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THE INFORMATION NEEDS OF VIRTUAL USERS: A STUDY OF SECOND LIFE LIBRARIES

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As virtual worlds continue to proliferate globally, libraries are faced with the question of whether to provide information services to virtual patrons. This study, utilizing a mixed-method approach of interviews, focus groups, and surveys, represents one of the largest studies of virtual libraries attempted to date. Taking a holistic perspective, the design and implementation of virtual library services and the information needs of 366 participants were examined with both traditional and virtual library users and librarians. Findings suggest that the information needs of traditional and virtual users differ significantly and the overall match between information provided and user needs of virtual branches are typically low. The study's impact centers on the findings that virtual library users represent a disparate group of first-time visitors whose primary information goals are exploratory; successful virtual libraries provide nontraditional information services utilizing the unique virtual reality context to emphasize and support social engagement and communication.

Introduction

As the snow continued to fall, the librarians at the Olathe Public Library in Kansas worried about how well attended their holiday event was going to be. Would their public library patrons brave the weather? Ultimately,

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their worst fears were confirmed as only a few patrons trickled in to celebrate with them; at the same time, however, something special was happening at their virtual branch in Second Life. Their “virtual” party was vibrant and alive with between twenty-five and thirty virtual users joining them to celebrate the holidays. There was no snow and no hazardous traffic jams, just a lot of virtual users tucked safely in their warm houses sitting at their individual computers, many of whom, in fact, may have not been from the United States at all, enjoying each other’s company in a pristine virtual world brought alive by the sound of fun, celebration, and human connection. Why did this happen? Who were these users? Are some library services more efficiently and effectively provided online in virtual worlds?

In October 2010 a significant milestone was reached: the total number of virtual registered users exceeded one billion worldwide, an increase of over 144 percent from 414 million users in 2009 [1]. The potential that the use of graphical, three-dimensional technology of virtual worlds represents is being explored by libraries, as it “create[s] a new stage of collaboration, cooperation, [and] communication with an even higher level of interaction, complexity and value creation” [2, p. 4]. The emergence and dominance of social networks such as Facebook, Twitter, and YouTube underscores how social interaction and connectivity are the predominate uses of the Internet and have resulted in new ways for people to communicate and collaborate; these technologies offer libraries an opportunity to extend beyond their walls into social communication and virtual interactions with their patrons. The most popular website on the Web as of January 2012 is Facebook, which accounts for over 10.26 percent of all worldwide hits; Google is second at 7 percent, followed by YouTube at 3 percent [3].

Literature Review

Libraries and Virtual Worlds: A Second Life

A virtual world is a simulated environment, accessed by multiple users through an online interface [4]. Second Life is one of the most well-known and largest social virtual worlds existing today for adults, with anywhere from 35–50,000 avatars online at any given time [5, p. 2]. Second Life was created by Linden Labs and opened to the public in 2003 [5, p. 1]. While early on it was mainly a place to socialize and play games, the potential for leveraging this medium for collaborative work, information sharing, and learning activities was soon realized.

Interest in virtual worlds has grown considerably with more than sixty colleges and universities having established virtual campuses along with over 120 virtual libraries [6]. These virtual libraries have been created and

supported by an army of volunteers with the primary goals of investigating library services in virtual worlds, attracting new users to traditional libraries, and meeting and collaborating with librarians from around the world. As users become more comfortable in the Second Life environment, information-seeking behaviors have emerged that lead them to virtual libraries. Libraries are responding by attempting to provide information services to a potentially new set of global patrons, “where potential library users are active and assess how library services might be integrated into these environments. Many individuals now involved in Virtual Worlds may not be traditional library users” [7, p. xvi].

Symbolic of the emerging virtual technology, while some libraries and librarians are merely exploring the potential of the virtual medium, others have decided to embrace the pioneering spirit of unexplored virtual worlds by taking the lead in attempting to predict how patrons will use this medium and design virtual libraries to meet these anticipated needs rather than waiting and reacting to unmet information needs as they emerge [7, p. xii]. Such librarian pioneers feel that the knowledge they are gaining now regarding virtual worlds will enable them to leverage the medium to meet the needs of current and potential patrons. Many librarians feel so strongly about this that “they are willing to explore Second Life outside of their usual administrative structures” [5, p. 5] spending their own time, and money, on Second Life projects.

Virtual worlds also serve as a nexus point for many librarians who can meet peers from across the country and around the world to share experiences, learn from each other, and for general camaraderie. Librarians are involved in meetings for professional development and information sharing, gaining new opportunities for networking, creating collaborative projects, and adding to the culture of Second Life itself.

The excitement of Second Life in 2011 has somewhat diminished as Linden Labs both cut discounts for educational purposes and reduced its workforce by 30 percent [8] in 2010, citing the need to move to a web-based platform that integrated more closely with social networking applications. In addition, according to Tim Goral, “all those things you’ve heard about Second Life—that corporations spend small fortunes building ‘islands’ that no one ever visits, that the virtual world is overrun by ‘griefers’ whose only purpose seems to be harassing other users, that it’s a digital den of depravity—well, they’re all true” [9]. Despite these negative trends, however, educational institutions and businesses are already heavily invested. Second Life is content rich [10], and the growing emergence of an interoperability standard through open-source software such as OpenSim that will allow virtual worlds to interact with each other [11] suggests that virtual worlds, regardless of which one is the most popular, will be an expansive, emerging technology for many years to come.

The usefulness and usability of virtual libraries.—A valuable framework to use when examining virtual libraries is seeking to understand who is using them and for what purpose. In other words, are Second Life libraries useful and usable to people who are visiting them? Usefulness represents the overall relevance and utility of a product, service, or environment and answers for users the question, can I find what I need here? [12]. A separate, equally important dynamic is ease of use or usability. Usability is defined as the “extent to which the product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use” [13, p. 11; 14–17]. Effectiveness is the percentage of goals achieved, percentage of users successfully completing tasks and average accuracy of completed tasks; efficiency is the time to complete a task, tasks completed per unit time and monetary cost of performing the task; and satisfaction is a rating scale for satisfaction, frequency of discretionary use and frequency of complaints [14]. Jakob Nielsen adds two additional components, learnability (how easy can users accomplish tasks the first time) and memorability (can users revisit and remember what to do), to the definition of usability [12].

The relevance of usefulness and usability to information seeking and libraries continues to grow as “the organization of information to allow for the retrieval of relevant documents has long been the focus of librarianship” [18, p. 162]. Anthony Chow and Rebecca Croxton found in a study of 936 users that Poole’s Principal of Least Effort was the predominant reason for utilizing virtual reference services [19]. The degree in which this information retrieval transaction is efficient, effective, and satisfying to patrons is essential. Numerous examples of usability studies have taken place in the library setting regarding library websites [18, 20], website maintenance and management [21, 22], and digital libraries [23–25]. These studies address both how websites are managed and maintained and how usefulness and ease of use are designed and evaluated in digital library environments.

These studies have not, however, examined usability from a holistic systems perspective, which emphasizes alignment between organizational ends, means, and processes and the degree of match between goals of the user and goals of the product or service being provided. In addition, the degree to which employees are able to provide the service with high levels of effectiveness, efficiency, and satisfaction also plays a pivotal role in the overall quality and long-term sustainability of any product or service [26].

Library services in second life.—Until the emergence of virtual worlds, most human interaction with information was strictly two-dimensional. While books themselves are three-dimensional objects, reading is still a two-dimensional activity. Virtual worlds, however, offer a three-dimensional ex-

perience. “You can fly around and through a large molecule, skip through a sculpture garden that conveys both visual and auditory information, experience a tsunami or other natural disaster, or blast off in a rocket ship” [27, p. 17]. Libraries in Second Life are attempting to capitalize on this third dimension to attract new users or meet the needs of their existing patrons in a different way. Early collections in Second Life were mainly links to web resources [28], but experience has shown this does not attract many users or encourage return visitors.

There is growing research that suggests virtual worlds are not conducive to traditional library services, as they are not the best place to read large quantities of text. In the virtual world there is a “shift away from object-oriented information systems to experience-oriented information systems . . . to create an interesting, engaging, and immersive information experience” [5, p. 16]. Traditional information services in virtual libraries tend to play a minor role, while events and exhibits are more popular. Three-dimensional experiences offered by the library services in virtual worlds offer an opportunity to provide cost-effective programming not available through any other easily accessible medium.

One of the traditional library services that thrives in Second Life is reference services. At the Alliance Virtual Library, volunteer librarians from all over the world staff the information desk more than eighty hours a week, providing reference service to Second Life users [29]. They assist virtual residents in finding and evaluating online information, but they primarily answer questions about using Second Life itself, including how-tos and offering suggestions of places to visit. They provide this service in a variety of languages using Babblar software to translate the text [28].

Public libraries in second life.—All traditional types of libraries—public, academic, school, and special—exist within Second Life. There are many virtual branches of public libraries in Second Life that are tied to real-life public libraries. The InfoIsland Library Directory lists ten public libraries in this category [30], including Cleveland Public Library (OH), Glenview Public Library (IL), Mark and Emily Turner Memorial Library (ME), Maryland Library System, Monroe County Library System (NY), Olathe Public Library (KS), Orange County Library System (FL), Society Hill SC Public Library, Charlotte Mecklenburg Library (NC), and the Topeka and Shawnee County Public Library (KS). These Second Life libraries are sponsored by a traditional library and built and overseen by librarians. Each virtual library provides a variety of services—some attempt to replicate similar services to their brick-and-mortar library in an attempt to attract traditional patrons in their local geographic area, while others provide additional services and events in attempt to broaden their reach in attracting new virtual patrons in Second Life.

There are also libraries that are “born virtual” or exist exclusively in the virtual world. These virtual libraries are built cooperatively by librarians or other volunteers from around the world. Two well-known libraries in this category, both of which contributed to this study, are the Alliance Virtual Library and the Caledon Library System. The Alliance Virtual Library (AVL) is a project of the Alliance Library System (ALS), a regional library system in East Peoria, IL. The Alliance Library System provides a variety of services including continuing education, consulting, grant writing, and new technology initiatives [31]. The Alliance Virtual Library and reference desk serves the general population of Second Life, just as a real-life public library serves its local geographic area. As of August 2008, the Alliance Virtual Library, now called Info Archipelago, had forty-three islands, or plots of land, associated with it. The library consists of such areas as the Genealogy Research Center, Library Gallery, Mystery Manor, Performance Center, Science Center, SF/Fantasy Center, and Health Info Island. Caledon is a popular nineteenth-century-themed area in Second Life where residents dress in Victorian attire, and the shops and homes are required to be of a nineteenth-century “steampunk” style. The Caledon residents wanted a branch library, so librarians, working together, worked on creating programs, services, and staffing. Residents were actively involved in the planning and creation of library services in their virtual community [31].

Virtual second life library branches.—While there does not appear to be a “serious expectation that patrons will download and use the Second Life software for the exclusive purpose of gaining access to library services” [29, p. 62], some Second Life residents appear to be interested in the material, service, and community that virtual libraries provide. The library islands are places to gather, meet people, and participate in interesting conversations and programming. Virtual library events are some of their most popular programming, and “these events are the lifeblood of the [AVL] library even more so than a bricks-and-mortar library. . . . During 2007, the Second Life Library hosted an average of three to five events per week with audiences of four to five to 60 to 70 avatars. Most programs drew 25–35” [28]. The programs are varied, and many of these programs are not possible in real life, such as a jousting tourney on Renaissance Island or a speaker that a small library branch might not be able to afford. Most residents do not read while in Second Life, but they will attend book discussions and author visits; they gather for discussion of ideas, to meet new people or old friends, or to experience new things. Librarians in Second Life have to carefully consider whether just re-creating a virtual version of their real-life library can be boring to users in a Virtual World. Successful libraries “do something more innovative, exciting and most im-

portantly, INVOLVE THE COMMUNITY instead of assuming . . . they'll flock to you. 'If you build it, they will come' does NOT apply in Virtual Worlds!" [32].

There are a variety of ways to attract residents to a library in Second Life. The question, what are your users doing elsewhere that they could be doing in your library? applies to both real world and virtual world libraries. The key to creating relevant experiences for library users comes down to knowing the community—knowing and understanding the culture of Second Life. Libraries cannot just build great Second Life buildings, beautifully groomed grounds, and provide static displays; residents in virtual worlds want to participate in content creation and interact with other people [13].

Traditional library organizational issues.—There are several key factors to consider for libraries when considering a presence in Second Life or in any virtual world. Major considerations for libraries include how to support the technology, how to provide access for patrons, how to support staff in developing the necessary skills and understanding of Second Life, and how to build an online presence for their own library. These issues are similar to those faced by traditional libraries.

Providing computing power necessary for running virtual worlds for both the real world patrons at their library and for librarians building and maintaining the library's virtual world branch is one of the first major issues that needs to be addressed. A second primary issue is finding a location for a Second Life library where Second Life users are. There may be 50,000+ users logged on, but they are spread out across a large area. Therefore, population density and traffic patterns must be taken into consideration [5]. The virtual library could also be built in a residential area instead of alongside all of the other libraries, involving the community in the design and services [33].

Whether getting involved in the virtual world is appropriate timing for a library is another major issue. Some people argue that Second Life and other virtual worlds are still new and still tentative for real development, while others say that libraries should develop a presence in virtual worlds now versus later. They point to the "wait-and-see attitude" arguably adopted by libraries and librarianship toward the early rapid development of information systems and services on the web. Second Life is still considered an emerging technology, but today it remains far from mainstream.

Organizational resistance and skepticism is another major factor. These issues may slow or misdirect the efforts of forward-thinking libraries and librarians [34]. Another factor is a social cultural issue of the patrons being served through Second Life or other virtual worlds. Second Life does nothing to "assist with bridging the digital divide, and in fact [it] widen[s]

it. . . . Only patrons operating quite current computers can access SL at all" [29, p. 66].

Issues for traditional librarians.— Librarians must also consider how they will or will not become involved in Second Life. Nearly all of the librarians in Second Life are volunteers, and most of the librarians are working independent of their real-life library. They may or may not have the backing and support of the real-life library they are employed by, but even if they do, the majority of the time they spend in Second Life, if not all of it, is during their personal, nonworking hours. Becoming involved in Second Life and understanding its value takes a real commitment of time.

Some of the issues to be considered in making the investment in a Second Life or any virtual library include addressing the social challenges of "managing communities, plugging into social networks, and becoming accustomed to the cultures within a Virtual World" [35, p. 35]. Another is consideration of the status of librarians in a future where virtual librarianship may be dominated by freelance professionals rather than by libraries and related organizations [34]. Maintaining staffing for a Second Life library is also a primary concern. Evenings and Sundays are the busiest times in Second Life and the best times to meet people [31]. Therefore, if a library wants to interact with Second Life residents, this must be done during off-hours from real-life librarians.

Another major issue is whether the librarian will be allowed to work in Second Life, especially on his or her real-life library branch, during normal work hours. This is a management issue and a peer issue: trying to get management and peers to see Second Life as a value, not a game. The most successful library initiatives in Second Life have been achieved primarily by library professionals working and collaborating in a freelance or pro bono fashion, not necessarily under or with a real-life organization [34].

While there may be limited benefits to libraries and library users to get into Second Life at this time, there are a number of potential benefits for librarians themselves. Dealing with virtual worlds and understanding the content that users may be looking for is a learning experience. This is similar to when librarians first authored webpages—learning how and then learning the content needs. This new interface, which may change in the future as technology evolves, will have similar elements of a 3-D interface and a social, immersive environment [36]. Collaboration elements of Second Life help break down the barriers of professional isolation. Librarians meet with and share experiences with librarians from across the country and around the world to "gain experiential knowledge on how to deliver library services in these virtual environments" [37, p. 9].

Purpose of the Study

Despite initial expectations largely remaining unmet, libraries continue to look at how Second Life and other virtual worlds will fit into their future, particularly as virtual worlds move more toward becoming a medium used in education [32]—“as a profession, librarianship needs to work through its tendency toward denial . . . and begin exploring how librarianship can survive and thrive in Virtual Worlds” [34, p. 5]. There is a potential from the collaborative experience of working, meeting, and talking to librarians across geographical borders. Libraries need to consider how they will become involved and what the timing of developing Second Life projects should be. While libraries may decide they do not want to jump full force into building a Second Life branch, they may want to consider being aware of virtual worlds and Second Life and supporting the librarians who wish to become involved with and knowledgeable about this technology.

This study began as a needs assessment pilot project for a Second Life public library, managed by a real-life library in the Midwest. Building on the preliminary findings from that project, this study represents an attempt to understand the dynamics of trying to balance the needs and demands of real and virtual world libraries within the framework of usability. The four research questions this study seeks to address are as follows:

- RQ₁. Are the information needs of traditional and virtual users different?
- RQ₂. How are virtual libraries managed and implemented?
- RQ₃. How usable are virtual libraries in terms of match between information needs of traditional and virtual patrons and information and services being provided?
- RQ₄. What is the future of virtual libraries?

Method

A mixed-method approach was used for this study, and it examined a traditional library, the Olathe Public Library in Olathe, Kansas, and its virtual library branch, along with their respective staffs and patrons. In addition, other Second Life librarians, Second Life library patrons, and Second Life general users were included in the study's sampling frame. Because of geographical constraints, all interviews, focus groups, and surveys were conducted remotely utilizing a combination of video conferencing, telephone calls, online surveys, and Second Life. A total of 366 librarians, patrons, and second life users participated in the study.



FIG. 1.—Olathe Second Life Library

Principal Case: The Olathe Second Life Library

Second Life is a virtual world, with 27.4 million unique logins as of January 2012 [38], composed of people from across the world who are there for a large variety of interests. The Alliance Library System is a regional system in Peoria, Illinois, that supports real-life libraries of all types in Second Life, and it works with librarians all over the country to create libraries in the virtual world. The Olathe Second Life Library is a branch of the Olathe Public Library, and it is part of the Alliance Library System (fig. 1).

Olathe, Kansas is a community of about 122,500 people, located twenty miles southwest of Kansas City, and it is the fourth-largest city in the state of Kansas. The vision of the Olathe Public Library is to “meet the lifelong informational, educational and recreational needs of the community through quality services and resources” [39]. Prior to starting a needs assessment for this library, a meeting was held with Lorie Hyten, who leads Olathe’s Second Life project and who has led the project from the beginning.

A tour of Olathe Second Life Library.—The Olathe Second Life Library is rich with information on Kansas, and this is their main contribution to the Second Life community. They have many programs that are provided both

in real life and in Second Life. Their objective is to make a global audience aware of their local heritage and culture. The library promotes the city of Olathe and the state of Kansas. See figure 2 to view images of Olathe's Second Life virtual library.

The Olathe Second Life Library project.—The Olathe Second Life Library is a relatively new project. Lorie Hyten, a librarian familiar with Second Life, went to the director of the real-life Olathe Public Library with a proposal in 2008, and the director approved the project. There currently is a committee of nine library staff (including Lorie) that meets once a month for about two hours to discuss projects for the library. In terms of managing the day-to-day logistics of the virtual library, there is no formal management structure, and most of the work in Second Life is done on the employees' own time, which is true of many librarians in Second Life.

There are approximately 125 libraries in Second Life, mainly university and special libraries. The few public libraries that do exist in Second Life are there with the primary aim of promoting their own real-life library. The Olathe Second Life Library seeks to find a niche and does not want to duplicate existing resources or activities of the Alliance group of libraries or duplicate the function or services of their real-life library. They seek to explore ways to serve the Second Life community and those Second Life citizens in their geographic area. They want to provide additional projects on or related to Kansas, attracting local people as well as those across the country and around the world.

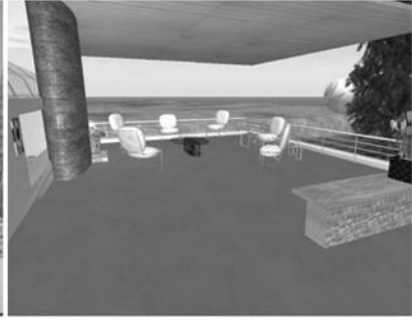
When our research team first piloted a needs assessment of a Second Life library, the Olathe Public Library was recommended by Abbey Zenith of the Alliance Virtual Library system in Second Life. Our initial findings were that the Second Life branch of the Olathe Public Library was not getting much user traffic. Our desire to further explore the dynamics between a public library and an associated virtual library branch and the usability of virtual libraries led to this study.

Participants and Instrumentation

In order to collect the valid data necessary to answer the study's research questions, our study took a holistic approach. The research team split up into two groups—one group examined Olathe library, management, librarians, and its patrons, while the second group looked at Olathe's Second Life Library branch and interviewed and surveyed Second Life librarians, patrons, and general users. We wanted to study how the Olathe virtual library was designed, developed, and maintained and what degree of match there was between what virtual services it provided and the patron demands of both traditional and virtual users.



Entry Foyer - displays and message board



Roof – meeting, relaxing and dancing for fun



Left room -touch screens for information



Right room - easy reading and Kansas information



Information provided – rare books



... and Kansas reads

FIG. 2.—Images of Olathe's Second Life Library

Olathe Public Library

Olathe library leaders.—Two interviews utilizing a set of structured questions were conducted utilizing Skype video conferencing software with the head of the Second Life committee and the library director at the Olathe Public Library. Questions were asked related to the purpose, goals, planning, and promotion of the project. In addition, questions were also asked about time spent on the project, usability, and the overall interest in the project from other staff. Interview responses were analyzed and compared and contrasted in order to gain an understanding of how management viewed the project (see appendix A, available online).

Second life library committee survey.—Nine people were identified as being Olathe Second Life team members, all of whom worked at the library. An anonymous online survey containing fifteen questions was administered with a response rate of 78 percent ($n = 7$). Six questions were open-ended and sought to solicit responses from the participants in an unbiased fashion, and four were multiple choice, close-ended questions. The questions focused on their general experience with Second Life, their general interest, and overall usability of Second Life for them. The online software used, Survey Monkey, provided basic statistics such as frequency counts, percentages, and mean ratings for each question along with the option to provide qualitative comments, which allowed us to determine the committee members' thoughts about the Second Life project from both a quantitative and qualitative perspective (see appendix B, available online).

Olathe patron survey.—A twelve-item online survey of Olathe's real-life patrons was conducted to examine their specific information needs and how interested library patrons were in a virtual library. Five questions were multiple choice questions designed to measure frequency of library usage, four questions looked to assess usage of existing online resources, and the final three questions were open ended and focused on allowing library patrons autonomy in voicing their opinions about programming. Descriptive statistics were provided by the online survey software and complemented by qualitative comments from participants. This allowed us to create a profile of the traditional Olathe patrons who completed the survey across a number of factors including technology proficiency, reasons for using the library, and their general thoughts toward virtual services provided in a virtual world. See appendix C, available online.

Olathe focus group.—To further investigate the interest of Olathe's real-life patrons, a focus group was conducted via teleconference and Second Life with five participants. The patrons met in a room at the Olathe Public Library and were led in discussion by the Second Life committee head

while simultaneously being able to communicate by microphone with the Olathe team through the audio conference feature in Second Life. The computer screen was projected for them using an LCD projector so they could collectively “tour” Second Life and see some of its functions and uses. Researchers asked questions similar to those in the traditional patron survey, then conducted a demonstration of Second Life. After the demonstration, further questions were asked relating to virtual libraries and the patrons’ perceptions of them.

The focus group session was recorded using a video camera at the Olathe library and Camtasia, which captured the computer screen as the researchers conducted the focus group from Second Life. The session was transcribed, and general qualitative trends for each question were identified (see appendix D, available online).

Olathe and Second Life Virtual Libraries

Olathe Second Life Library patron survey.—Data from the Olathe Second Life library users were collected through a fourteen-question online survey. The surveys were delivered via a kiosk placed in Second Life at the entrance of the Olathe Second Life library. The survey was broken down into two major sections: library usage (1–7) and demographics (8–14). The intent of the survey was to understand why and with what frequency virtual patrons were using the Olathe virtual library. In addition, we wanted to understand the demographic profile of virtual patrons. The Survey Monkey online survey software provided basic descriptive statistics for each question and also collected participant’s qualitative comments (see appendix E, available online).

General second life library patron survey.—In order to gain a broader perspective of Second Life library users, an additional sixteen-question online survey was disseminated at different Second Life virtual libraries. The library user surveys were delivered via kiosks placed in Second Life at the Alliance Virtual Library, the Caledon Library, and the Topeka/Shawnee Public Library. Basic descriptive statistics were examined along with qualitative comments (see appendix F, available online).

When a user’s avatar approached the kiosk, the kiosk handed the user a note card explaining the research project and including a URL link to the online consent form and survey (see fig. 3). A clickable URL was also generated within the Second Life environment that the user could use to link out directly to the consent form and survey. Surveys were left open for six weeks. Participants received ten Linden dollars (the Second Life in-world currency), valued at approximately US\$.04 at the current exchange rates. Questions were asked to determine the demographics of the



FIG. 3.—Information kiosk in the Olathe Second Life Library

user, why they use the library, and what resources they expected to see in a Second Life library.

General second life users (nonlibrary patron).—General Second Life users were asked a total of six questions through an online survey. This was an effort to try to determine why they use Second Life, their information needs, and if they were aware of the presence of libraries in Second Life. Survey participants received ten Linden dollars for completing the survey. Kiosks and ad boards, which had the same functions as those used for the library user survey, were set up at ten different high-traffic nonlibrary locations in Second Life. There were ten respondents to the general user survey. Again, general statistics were collected and analyzed along with qualitative comments for each question (see appendix G, available online).

Second life librarian interviews.—Members of the research team set up in-world interviews with four librarians in Second Life who were known and

regarded for their contributions to librarianship in virtual worlds. The team interviewed Leeorie Alter (names used are Second Life avatar names) of the Olathe Public Library (the Second Life coordinator), Cindy Elkhart of the Topeka/Shawnee Public Library in Second Life, Abbey Zenith of the Alliance Virtual Library, and Rocky Vallejo of the Kansas State Library in Second Life. All of these librarians are deeply involved with librarianship in Second Life, and we asked them questions about their experiences in building and running libraries in a virtual world. Each interview was recorded, transcribed, and analyzed for specific trends in response to each question (see appendix H, available online).

Instrumentation and Data Analysis

To help write the survey questions, we used principles from D. A. Dillman, J. D. Smith, and L. M. Christian [40]. Some examples of these principles include not requiring answers to all questions [40], using a small prepaid financial incentive to create a social obligation on the part of the respondent [40, p. 18], choice of the first question as closed-ended but hopefully interesting [40, pp. 157–59], and many other aspects of the survey and questions. Results were examined using the basic statistical features of our online survey software (Survey Monkey) and descriptive statistics generated using Microsoft Excel and SPSS 20. Qualitative data was analyzed by question for trends and similar categories. Direct quotes were identified to help enrich quantitative data so that respondents could articulate their opinions in their own words.

Results

The results of the study suggest that there are significant issues with goal alignment and the general usability of the public library virtual branch followed during the study, especially with the match between what virtual users in Second Life appear to be looking for and the information services the virtual library is currently providing.

Olathe Public Library and Second Life Library: Discovery of a Brave New World?

According to interviews with the head of the Second Life committee and the library director, the purpose of the Second Life Library project was experimental and exploratory. The central goal remains attempting to offer library resources to virtual patrons, but unintended potential benefits for the staff such as networking, virtual conferences, and educational opportunities have also emerged. No formal research or planning was conducted before beginning the Second Life library project—one staff member who

was already familiar with Second Life had the passion, interest, and vision, and she started the project as a volunteer effort, dedicating her own time and resources to getting the project off the ground; when she wanted to expand, she sought approval from the director, who agreed, and a library committee was formed.

The library director felt that there were four primary reasons why exploration into virtual libraries is of potential value to libraries. First, libraries need to be examining what new technologies and services are available and what emerging technologies are “coming down the pipeline” before they actually arrive. Second, she predicted that there will be an increasing demand for virtual services in virtual worlds as more patrons become digital natives, born with the Internet, rather than digital immigrants [41], and, with this in mind, it is critical that librarians are exposed to virtual services in preparation for the future. Third, the Second Life project represented an opportunity for librarians to be leaders in new technologies rather than merely followers. Finally, the overall budget for the Second Life project was relatively nominal with the largest expense being allocated staff time.

Second Life Truly a “Second Life” for Librarians

Virtual libraries are for most librarian designers and developers an extracurricular activity. It is typical that Second Life librarians do a great deal of their work on their own personal time, unsupported by the library and library administration, which reflected the situation at Olathe. Librarians find that there is not adequate time to manage the Second Life project at work while they are expected to oversee their traditional day-to-day duties, and these library duties, a formal part of their job description, take precedence. The Second Life librarian’s immediate supervisor did not give the project a high priority and therefore did not allow her much staff time to work on the project. Given this situation, the overall usability in terms of supporting and maintaining the Olathe virtual library branch was determined to be extremely low on effectiveness, efficiency, and satisfaction.

Second Life Project—a Paradigm Shift

While the interest of the library director and the head of the committee was high for the project, this optimism was not shared by the Second Life project committee, other library staff, or library patrons. The seven members of the Second Life project committee who responded to our survey, which represented different areas of the Olathe Public Library (adult services, young adults, electronic resources, technical services, and children’s services), felt that the primary goals of the project were exploratory and represented “experimentation with a new technology.” They felt that the learning curve for Second Life was high for both staff and patrons and that, in general, it was necessary and appropriate to spend personal time

on the Second Life project because of budget cuts. As one committee member noted, "If the person doing the work wants to do the work and doesn't mind doing it on their own time then it is fine." Concern was also expressed that the project interfered with other responsibilities and that the interest level of traditional library patrons and those Olathe employees not involved with the project was low.

Overall satisfaction ratings of the Second Life committee members was neutral—33 percent chose low, with a 2.0 rating or lower (on a scale from 1–10); 33 percent chose midway, with a 5.0–6.0 range; and 33 percent chose high, with a 9.0 rating. The committee found the overall usability of Second Life to be low ($M = 5.2$ out of 10). According to the committee members, their department supervisors were also divided about the project—50 percent ranking 2.0 or lower while 50 percent ranking a 5.0 or better. When asked about the future of the Second Life project, a supporter of the project foresaw a "bright" future but recognized that efforts needed to be made to increase visitation. A respondent who was "unsure" stated that it was important "to be open to all ideas." More than one member, however, felt that resources would be better applied to other technologies like Facebook, Twitter, or Flickr. The overall support of the library's committee was clearly not present.

Traditional Olathe Public Library Patrons: More Books if You Please

Fifty-nine traditional or Real Life (RL), as they are referred to in Second Life, patrons responded to our survey. Most patrons (98.3 percent) used the library to borrow books, while more than half used the library to borrow videos and/or to obtain general information. The majority of patrons, however, did not appear to use Olathe to attend library programs, for a quiet place, or to use the Internet. The majority of surveyed patrons used the Internet primarily at home, while a fourth used the Internet at school or work (see table 1). Only a small percentage used the Internet at public access locations such as the library, cafés, and so forth.

Patron Technology Trends—Social Networking and E-mail

All patron respondents used e-mail on a regular basis, and 63.2 percent used social networking sites regularly. Instant messaging, chat rooms, blogs, and online games were not particularly popular, which is germane because text chatting is the primary mode of communication in Second Life, and its virtual environment is similar to that of a game (see table 2).

In terms of the usage of online resources, Olathe offers a suite of services including databases, subject guides, Cool Sites for Kids, and downloadable books and music. The databases were the only online resource used on a regular basis, while 30–40 percent of the respondents said they had never

TABLE 1
WHERE DO YOU ACCESS THE INTERNET?

In the Past Month, What Percentage of Your Time on the Internet Were You Using from the Following Locations?		
	Response Average	Response Count
Where do you use the Internet:		
School/work	26.94	47
Home	66.79	56
Public access locations (libraries, cafés, etc.)	15.83	41
No. who answered question		59

heard of the other sources. In terms of additional online services, patrons asked for user-friendly search options, improved online tutoring for college students, an RSS feed for what's new at the library, eBooks, and more resources in Spanish.

In terms of virtual worlds, the majority of patrons did not know that the Olathe Public Library was involved with Second Life, and only a small number of patrons indicated that they were interested in virtual library services; interest in classes teaching them about Second Life were also rather low (see tables 3–5).

In terms of potential services that patrons potentially would want delivered virtually, suggestions included a need for ease of navigation, novel technologies, things not offered in the physical library, virtual book clubs, chatting with other patrons, reference, eBooks, programs, classes, reader's

TABLE 2
PATRON USAGE OF INTERNET TECHNOLOGIES

Do You Use the Following Internet Tools Regularly?			
	Yes (%)	No (%)	Total Response Count
Internet tools:			
E-mail	100.0 (57)	.0 (0)	57
Instant messaging	29.3 (17)	70.7 (41)	58
Social networking site	63.2 (36)	36.8 (21)	57
Internet chat rooms	5.3 (3)	94.7 (54)	57
Blogs	43.9 (25)	56.1 (32)	57
Online games	33.3 (19)	66.7 (38)	57
No. who answered question			59

NOTE.—Numbers in parentheses are totals for each response.

TABLE 3
DID YOU KNOW YOUR LIBRARY HAS A SECOND LIFE LIBRARY?

Did You Know That the Olathe Public Library Is Involved in the 3-D Virtual World Second Life?		
Answer Option	Response (%)	Response Count
Yes	11.9	7
No	84.7	50
Not sure	3.4	2
No. who answered question		59

advisory, book reviews from other users, more in-depth information of books and authors, and educational material. Such a virtual environment would also need to be safe, confidential, and entertaining.

Seeing Is Believing

A focus group with five Olathe patrons found that their initial impression was that a 3-D virtual extension of their public library would be more suitable for “kids.” Yet, when they were informed of some of the existing ways the virtual world was being used, their interest visibly increased. While they felt that typical Second Life actions such as flying, changing one’s appearance, and dancing were still more applicable to children, they found the ability to meet and communicate with people who have similar interests from across the state, country, and world, completely free and from the convenience of their own computer, extremely intriguing. Virtual services that they saw as potentially useful were audio books and documentaries based on real-life dramas and delivering plays and reenactments. One of the participants, a teacher, expressed interest in using Second Life as a tool to inspire children to read.

After a demonstration of Second Life, participant interest was clearly

TABLE 4
HOW INTERESTED ARE YOU IN A VIRTUAL LIBRARY SERVICES?

How Interested Would You Be in a 3-D Virtual World Extension of Your Public Library?		
Interest Level	Response (%)	Response Count
Very interested	10.2	6
Might be interested	37.3	22
Not interested	25.4	15
Not sure	27.1	16
No. who answered question		59

TABLE 5
 WOULD YOU BE INTERESTED IN BEING TRAINED IN THE VIRTUAL WORLD?

Whether You Answered "Yes" or "No," How Interested Would You Be in a Library Program to Teach You about a 3-D Virtual World (Living, Playing, Learning—More Than Just with the Library)?

Interest Level	Response (%)	Response Count
Very interested	15.5	9
Might be interested	39.7	23
Not interested	29.3	17
Not sure	15.5	9
No. who answered question		58

peaked. When asked what services they would be most interested in, participants were full of suggestions and ideas and seemed impressed that essentially anything that could be dreamed up was possible in a virtual world. One person liked the idea of asking a librarian a question in-world without having to get up and go find someone while in the library. A teacher enjoyed the idea of virtual tours. Another person liked the idea of visiting places, such as Europe and Africa—places he may never get to see or might like to “tour” before he decided to visit in real life. At the end of the session, when asked if they were interested in Second Life and if they saw it as something that they would continue to use in the future, all five participants answered “yes.”

Olathe and Second Life Libraries, Librarians, and Patrons

Olathe Second Life Library patrons.—The overall response rate for the Olathe Second Life Library was rather low, with only fifteen participants. Despite the low number of responses, some interesting trends emerged. The majority of respondents were referred to the Olathe virtual library branch either at the actual Olathe Public Library (40 percent) or in Second Life (20 percent). A third, or 33 percent, found the library through their explorations of Second Life. It was the first time visiting the Olathe virtual library (60 percent) for the majority of respondents; they did not tend to talk with a virtual librarian (67 percent), and they tended to be public library users in “real life” (67 percent; see table 6).

Most of the visitors were just exploring (73 percent) rather than looking for anything specific and overwhelmingly liked the library enough to consider visiting again (93 percent). The most frequently mentioned service that patrons would like to see at the virtual library was instruction ($n = 2$) and opportunities to network with other people ($n = 2$). Overall, the virtual library visitors were older, in the forty-one to fifty-year-old age range

TABLE 6
OLATHE SECOND LIFE LIBRARY PATRON USAGE

	Yes (%)	No (%)
Is this your first visit to this library in Second Life?	60 (9)	40 (6)
Have you ever talked with one of the librarians here?	33 (5)	67 (10)
Do you regularly use a public library in real life?	67 (10)	33 (5)
Do you regularly use another library in Second Life?	33 (5)	67 (10)
Do you work or volunteer at a library, in or out of Second Life?	47 (7)	53 (8)

NOTE.—Numbers in parentheses are totals for each question.

or older (57 percent), followed by twenty-three through thirty-year-olds, who represented 36 percent of all respondents and who were well educated (87 percent with a college degree), with 47 percent of respondents having a bachelor's degree and 40 percent having a graduate degree.

The majority of respondents were new to Second Life, with 77 percent having used it less than a year (see table 7).

Virtual second life library patrons are digital neophytes and pioneers.—The survey of 285 virtual patrons in Second Life libraries supported Clay Shirky's finding that Second Life attracts many users who create an account but ultimately do not stay, but there also tends to be a smaller dedicated group of persistent users [42]. Overall, this general trend was supported: the majority of respondents, 69.1 percent, had used Second Life for less than

TABLE 7
HOW LONG HAVE YOU USED SECOND LIFE?

Duration	Response (%)	Response Count
Less than a month	26.7	4
More than a month but less than three months	26.7	4
More than three months but less than six months	6.7	1
More than six months but less than a year	6.7	1
More than a year but less than two years	26.7	4
More than two years	6.7	1

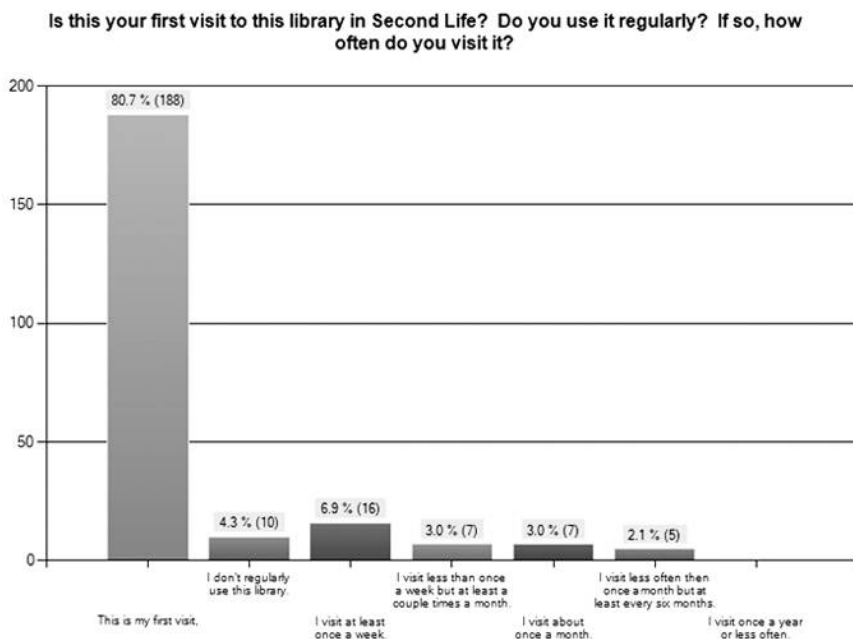


FIG. 4.—Survey results of virtual patrons

a month, while the second-highest length of time people had used Second Life was for two years, 9.6 percent (see fig. 4).

Within Second Life, libraries appear to have a similar problem with patrons: most of their traffic comes from first-time visitors, 80.7 percent, and even 32.4 percent of those with more than a year of Second Life experience were visiting for the first time. An interesting difference was found between Second Life branches of real-life libraries and Second Life–only virtual libraries. For virtual library branches of traditional libraries, 0 percent of the respondents were repeat visitors, and approximately one-fourth of its visitors, 26.2 percent, either worked or volunteered at a library in real life, which suggests that Second Life libraries may be more interesting to librarians than to the general public.

Second Life–only libraries appeared to be far more frequently visited than the Second Life branches of real-life libraries, as the former returned 285 responses versus fifteen responses from the latter. The surveys, however, indicated no clear reasons for the difference and no real patterns in the use and need for library services. In general, Second Life patrons appear to want to keep to themselves and explore, as not many users really engaged

directly with the library—79.0 percent never talked with a librarian at the library they visited, 75.3 percent did not come to the library looking for a specific resource, and more than 68.5 percent did not use any resources while they were visiting the library. Of the reasons users mentioned for visiting, there was no requested service or resource that appeared more than a few times, suggesting that there is no single service or resource a library can offer that would be guaranteed to bring in a large number of users.

Most users, 69.8 percent, found the library by exploring Second Life. This suggests that most real-life patrons would never find a Second Life branch without better advertising and that Second Life libraries, depending on their goals, may want to market themselves rather than wait for potential patrons to wander in. Likewise, of Olathe's real-life patrons, 84.7 percent did not know that Olathe had a Second Life branch, suggesting that the lack of awareness of Second Life branches of real-life libraries extends into the real world.

The profile for a general Second Life user is as follows: ten users completed a survey in Second Life, and the majority (80 percent) of those surveyed used Second Life for fun, while 20 percent used it for work. Users were split down the middle regarding needing assistance in Second Life, listing issues such as moving around and finding places. Of those who answered that they had needed help or had questions, two mentioned that they needed a lot of help learning about all aspects of Second Life in general. Other issues mentioned were making money in-world and finding hot spots to hang out and meet other people.

Most of the respondents (70 percent) were aware of the existence of libraries within Second Life, although only one respondent (10 percent) had used one. That respondent used a library to learn about object-building, which is in keeping with the findings of the Alliance Virtual Library reference desk, that most questions posed there relate to Second Life issues. No respondents offered concrete answers when asked "Do you have any thoughts or ideas on how libraries could assist Second Life users?"

Second Life Librarians—Community over Information

Through the interviews with four librarians who do a lot of work in Second Life, we discovered that many of these professionals share the same goals and outlooks regarding virtual libraries. When asked what the primary goal of their Second Life library was, all of them mentioned the community aspect of Second Life. Being associated with a Second Life library offers opportunities to learn, network, and collaborate across geographical borders in ways that would not be possible without the Internet. The librarians valued the ability to learn from and work with other library and information professionals all over the world.

Despite the culture of project planning and management in librarian-

ship, most of the librarians interviewed did not do much preplanning for their Second Life libraries. Three of the librarians started doing their own research about Second Life and the possibility of creating a library branch and took the initiative of approaching the directors of their real-life libraries to ask about launching one. Libraries were supported and funded in different ways. Second Life charges fees for “land” ownership, though these are generally discounted for educational institutions, and the original site of the Kansas State Library was free. The real-life branch of the Alliance Library System supports the Alliance Virtual Library through contributions and grants, and the land was purchased by an anonymous donor. The Olathe branch and the Kansas State Library were paid out of library funds, although for the past two years the Kansas State librarian has paid land fees out of his own pocket. The librarians can purchase buildings, furniture, and objects using Second Life’s in-world currency or build their own. There seems to be a strong support network where librarians can find out where to get resources to create their virtual libraries.

The issue of doing work in Second Life libraries on personal time was mentioned previously, and all of the librarians interviewed followed this practice. Most could only put in an hour or so per week of actual on-the-clock work time, although the virtual library is sponsored by their employers. They spent many more hours of their own personal time working on and in the Second Life libraries, mainly because they personally feel that the libraries are of great value, essentially making them volunteers. In general, the real-life library administration seemed supportive of the Second Life projects but not to the extent of setting aside time out of a regular work day to maintain them. The librarians, while understandably expressing how nice it would be to be able to do Second Life work at their place of work, accepted this arrangement. They noted that there often was not time to do Second Life work during the workday, and that other people misunderstood what they were doing when they worked on the Second Life library at work. This ties in to the perception of many people that Second Life is just a game with no educational or organizational value.

When asked why many people started using Second Life but dropped out quickly due to the high learning curve, every librarian interviewed said that the key to getting people to “stick with it” was to get them involved in a community and interacting with other participants. Suggestions for new users included joining groups that patrons are interested in, taking classes, and attending lectures and events in Second Life. Everyone stressed the importance of finding a purpose for being in Second Life beyond “dancing and shopping.” Most of the libraries offered classes in real life and/or Second Life to teach users how to navigate the virtual environment.

The final interview question addressed the perceived future of Second Life. All of the librarians interviewed reiterated the opportunities created

for networking and collaboration between libraries that are geographically distant. Most saw Second Life continuing to move in an education-based direction, with possible increased participation from government entities and businesses. The 3-D environment lends itself particularly well to learning demonstrations that are difficult or impossible to re-create in the real world, such as medical dummy simulations at the University of Wisconsin-Oshkosh or the moon landing simulation at Elon University. One noted that as librarians are expected to be leaders in technology, they will be expected to guide other users through new technologies such as Second Life. All foresee the continuing relevance of Second Life to the field of librarianship.

Discussion

Examining the research questions through both librarian and patron perspectives allows the study to address the original research questions with a degree of internal and external validity and reliability.

RQ₁: Are the Information Needs of Traditional and Virtual Users Different?

The information needs of tradition and virtual users appear to be different. Traditional library patrons are local and utilize the Olathe Public Library for books as well as videos and other similar materials. They do not appear to use the library much for its technology or programming and do not have much experience or interest with virtual worlds or gaming. Virtual users, on the other hand, are not local to any one location and are, in fact, from around the world; are relatively new to the virtual world and Second Life; are first-time users of the virtual library they were visiting with no clear information needs; and generally found the library as part of their exploration process. They were mostly there for entertainment and fun, which supports Lori Bell and Rhonda B. Trueman's assertion that virtual users are not traditional users [7].

Consistent with Tom Peters's assertion, our findings found that traditional users were focused on information and object-oriented information systems, while virtual users were "experience-oriented" [5]. This suggests that services such as programming designed around social engagement [28] and experiences utilizing the unique technology-enriched environments not possible in the real world are more suitable virtual library services. Attempting to re-create services centered on the information needs of traditional patrons for virtual patrons would seem to be ineffective and low in usability from a utility perspective because their information needs are so diffuse.

The results of the Olathe Public Library user focus group also suggests

that once exposed to the technology and the potential it offers, patrons may be able to see ways to use it and assess virtual services that they never realized were possible or available.

RQ₂: How Are Virtual Libraries Managed and Implemented?

Previous research suggests that virtual libraries are managed by “a sea of volunteers,” because providing virtual services usually is a lower priority than traditional services and also because evenings (after work) and weekends tend to be the busiest times in Second Life [31]. Our study results suggest that the majority of virtual libraries were created and are managed by passionate librarians who do most of the work during their personal time. Oversight of the virtual library is not given a very high priority, and virtual librarians typically work in conditions where their work is not highly regarded by their peers, has few resources, and is conducted during personal time in the evenings and on weekends. Staffing is an issue, and it would appear that virtual libraries “born virtual,” as opposed to virtual branches of a traditional library, are more heavily visited because their information services focus on programming that accentuates and builds upon the social, collaborative nature of the environment.

A large part of learning about Second Life consists of exploring, playing, and experimenting “in-world”; unless a librarian is willing to spend some of her/his own time at home learning about the environment, it can be difficult to balance Second Life with other tasks in a normal work setting. Without the passion, drive, and advocacy of Olathe’s Second Life committee head, their project would probably not exist and certainly would not be where it is today. Until such time as managing a virtual library is accepted as a legitimate work duty, these qualities are what will drive Olathe’s Second Life branch and most other virtual library branches.

From a usability perspective, the design and management of virtual libraries is low in terms of utility and ease of use for traditional libraries with virtual branches in Second Life. They lack support in terms of both time and money, and relying on librarians to volunteer their time after hours is not a solid foundation for long-term planning and implementation.

RQ₃: How Usable Are Virtual Libraries in Terms of a Match between Information Needs of Traditional and Virtual Patrons and Information and Services Being Provided?

The usability of virtual libraries based on the results of this study is relatively low. Examining it from the three main factors—efficiency, effectiveness, and satisfaction—there are fundamental issues for both librarians and their patrons. From an *efficiency* standpoint, librarians managing and providing services in Second Life are faced with a host of cultural and organizational challenges that frequently compel them to perform work in Second Life

on their own personal time. This is not a sustainable model until greater acceptance occurs and more work hours are dedicated to work in virtual worlds. *Effectiveness* is also a challenge, as the use of personal time and skepticism and lack of support again makes work in virtual worlds truly a “pioneering” effort, often done in isolation and during the librarian’s own personal time using his or her own resources. As to general *satisfaction*, while commitment and passion of the virtual librarians for exploring the use of virtual technology in the library setting appears strong and is common, the lack of mainstream support and organizational commitment from their host libraries is problematic.

From a patron standpoint, there are similar issues with the usability factors of efficiency, effectiveness, and satisfaction. Patrons of the “real” traditional library clearly represented a different group from Second Life users—less tech savvy; less likely to use chat; and less likely, in fact, to have visited a virtual world at all. From their standpoint, virtual worlds were not a common or frequent experience. While intriguing, a virtual branch appeared for most patrons to be beyond the realm of their day-to-day information needs (98 percent of the study’s respondents used the library primarily for books). In general, Olathe’s real-life patrons were less familiar with the Internet compared to the general Second Life library users, as they used a smaller variety of Internet tools and services and spent far less time on the Internet.

Another important difference is that Olathe and Second Life library users spend different amounts of time on the Internet in public access areas, 15.83 percent and 7.48 percent, respectively (see table 8). This suggests that Olathe users might be more willing to come to the library itself to learn about Second Life but also might not use it as much as people who can log in from home. One additional factor of interest was that 87 percent of the Olathe virtual library patrons were college graduates. It could be that only college graduates took the time to complete the survey, but another possibility is that only higher-educated patrons tend to have the technology resources and interest in using Second Life. If this is indeed the case, this eliminates a major portion of potential public library users.

A focus group of Olathe Public Library users supported this trend although there was quite a bit of excitement about the possibilities once patrons were able to see and understand what Second Life had to offer. For virtual users, the majority of participants noted that it was the first time they had visited the virtual library, they visited for no specific information need other than to simply explore, and they were usually new users of Second Life. Overall efficiency, effectiveness, and satisfaction for patrons therefore could be considered low for both traditional and virtual patrons.

TABLE 8
COMPARING TRADITION AND SECOND LIFE PATRON INTERNET USAGE

How Often Do You Use the Internet in a Typical Week? (Pick the Range in Which Your Use Falls)		
Duration (Hours per Week)	Response (%)	Response Count
Olathe Public Library users:		
Less than 1	3.4	2
1-5	22.0	13
6-10	25.4	15
11-20	20.3	12
21+	28.8	17
No. who answered question		59
Second Life library users:		
Less than 1	2.2	5
1-5	7.0	16
6-10	15.2	35
11-20	23.0	53
21+	52.6	121
No. who answered question		230

RQ₄: What Is the Future of Virtual Libraries?

The virtual branch of the Olathe Public Library, in its current state, is easy to use in that the Second Life area itself is easy to navigate and offers a number of useful and interesting collections. The problem is that not many people are actually using it. This is because the Second Life branch is not particularly well promoted in real life, and, as this study found, many of the Olathe Public Library patrons were not aware of its existence. The library staff is working on increasing promotional efforts on the library website and is planning to offer seminars for library patrons to learn more about Second Life, virtual libraries in general, and what they have to offer. Making this link between real life and the virtual world could potentially help bring more Olathe Public Library patrons into the Second Life environment. Also, the Second Life branch could benefit from offering library services unique to Second Life, such as community events like classes and 3-D exhibits.

This study was also designed to examine if Second Life library branches are viable options for expanding real-life library services in general. The high proportion of new users, a persistent phenomenon in Second Life, suggests that Second Life will always be a niche interest. Public libraries have historically provided services for niche client groups—they do not

intend for every resource to serve every audience. When designing services, libraries can view Second Life from this perspective.

Coordination problems between the Second Life branches of traditional libraries and the real-life libraries themselves abound, as the real-life patrons were often not aware of the existence of the Second Life branches and may not have had the technical skills to engage even if they did have interest in exploring and using them. The polarization effect apparent between those who become long-term Second Life users and those who stop after a month also occurs among the library staff responsible for creating and maintaining Second Life projects. In turn, polarization spurs conflict within the library staff members and may cause some of the coordination problems. There also seem to be perception issues at play between those who see Second Life as a valid educational and information tool and those who see it only as a game or technology fad. This seems to be the reason that so many Second Life librarians do their work on their own personal time.

While the survey results indicated that Second Life-only libraries are far more popular than Second Life branches of public libraries, there are no clear indications of what makes a Second Life library more or less popular. When surveyed, users had many suggestions for services that Second Life libraries could offer, but they did not agree on what services they wanted to see. The Caledon Libraries and the Alliance Virtual Library, however, are both extremely popular in Second Life and seem to be taking advantage of the niche market afforded by a 3-D environment. Both libraries offer virtual surrogates of traditional library collections but seem to spend more energy on community programming and exhibit creation. The Alliance Virtual Library offers the reference desk, which provides live help to Second Life users, and they also offer classes on building, object creation, networking within Second Life, job seeking, and many other topics. Caledon offers dramatic readings and storytelling events using in-world audio, live music, and book clubs.

Second Life libraries attached to real-life public libraries could benefit from examining what works for these Second-Life-only libraries. They tend to focus on delivering services that have no equivalent in real-life libraries and would be impractical, if not impossible, to deliver in a real-life setting. The librarians who were active in Second Life all acknowledged that the key to having a valuable experience in a virtual world is tapping into a community, and offering community-based services that cross geographical barriers is one way that libraries can maximize Second Life's potential as a medium for delivering information services and social experiences.

Libraries should also consider ways to use Second Life's 3-D environment to create experiential learning opportunities. While three of the researchers were interviewing Rocky Vallejo of the Kansas State Library in Second

Life, he mentioned how a friend and associate of his had used the 3-D qualities of the virtual environment to build a hypercube to demonstrate the nature of four dimensions. Within seconds, that associate, who was sitting in on the interview, had recreated the hypercube (a visual representation of software code) and placed it in the middle of the room. The researchers were able to walk around it and see and experience exactly what Rocky had been describing just a moment before. This kind of interaction demonstrates the strength and potential of Second Life as an immersive educational tool. By avoiding duplication of real-life services and thinking of innovative ways to use Second Life's interface to deliver information and services, virtual library branches can be a viable option for expanding services in a brick and mortar library.

Limitations and Future Research

The study has several limitations. The first is that only one traditional library and its virtual branch were closely studied, which limits the overall validity and generalizability of the study's findings. The second is that the study was conducted only in the Second Life virtual world, which again limits the ability to generalize results outside of Second Life. Finally, the study had a low sample size of general Second Life users who were not visiting virtual libraries in Second Life. While examining the information needs of users who visit virtual libraries is valuable information, learning the information needs of the majority of Second Life users, all potential virtual library patrons, would help inform at a higher-level future provision of information services in virtual worlds.

In terms of opportunities for future study, utilizing a usability framework provides a clear vernacular for success—find out what your prospective users want and then provide it in an efficient, effective, and satisfying fashion. As currently implemented, the primary library that participated in our study and its virtual branch do not appear to be very high in usability. The potential, however, remains, as the project has not been widely marketed, and current users will not use services they do not know exist. From the perspective of the virtual branch, using a different paradigm incorporating the unique nature of virtual users and their disparate information needs appears challenging, but if a pattern can be ascertained, then information services can be designed and provided that are higher in both utility and ease of use.

Another potential area for study is the aspect of virtual libraries that the virtual librarians, in particular, have identified as the primary benefit: social collaboration and networking with other librarians. What impact do these social collaborations with colleagues across the globe have on the actual

practice of librarians both in traditional and virtual library settings? Is it possible that the true value of virtual libraries may be in the professional development area and networking possibilities for all librarians? It could be surmised that virtual patrons attended the Olathe holiday party, described in the introduction of this essay, but traditional patrons did not because inclement weather, which serves as a viable barrier toward access to physical services, had little effect on the virtual world and the primary human appeal of social gatherings in general—connecting and interacting with other people free from the constraints of space and physical limitations.

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