HealthInfo Island: Center of Consumer Health and Medical Information in Second Life

van den Brekel, Guus; Perryman, Carol

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AND OTHER MULTI-USER VIRTUAL ENVIRONMENTS

Edited by LORI BELL & RHONDA B. TRUEMAN

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Edited by

Lori Bell and Rhonda B. Trueman

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HealthInfo Island: Center of Consumer Health and Medical Information in Second Life

Guus van den Brekel and Carol Perryman

Guus: The Second Life Medical Library (SLML) was, in a way, forced into existence by my skepticism and a healthy dose of curiosity. An essential part of my job as the coordinator of electronic services at the Central Medical Library of the University Medical Center Groningen, in the Netherlands, is identifying innovative products and ideas and thinking of possibilities for their utilization in a medical library setting. Because of the need for currency, blogs are more useful to me than journal articles or books. Blogs jump over barriers such as hierarchy, countries, culture, and time. In April 2006, Jenny Levine's blog, the Shifted Librarian (www.theshiftedlibrarian.com), included a post about the Alliance Library System (ALS) Second Life (SL) project. I responded with a question: "Why do we chase after patrons who obviously do *not* want to go to the library in the real world—into the virtual world of a massive online game?" My posting received an immediate response from librarians already active in SL and invitations to investigate before passing judgment. It didn't take long for Namro Orman, my SL avatar, to become acclimated to life as an SL resident. In-world, I soon met librarians Eiseldora and Rain (SL names), who offered me a floor of the SL library for medical and health information. Thus the SLML was born. Looking back, I see that it was their enthusiasm, energy, and openness that eased the transition.

Carol: I've never been a gamer, so SL was a curiosity to me, and not much more. After all, I'm a full-time doctoral student with an emphasis on evidence-based library and information practice! But Lori Bell, a good friend and former coworker (at the OSF Saint Francis Medical

Center in Peoria, Illinois), kept talking about this new and exciting thing. She chose the perfect "hook" with which to pull me into SL— my past history and research in the area of consumer health information behavior. How could I fail to be captivated? So I said yes, thinking I'd be doing the equivalent of staffing a reference desk 8 to 10 hours per week (insert laugh track here). How do you start library services in a virtual world? Well, first you build the library, you create the resources, and you think thrice about every step, questioning existing methods and paradigms and becoming increasingly intrigued by the possibilities.

Guus: Having a space of my own to use as a sandbox in learning the basics of SL—such as using textures, creating notecards, building small objects, and creating easy scripts—was great fun and helped me understand why others were so enthusiastic about the possibilities of this virtual community. When I began my involvement, interaction between the virtual world of SL and the Internet was nonexistent, with the exception of scripts designed to open a web browser window outside the SL environment. Therefore, I determined to try to identify new ways of presenting search results and displaying other web content inside SL.

Unsatisfied with the limitations of in-world displays as simple citations, I took on the challenge of finding ways to enable interaction. The use of nontraditional design, bright colors, and many graphical displays with links to a few consumer health resources was attractive to many visitors. When the SL library moved to its own island, the single-floor medical library department was replaced by a stand-alone building. Growing interest in SL libraries, awareness of a large number of health-related support groups, and the obvious increase in traffic through the SLML sparked ideas that culminated in a grant application, again initiated by Lori Bell, to the Greater Midwest Region of the National Network/National Library of Medicine (GMR NN/NLM). The grant, discussed later in this chapter, allowed the SLML to evolve further into a whole island of its own, HealthInfo Island.

HealthInfo Island: Medical and Consumer Health Information and Wellness

Guus: The SLML is one of the three main buildings on HealthInfo Island. The building itself was constructed by Logann Lombardi (SL

name), an architecture student. As with so much else concerning SL libraries, Lori Bell's support and motivation were instrumental in this new growth. The new medical library has a decidedly nontraditional look, featuring transparent, flexible layers that create an impression of openness and light. It has three floors intended to highlight health displays both inside and on the roof: In a virtual environment, physical boundaries and the weather have no influence. In its current incarnation, the ground floor serves as a showcase of different ways to offer medical information as content in SL. Education and research on medically related subjects in SL will be displayed in the Medical Research Room, while another room houses a breast cancer awareness center. The second floor is used by contractors employed by the National Institutes of Health (NIH) to explore potential applications of the virtual environment, one of many similar collaborative ventures as health organizations explore this new world. Plans for further development of the medical library include displays of historical medical images.

SLML has developed its project plan by working closely with the Alliance Virtual Library. One of our goals is to share in the development of activities, programs, and services with all librarians and with colleagues from other disciplines. In SLML, most existing web-based services in libraries can be implemented, but the main goals are to market existing library services and resources, to increase public awareness, and to improve access to freely available consumer and scientific medical resources. For the medical library, we are especially interested in exploring innovative ways of offering and distributing services. In addition, the following specific goals and objectives have been established:

- Dare to explore. Offer displays, programs, and methods of access, focused more on visual and audio exchange than on text, that most libraries don't offer in real life spaces but that patrons like and need or want.

- Experiment with innovative delivery of services while also exploring interactive possibilities between library, library staff, and visitors.

- Advertise the presence and services of Alliance Virtual Library and SLML in particular.

- Identify possible target groups around noncommercial clinical, medical research, and education activities within

SL that have an open structure. A possible product here might be an SL health directory, which is not currently available.

Carol: The Consumer Health Library will identify existing support groups in SL. We intend to implement an outreach program and to explore practices of health information transfer. This project has compiled a long list of support groups, which benefits SL residents immediately as a resource and serves as a framework for the beginning of outreach activities.

The Consumer Health Library looks like a home, and it's meant to. I have used warm colors and inviting furnishings to increase comfort and create an environment where SL residents can feel at home. In my previous research, I found that healthcare consumers are often intimidated by an institutional environment, forced to enter an alien world whose languages and customs are often symbols of power. But consumer health, I believe, offers a human face in that environment—and certainly it should do so in this new world of SL. I have a logo on the library sign reading "Health, Collaboration, Community." The design of the library, the landscaping, and all displays are intended to be accessible and interactive and to encourage a collaborative atmosphere.

Like SLML, the Consumer Health Library showcases innovative information objects whose primary intent is to engage the viewer interactively. Perhaps the best examples of this are information objects based on the Jnana Technologies software platform. Developed to deliver customized advice and guidance, the Jnana SL terminals lead participants through a decision tree by asking questions, eventually providing a tailored response in the form of a Flash tutorial, a PDF document, links to in-depth information, or even links (landmarks) to places within SL.

Gardens and Mountains

Guus and Carol: A focal feature of HealthInfo Island is its landscaping. Our vision is to have a little compound surrounded and connected by an extensive garden, with meeting spaces for large and small groups, collaborative events, and just sitting quietly. Isa Goodman (SL name) is a former landscape designer in New Zealand who has created gardens all over the island, including a beautiful little Japanese garden behind SLML. Several mountain areas have been

designed to create lovely quiet spaces. On the technical level, Isa has benefited HealthInfo Island by his use of prim-saving scripts that enable objects to "rez" (resolve, or appear) when avatars enter the immediate area. (Prims, short for *primitives*, are the basic units for building in SL. Each land allocation is accompanied by an allowance of these basic units, so an island, for example, can use only around 15,000 prims. One chair might use 12 prims; a plant, two or three.) Isa's scripting means that prims are used only when needed, freeing up the limited allotment for other uses. When they are needed, objects simply "rez" on demand.

Activities

Guus: Activities have been offered from the start and have always focused around the idea of making medical information available for everyone. Looking back, it's amazing now to realize the volume and variety of activities that already have taken place, both those initiated by libraries and those developed in collaboration with others. It is our experience that special activities and events on health issues attract a substantial number of visitors.

Carol: I have connected with health information professionals, other health librarians, and support groups to create displays and coordinate health events. Most recently, the island hosted SL's Diabetes Support Group and the AIDS/HIV support group and is encouraging several start-up groups, such as one for agoraphobics and another for parents of children with leukemia. For the Diabetes Group, an internal medicine physician with a strong interest in patient education participated in a casual question-and-answer session that was held in the beautiful mountain gardens. The session lasted well over 2 hours.

Guus and Carol: The combination of content, visualization, expert help within reach, and fun makes the HealthInfo Island environment a success. Here are just a few examples:

- Trial access to EBSCO's Consumer Health Database and to Reuters Consumer Health News accompanied by workshops on the Consumer Health Database.

- Workshops on the evaluation of health information on the Internet.

- Collection and presentation of quality consumer health resources about illness, drugs, and allied, alternative, and complementary medicine using U.S., European, and other resources. This includes presenting information about freely available scientific medical research, ebooks, ejournals, databases, and repositories, as well as podcast modules for listening to themed podcast sessions via mp3s.

- Play2Train, the Idaho Bioterrorism Awareness and Preparedness Program's virtual training space in SL, meetings and collaboration, including a simulated town and a hospital for interactive role-playing that will serve as the foundation for an emergency preparedness education program.

- In-person reference services available either in-world, online using instant messaging (IM), or by email.

We also engage in a number of more technical activities:

- An in-world PubMed search was developed by Hugo Dahlgleish (SL name) and is available in SLML.

- RSS feeds, first with floating text display and later on screen, are available for several medical subjects. Searches from PubMed, Google Health, and Reuters HealthNews were constructed, saved, and transformed into RSS feeds shown in-world at several places at HealthInfo Island.

- Infostations offer an in-world search interface. Thanks to collaboration with Damek Tretiak (SL name), a special HealthInfo Island Infostation is in development. It will offer specific health search tools such as PubMed and Consumer Health and Patient Information. Such developments bridge the gap between the real world Internet and SL. The Infostation can also be monitored from Internet web pages, and interaction with live avatars from the real world is possible using chat.

- Automated tours of the island give visitors information about specific services and events when there are no librarians available.

- An experiment with artificial intelligence and chat technology, dubbed Healthy, enables patrons to ask health-related questions even when there is nobody around. Healthy always has an answer (sometimes even a relevant one ;-).) Besides being fun, this technology proves that bot (robotic) systems are getting smarter. Chatbots, benefiting from emerging technologies enabling immediate interaction, are able to provide information in the form of a URL or SL landmark, results from a Google Define search in IM, or even images on demand.

- The HealthInfo Island toolbar is a browser extension available for download by anyone, connecting real life with SL by offering news and search options for high-quality consumer health resources, such as MedlinePlus. The toolbar also links directly to the HealthInfo Island website and blog (healthinfoisland.ourtoolbar.com).

Grant

Guus and Carol: In 2006, the ALS was awarded a $40,000 grant for an 18-month project intended to provide consumer health information services in the virtual world of SL. In this grant, ALS partnered in with the University of Illinois Library of the Health Sciences-Peoria; the Central Medical Library of the University Medical Center Groningen, in the Netherlands; and TAP Information Services. This grant, titled "Providing consumer health outreach and library programs to virtual world residents in Second Life," constructs the project on a solid foundation of evidence: "Online medical groups often provide a source of emotional support, referrals, and health information (e.g., news about new medications and their side effects), and help one another to navigate the often bewildering alternate worlds of health-care institutions" (see, for example, Ferguson & Frydman, 2004; Klemm, Reppert, & Visich, 1998).

Communities such as SL can provide an atmosphere for empathic interaction, sharing experiences and information sometimes not otherwise provided in the physician-patient relationship (Preece, 1999). Questions arising during the course of everyday life for those who suffer from chronic disease can seldom be answered at the time of need, so the Internet (and peers within a community such as SL) help fill an important gap in understanding. Consumer

health librarians working within such a community may be able to span the gap and, by doing so, expand our understanding of these increasingly popular communities.

The target populations are SL residents participating in identified medical groups, interested individual residents, and outside groups that might be interested in SL as a platform for providing services and outreach for health services. Groups such as the SL Medical Association, Sugar Medical Clinic, Positive Mental Health, Dream Travellers (a group of stroke survivors), diabetics, Domestic Violence and Sexual Assault Group, and others may benefit from the expertise of medical librarians in locating quality health information resources. The medical and consumer health libraries are intended to help publicize support group activities such as meetings, as well as educational, clinical, and research activities that relate to medicine and healthcare. We also provide networking information and basic SL skill training to those who are new to the community.

Our role with these groups is mostly informative, offering support and collaboration in the development of special displays and events focused on group needs. However, because of our affiliation with the SL Health and Wellness Center, we can also offer start-up groups a confidential and supportive environment in which to begin their existence.

We are also developing 24/7 reference services, depending on available volunteers. We are convinced this service—and an optimal presence on the Islands—is very important to building patron trust. Similar to librarian-patron interactions in real life communities, often the most casual encounters elicit health-related questions, making us all walking (and flying!) ambassadors of health information services. Questions we hear fall into the following areas:

- Basic or more advanced information about a disease or condition

- Information about surgical procedures

- Drugs and their side effects or interactions

- How to find a support forum where people are dealing with the same issues a patron is facing

- New research about diseases or therapies

The initial project for HealthInfo Island officially ended in March 2008. During the past year, a second project, intended to highlight

issues of disability and access, titled "Libraries on the MUVe," has been funded by the NLM. Funding for the Accessibility Center also ended in March, but new funding from the same source, beginning in April 2008, both ensures the continuation of work at HealthInfo Island and expands the project to a second island. VAI (Virtual Ability, Inc.) Island will house facilities for orientation and health information learning for SL participants with chronic illness or disabilities. At the conclusion of the one-year project period, we hope to continue the islands under the supervision of the nonprofit group Virtual Ability, Inc., and to seek additional grant funding.

Carol: SL residents are already taking advantage of reference services offered at the new library. One recent query from Germany sought information about new, experimental therapies for migraines. Although the patron spoke English, I was challenged to understand her specific information need and health literacy level. In this instance, the patron had conducted PubMed searches at a basic level, but she admitted that she found the literature difficult to understand. Still, she wanted to be able to track new developments and then to share what she found with her own healthcare provider. I provided an initial set of citations via email and set up a current awareness search, and the patron intends to return for some additional PubMed instruction.

Collaboration is a crucial factor in our success. We work with an epidemiologist, an internal medical physician, medical information specialists, a retired pharmacist, an educator in nursing, medical and consumer health librarians, library paraprofessionals, and many others to accomplish the grant objectives.

We are already cooperating with two real world groups interested in SL as a platform for providing health services and outreach for health services:

- Specialized Information Services/National Library of Medicine (SIS/NLM) – The SL Health Information Outreach Research Lab was created by the Specialized Information Services (SIS) division of the National Library of Medicine (NLM). SIS is exploring SL as a venue for providing health information to special populations and as a platform for testing new information delivery technologies enabled by this 3-D environment. In real life, SIS develops information resources and services in environmental health, toxicology, chemistry, and

HIV/AIDS and seeks to improve access to reliable health information for underserved populations and populations with special needs. SIS's building on HealthInfo Island currently hosts an interface with ToxTown, an environmental health portal, and links to other well-known NLM information products. SIS is working to bring more health information products to SL and expects to host a number of outreach and promotional activities in SL in the future.

- National Institutes of Health (NIH) – In real life, Paul Santoro Jr. (PJ Slapstick in SL) is an advanced technology engineer and employee of SRA International, a 2007 Fortune 500 "Best Company to Work For" that is contracted with NIH, as well as numerous other government entities; for an impressive list of SRA's government contracts, see www.sra.com/contracts/idiq/gwac.php. In their daily lives in either their real world or in-world environment, PJ Slapstick and his colleague, JP Sinatra (real name, Jean-Paul Boucher), are part of an advanced technology group researching and exploring emerging technologies that can be used at NIH.

Observations

Guus: Interaction, communication, and international involvement have proven to be the most valuable aspects of SL over the past several years. The ability to connect with people and exchange knowledge and information is arguably the greatest benefit of the SL environment. There are a few frustrations that limit SL in communication power. The time-consuming typing in meetings is one of them. Voice chat will be a major improvement that anyone would benefit from. Management and sharing of documents and objects in-world is still on a very one-dimensional level. Offering tools comparable to Google Docs and a sophisticated search engine with advanced options would make (Second) life easier and boost educational and research use inside SL.

Carol: We have some upcoming challenges in a number of areas, one of which is the interface between commercial, fee-based or entrepreneurial services and products, and the other being the currently prevailing library and educator perspectives of low- or no-cost

sector while we maintain strong connections with the InfoIsland Archipelago.

Plans for the near future involve attention to organizational aspects, such as dealing with the burgeoning number of volunteers and maintaining reference services. Outreach activities involving support groups will be intensified, and, depending on need, resource development will be at the forefront. New technologies and methodologies of information exchange within SL will need to be incorporated into our support toolboxes for the groups. Guidelines for evidence-based display development are being developed to ensure that products developed by those with little experience in healthcare or library practices will meet quality, currency, and other standards.

Envisioning

Guus: SL offers a lot of simulation, education, and communication power. Many corporations and even universities are stepping in to promote their real world organizations and often try to implement SL activities within their normal workflows. A growing number of medical organizations have shown interest in HealthInfo Island. Discussions about the possibility of developing continuing medical education and offering services to special educational groups have helped us realize that the potential is enormous and growing. The HealthInfo Island staff, with its current partners, can offer help and support.

Guus and Carol: With open-minded people who are willing to invest time to improve library services and really learn what users want and need, growth is inevitable. Many individuals and groups have been trying to reproduce their real world resources and situations in-world, but this will likely change. We are at a stage at which we should accept SL as more than an extension of existing spaces and services: It is becoming something completely *other*, in a manner similar to the beginning of excitement about the Internet. If someone had told me in the early Internet days that soon all companies, organizations, and even individuals would have their own websites—and pay big money for developing and maintaining them, and in fact could not survive without them—I would have declared that person mad.

Experiences with information technology within virtual environments such as SL can be beneficial for individuals and organizations. SL helps transcend barriers and may well develop into a web 3-D browser extended and integrated with Internet and Web 2.0

possibilities, including content, tools, and resources. I see SL as a new level of Internet browser, but currently in a very early stage of development. Therefore, I am also convinced that we should not focus completely on in-world information but try to make all improvements and positive elements—the lessons learned in SL—also available in the real world, creating optimal two-way interactions between SL and real life resources, across and beyond the Internet.

Carol: My role is gradually changing to one of coordination as I recruit support for island coverage and begin to plan for health fairs. Outreach to more general populations will involve soliciting donated space at SL's shopping centers and other popular gathering spaces for informational booths with flyers about HealthInfo Island services, and our presence at fairs will help spread the word. Initiatives are underway to encourage collaboration with organizations, such as IBM, who have a massive in-world presence and whose tremendous collective expertise can make all the difference between a wish and reality. An example of such possibilities is the Assistive Technologies initiative, intended to identify and develop ways to implement technologies that can enable individuals with physical disabilities to enjoy activities and interact in SL. Although the number of people with disabilities who participate in SL is unknown, anecdotal accounts indicate that SL is host to a growing number of individuals with disabilities. It is our belief that enabling higher-level functioning and increasing general awareness of disabilities will benefit all participants.

Guus and Carol: HealthInfo Island will certainly grow and continue to support medical education, research, and medical information literacy and to provide quality consumer health information and support for all SL residents. The Alliance Virtual Library offers librarians an opportunity to examine existing practices while exploring potential new paradigms beyond the restrictions and limitations that affect libraries in the real world.

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