUVE) using 3-D modeling to replicate real world settings and experiences. However, little is known of the extent to which nursing education is involved in SL activities. This study used four different search strategies to conduct a comprehensive review of print, blog, web and media sources. Twenty-nine unique nursing communities, groups or educational activities were identified. This study identified a number of barriers identified that made the analysis both difficult and time-consuming.
Two main categories emerged: explorers and developers. The explorers used SL for a support group, networking, and uncovering health-related sites. The developers were associated with land ownership and were involved in distance learning and simulation activities. Seven unique simulations for nursing education were identified. Given the number of registered users, the number of universities currently involved in SL, the availability of health-related sites for consumers, and the emerging interest in telehealth in SL substantial growth in the use of SL in nursing education is likely.

Keywords:

Nursing education, Computer simulation

Introduction

A variety of Learning 2.0 technologies have emerged over the last few years as adjuncts to both traditional and distance learning in nursing.[1] One of these technologies is a multi-user, virtual environment (MUVE). Some of the purported advantages of student engagement in MUVEs include active interaction, role playing professional skills, and increased competency in learning a new skill. [2] The degree of immersion and interactivity available in MUVES allows for a greater sense of presence which is believed to contribute to meaningful learning. [3, 4]

Presence is defined as "the subjective experience of being in one place or environment, even when one is physically situated in another".[5] In other words, participants feel as if they are actually in the virtual environment rather than where they are physically. In contrast, immersion refers to the sense of being enveloped by, included in and interacting with the environment. While involvement is "a psychological state experienced as a consequence of focusing one's energies and attention on a coherent set of stimuli or meaningfully related activities and events". [5} According to these authors, both immersion and involvement are required to experience presence.

At this time, one MUVE that is being used for a wide range of educational and healthcare activities is Second Life (SL). Second Life, developed by Linden Labs, has been available over the internet since 2003. Currently, there are over 16 million registered users with over 300 universities teaching courses or conducting research in SL. [6]

Upon entry into this virtual world, each participant creates a free, customizable avatar. Communication is via text messaging or by voice. Avatars navigate SL by walking, flying or teleporting. Real world entities can be replicated in SL through 3-D modeling and can provide simulated learning experiences that are impossible to achieve in the real world or are considered to be of high risk.

While nursing education has long used simulation part of its repertoire of learning activities, little is known of the extent to which nursing education is immersed in Second Life. This study surveys and categorizes the range of nursing education-related sites in Second Life.

Methods

To explore this area, four different searches were conducted. First, the term nursing was entered into the search engine in SL. The SL search engine used the key word "nursing" to search region names and descriptions, group names and descriptions, and individual avatar profiles. In addition to this search strategy, the author conducted additional searches in Google Scholar, Google and PubMed to identify additional nursing education activities through a comprehensive review of print, blog, web and media sources. These latter searches used the terms "Second Life" combined with "Nursing Education". Unique nursing educational activities were identified. Next, all relevant materials, including visits to SL sites, were reviewed to identify associated region or island names, sponsoring agencies or institutions, funding sources and descriptions of educational activities employed or proposed. Catego-

ries were developed that grouped the results based on their primary purpose.

Results

Table 1 displays the search results. Sixty-six percent (66%) of those were identified using the SL search engine. Of the 141 listings identified by SL only 21% were related to professional nursing. Ten (10) additional listings were identified by a Google search. Both Google Scholar and Pub Med did not identify any additional listings beyond what was obtained by SL and Google.

Table 1 – Search Results

Search Engine	Results	Unique Listings
SL	141	19
Google	6690	10
Google Scholar	92	0
PubMed	4	0

Of the 19 listings identified by the SL search, one (5%) indicated a region or island and 14 (74%) were group pages not directly linked to the corresponding region or island in SL. Descriptions contained in individual avatar profiles lead to an additional 4 unique listing (21%). Again, individual profiles were not associated with a SL region.

Initially, 32 sites were identified. Three were found to be members of a consortium and those sites were included with the listing for the consortium. Of the 29 unique institutions or groups identified as using SL for educational activities in nursing, the vast majority (83%) were American. Of the remaining 5 sites, 3 were located in the UK, 1 in Canada, and 1 in Australia.

The 29 unique listings were classified into 2 main categories: explorers and developers. In the larger, developer set (N=18, 62%) the group was associated with a region in SL. However, the 38% of those sites identified, were not linked to given region in SL. In addition, each entity in this latter group was identified in only one of the four searches conducted. Most (64%) were identified from SL group pages and 4 were identified through the Google search.

Those entities not associated with a region in SL, tended to be explorers of SL. They used SL for one of 3 reasons: support (N = 1), networking (3), or nursing educational activities (6). The one support group identified was Nursing Students of SL whose purpose was "to help with NCLEX/HESI questions, critical thinking scenarios, or advice for performing in clinicals". Other educational activities described by these explorers in SL included discovering healthcare resources in SL (Treasure Valley Community College/TVCC), possible use of a paramedic simulation in the curriculum (University of Nottingham/UK), or proposing to develop a virtual poverty simulation in SL for a community health clinical (University of Nevada)

Of greater interest in investigating nursing education's immersion into SL was a further analysis of the listings associated with regions or islands in SL. By purchasing land in SL, these groups had a greater financial commitment to, as well as a greater responsibility for developing and implement educational activities.

However, discovering the names of the respective regions in SL was difficult and often required additional searches in SL. Institution and region names are listed in Table 2 with their corresponding Second Life Uniform Resource Locators (SLurl), when available.

Table 2 – Institution and Region Names (SLurl)

Site	Region
1. Ann Myers Medical Center - Sprott Shaw College – Canada (http://slurl.com/secondlife/Hospital/143/194/22)	Hospital
2. Ball State (http://slurl.com/secondlife/Ball%20State%20University/136/135/22)	Ball State University
3. Boise State (http://slurl.com/secondlife/Ball%20State%20University/136/136/23)	EdTech
4. Duke	DUSON
5. Kansas University Medical Center (KUMC)	KUMC Isle
6. Ohio University (http://slurl.com/secondlife/Ball%20State%20University/136/136/23)	Ohio University
7. University of Arizona (http://slurl.com/secondlife/University%20of%20Arizona/128/128/0)	Arizona Island
8. Vanderbilt University School of Nursing and the University of Kentucky College of Nursing	NurSIM4U
9. Washington State Board for Community and Technical Colleges (Tacoma Community College) (http://slurl.com/secondlife/Evergreen%20Island/76/165/28)	Evergreen Island
10. Wisconsin TECHE (U of Wisconsin Oshkosh; U of Wisconsin- Milwaukee) (http://slurl.com/secondlife/Wisconsin%20Tecne/84/80/2)	Wisconsin Tecne
11. Caledonian U. Saltire Centre/Glasgow Scotland (http://slurl.com/secondlife/Wisconsin%20Tecne/84/80/2)	Glascow Caledonian

Table 2 (continued)

12. HealthLink New York (http://slurl.com/secondlife/HealthLink%20New%20York/188/187/25)	HealthLink New York
13. Learning Commons for Nurses (http://slurl.com/secondlife/Teaching%2010/128/128/0)	Teaching 10
14. Second Health Imperial College of London (U. of Nottingham – UK) (http://slurl.com/secondlife/Teaching%2010/128/128/0)	UK Virtual Hospital
15. SLENZ/New Zealand Tertiary Education Commission (U. of Auckland) (http://slurl.com/secondlife/Kowhai/148/164/32)	Kowhai
16. Texas State Tech. College (http://slurl.com/secondlife/Kowhai/148/164/32)	TSTC-Commons
17. University of Michigan	Wolverine Island
18. U. of Texas Medical Branch at Galveston	UTMB Alpha - Main Campus

It was interesting to note that 50% of these communities in SL were found in only one of the 4 search strategies used. Most common was an individual or group page in SL, or a Google listing. Both Kansas City Medical Center and the Wisconsin Tecne were found in all 4 search strategies.

Given that land ownership in SL requires annual fees, probable funding sources or sponsors for these various SL communities were of interest. Nearly two-thirds (61%) of these communities were part of a wider university endeavor. Seventeen percent were supported or developed using grants. The remaining 4 communities were equally divided between government and consortia sponsorship.

Materials returned from the 4 search strategies that described nursing educational activities in these 18 SL communities were reviewed. Most referenced some type of distance learning activity that created a greater sense of presence. Most notable, was the YouTube video describing Duke University's School of Nursing distance learning for informatics students. [7] Students attended presentation in SL, gave poster presentation, and interacted with other students or communities in SL.

Four SL communities did not provide adequate descriptions of the nursing educational activities occurring within their region. Another one third (N=6) of these communities vaguely described simulated patient encounters or a virtual simulation lab experience. However, visits to these SL sites were either restricted to members only or these simulation areas could not be located on the respective regions.

The remaining 7 SL regions did provide more information that described unique nursing–related educational simulations. Table 3 lists these unique educational activities developed or proposed.

Table 3– Unique Nursing Educational Sims in SL

Site	Unique Uses
Ball State	Health and nutritional histories using volunteers and standardized client avatars.
Kansas University Medical Center	Healthcare Informatics/ Operating room for Nurse Anesthesia students proposed
University of Arizona	Border Crossing Sim
Vanderbilt University School of Nursing	Sims to teach nurse educators how to develop and implement simulations
Washington State Board for Com. and Tech. Colleges	Emergency Room Sim
Second Health Imperial College of London	Detailed Hospital Sim; Paramedic Sim
SLENZ	Post-partum Hemorrhage Sim

Discussion

Investigating nursing education's immersion into SL was both difficult and time consuming. Four different search strategies were needed to fully identify and describe participants and activities in this environment. The professional literature was sparse. Searching within SL resulted in twice as many sites for non-professional nursing listing. It was interesting to note that the SL search engine did not distinguish between "Nursing" (usually related to the profession of nursing) and "nursing" which was related to activities such as such as breast feeding and animal care. Attempting to locate relevant SL communities or activities would be a daunting task for nurse educators new to this environment.

The inability to locate and retrieve pertinent information related to nursing educational activities in SL, limits its adoption and likely underestimates nursing's immersion in this environment. A science-related wiki maintained by SL residents [8] includes a tag for nursing. However, only one site, the Ann Myer Medical Center, was listed that was related to nursing education. As with all wikis, updating and adding pages is a personal endeavor.

Another barrier to identifying nursing education's immersion in SL is the lack of any standardized template as to what to include in descriptions of regions or groups or in individual profiles. A consensus within nursing of users of SL as to a standardized approach to listing information would vastly improve search capabilities. A template similar to the one used

by the SL Health y wiki [9] could be adopted and might contain the following information.

- Group or SIM Name
- Purpose
- Contact Information
- Educational Activities Provided
- Target Audience
- Open to All or Closed (except to Members)
- Special or Unique Features
- Related Blogs, Wikis and Other Outworld Content
- Tags/Keywords
- Additional Comments

Furthermore, even if a SL nursing simulation or community was identified in this study, it was very difficult to uncover where in a given region the activity took place. This was due to either the community being closed to non-members or lack of information that directed visitors to nursing educational activities. In addition, many simulations could not be observed as synchronous participation by a group is required. Machinimas, such as those found on YouTube videos provide greater insight into select simulations.

It is not surprising that most of the SL communities identified in this study relied on institutional, governmental, or grant support, given that land ownership and development in SL is not trivial both in terms of costs and the learning curve. The resources needed to develop, maintain, and improve nursing educational communities is extensive. Therefore, it is likely that these or similar funding models will continue.

Using SL to explore healthcare resources is a valuable learning activity for nursing students. The SLHealthy wiki lists nearly 300 sites related to consumer health locations and groups or general health education resources. Many of these are already providing counseling and patient education. In addition there is growing interest in using SL for telehealth. [10-12] All of these reasons indicate that future nurses will likely need to be able to use navigate and interact with others in MUVEs such as Second Life.

Conclusion

Second Life is an environment that can provide valuable educational experiences in nursing. The degree of immersion and interactivity available provides a greater sense of presence, contributing to better learning outcomes.

Identifying nursing educational activities currently available in SL is very difficult. A number of barriers and possible solutions were identified. The difficulty in identifying educational activities in nursing in addition to the challenges of learning to navigate and develop simulations in a 3-D world and the technological requirements required may contribute to nurse educator's reluctance to consider SL as a viable educational tool.

However, since SL has only been available since 2003; the educational experiences identified by this study most likely represent the early adopters. Better identification of nursing education's immersion into SL can assist in the dissemination of this unique environment in nursing. Given the number of registered users, the number of universities currently involved in SL, the availability of health-related sites for consumers, and the emerging interest in telehealth in SL, substantial growth in the use of SL in nursing education is likely.

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