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Making a Case for Virtual Healthcare Communications: Mayo Clinic's Integration of Virtual World Communities in its Social Media Mix

Donna Z. Davis
University of Oregon

Abstract

This case study reviews current health-related activity in virtual worlds and documents Mayo Clinics' use of the Second Life virtual environment specifically, externally for developing community and providing health education, as well as internally for professional continuing medical education for a globally connected health network. The study explores the mediated effects of the 3-D online immersive environment as well as role of presence in building an online community in the virtual world of people concerned about the health and wellness. While a number of strengths of maintaining a presence in the virtual world are evident, such as the ability to create and nurture relationships, weaknesses are also identified. To date, Mayo Clinic's use of virtual worlds remains experimental while its other social media tools including the website, Facebook, Twitter and YouTube are in full production. Preliminary results reveal different motivations for traditional social media vs. the virtual world including the ability to create an online identity (or healthy avatar), being able to consume multiple visual inputs that reinforce learning, and creating a social space that fosters more engaging conversations and meaningful relationships.

Keywords: Mayo Clinic; Second Life; uses and gratifications; media effects; social capital

Introduction

In the growing and rapidly changing social media landscape, organizations often find they must run faster to get no further ahead in the quest to reach new and existing audiences. For the professionals challenged with crafting engaging messages and identifying the delivery to either a mass audience or highly targeted consumer market, the task can be

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overwhelming. Likewise, consumers have flocked to tech tools du jour, such as Facebook, Twitter, Instagram and Pinterest, each which reached mass adoption while other technologies struggle to find a niche or an audience. Keeping pace with emerging technologies has also become more of a challenge as while it took television 13 years to reach a market audience of 50 million (Fisch, 2006), Facebook took just four years to achieve the same benchmark ("Company Info: Timeline," 2014). In their quest to reach important audiences, some organizations have been able to create digital destinations that offer compelling and unique uses and gratifications for their audiences. Perhaps one of the most successful is Mayo Clinic.

Mayo Clinic enjoys the status of hosting the most successful health information website in the world with about 50 million unique visitors to mayoclinic.com, mayoclinic.org and mayo.edu combined per month (Plumbo, 2014). In 2010, Mayo Clinic announced the creation of its Center for Social Media "to accelerate effective application of social media tools throughout Mayo Clinic and to spur broader and deeper engagement in social media by hospitals, medical professionals and patients to improve health globally" ("Mayo Clinic Creates," 2010, para. 1). The site targets both internal and external audiences for training, coaching, consulting, conferences and providing resources such as books, white papers and manuals. As an example of the power of its social media presence, as of this writing, the Mayo Clinic YouTube channel has more than 24,000 subscribers with more than 17 million video views. On Facebook, Mayo Clinic has more than 559,000 "likes" and on Twitter, Mayo Clinic has more than a million "followers."

While these activities reflect the strength of Mayo Clinic's reach in digital media, another medium Mayo Clinic continues to explore is the realm of virtual worlds. Mayo Clinic manages three "sims," or simulated environments in Second Life, a 3-D online immersive social environment. According to Mayo Web administrator and coordinator of Mayo Clinic's presence in Second Life (SL) Brian Kaihoi (Svea Morane in Second Life), virtual world activities are still at the experimental stage for Mayo Clinic. Kaihoi is charged with exploring the uses of virtual worlds in practice, education, research and administrative activities and is responsible for the outcomes of the Clinic's activity there. Although it is still considered an alternative space, the potential applications are intriguing given the

nature of the immersive environment and its ability to build social capital for the globally connected organization.

Background

Evidence of effective health-related activities and healthcare support groups in virtual worlds began emerging in scholarship in 2009 (Beard, Wilson, Morra, & Keelan, 2009; Krebs et al., 2009; Norris, 2009) as virtual reality became more accessible and user traffic became more wide spread. Medical researchers began reporting on the potential uses of virtual reality in training as early as 1993 (Satava, 1993). With the advent of more accessible and social virtual worlds, healthcare organizations including Mayo Clinic have explored the platform for possible uses such as medical training, research, organizational communications and telehealth. Researchers at Glasgow Caledonian University have created a Second Life "international Community of Practice (iCoP) of Nursing, Midwifery, Healthcare educators and Learning Technologists" that "aims to facilitate sharing of ideas, experiences and learning resources around healthcare simulation, research & teaching and learning in virtual worlds and beyond" (*School of Health*, n.d.). The American Cancer Society, Fearless Nation (for PTSD support), the Autism Society of America, and Team Fox, for the Michael J. Fox Foundation are among hundreds of non-profit health organizations that have a presence in Second Life.

Although Second Life's traffic numbers of an estimated one million monthly active users (Reahard, 2013) pale in comparison to the more mainstream social media destinations such as Facebook with more than one billion active users ("Company Info: Timeline," 2014), there are powerful media effects based on the sense of presence in these online virtual 3-D environments that warrant further exploration for healthcare community development and outreach. It is this element of presence combined with international access, as well as social and psychological factors, that keep Mayo Clinic and other health-related organizations interested in the use of virtual worlds as a potential platform especially as telemedicine gains momentum.

Virtual environments are hyper-social, providing an alternative location for in-depth interaction and meaningful exchange. Studies continue to show that individuals who operate as avatars in virtual environments

often express a level of social capital equal to or greater than what they may experience in the physical world which has tremendous potential value in patient support and recovery (Davis, 2013a; Yee, 2006). However, technological barriers remain as individuals resist the complexity of functioning in a virtual world. Likewise, a lack of understanding of virtual reality and perceived normative values create additional obstacles in achieving mainstream adoption. This study explores these issues and argues for further research to better understand virtual worlds as a viable communications function in the healthcare field.

Media Theory and Virtual Reality

In remarkably short order, it has become cliché to say that digital media has changed the way we live. For perspective, if one were to consider the historical adoption curves of media as defined by Rogers' (1994) theory of diffusion of innovation, to reach an audience penetration of 50 million it took radio 38 years and television 13 years (Tapscott, 2009). It took Facebook just two years to reach the same milestone ("Company Info: Timeline," 2014). Even more astonishing, in April, 2012, Rovio Entertainment announced that its mobile game "Angry Birds Space" reached 50 million users in just 35 days ("Angry Birds Space," 2012). With the advent of each of these technologies, researchers have been studying their effects on individuals and society. Whether we credit or accuse the media of social change, there is no question the evolution of these technologies has changed the way individuals and communities connect and communicate for both social and business purposes.

In his exploration of media effects, McLuhan's (1964) prediction nearly half a century ago of media as an "extension of man" was perhaps even more applicable to digital media, especially the immersive 3D virtual world where humans function and interact with others in the form of digital surrogates, also called avatars. He wrote,

> After more than a century of electronic technology, we have extended our central nervous system itself in a global embrace, abolishing both space and time as far as our planet is concerned. Rapidly, we approach the final phase of the extensions of man—the technological simulation of consciousness, when the creative process of knowing will be collectively and corporately extended

> to the whole of human society, much as we have already extended our sense and our nerves by the various media. (pp. 3-4)

Likewise, a retrospective look at Blumler and Katz's (1974) uses and gratifications framework can help guide our understanding of the nature of adoption of participatory and social media. The uses and gratifications approach assumes the media consumer takes an active role in which medium they choose and how they use it. These consumers are goal oriented in their use of the medium, seeking out those media that best satisfy their individual needs whether those are information, entertainment, social, advocacy or professional needs.

One study of "Internet uses and gratifications found that the motivations of Internet use and television viewing likelihood were identical, even though the motivations for seeking specific types of Internet or TV content might diverge" (Song, Larose, Eastin, & Lin, 2004). Furthermore, Charney and Greenberg (2001) identified eight gratification factors for Internet use which included keeping informed, diversion and entertainment, peer identity, good feelings, communication, sights and sounds, career and 'coolness.' Specific to socialization, multiple studies have found process-oriented gratifications including social and entertainment gratifications (Stafford & Stafford, 2001), escapism and socialization (Korgaonkar & Wolin, 1999), and companionship, interpersonal communication, escape, and interaction (Lin, 2000; 2001). Because of the sense of presence that is experienced in online 3-D immersive environments, individuals have the potential to satisfy many of those motivations in ways that 2-D media simply cannot.

Another important differentiation between social virtual worlds such as Second Life, the platform used by Mayo Clinic, and gaming virtual worlds or other social media is the ability of the user to have a perception of control and to enjoy the experience (Merikivi, Verhagen, & Feldberg, 2013). Unlike other social media, users of social worlds appear to have little concern about the need for "critical mass" or social influence more often found in other social media destinations (p. 1181).

In addition to the positive and productive social, informational and entertainment uses and gratifications afforded via 3-D immersion, online games also represent risks. One such online game, and one the most

popular, is EverQuest. After spending six months in EverQuest, Castronova (2001) wrote:

> We must conclude that VWs offer something that is perhaps a bit more than a mere entertainment to which the players have become addicted. Rather they offer an alternative reality, a different country in which one can live most of one's life if one so chooses. And it so happens that life in a VW is extremely attractive to many people. A competition has arisen between Earth and the virtual worlds, and for many, Earth is the lesser option. (p. 10)

Castronova's conclusion represents what may be a primary cause for concern among laggards on the diffusion curve, or those who resist online 3-D immersive environments because they fear individuals will sacrifice relationships and healthy functioning in the physical world for an alternative virtual life. Evidence of maladaptive behavior such as this has been documented in news headlines such as the story of a Korean couple who let their 3-month-old daughter starve to death while they tended to a virtual baby in an internet café in Seoul (Tran, 2010).

What is so compelling about these online games that not only represents such dramatic addictive behaviors, but may also result in productive and positive outcomes? In his study of human communication and interaction on the Internet, Matusitz (2007) found "a virtual community, just like a community in a physical environment, looks like a gathering of people where there is significant social interaction, as well as reciprocal and non-reciprocal communication" (p. 21). Online communities in many forms have emerged in various social media destinations, connecting individuals globally for multitudes of purposes.

In a longitudinal study of a mature networked community, Kavanaugh, Carroll, Rosson, Zin, and Reese (2005) found "evidence in support of the argument that Internet use can strengthen social contact, community engagement and attachment" (p. 1). They also found social groups would significantly increase their types of active participation over time either by attending community functions or through leadership (Kavanaugh et al., 2005, p. 21) via active engagement of their online community. In some cases, the online community is the only option for active engagement. In her research of teens in social networks, boyd (2007) explained,

"Regardless of whether teens in the United States have the time to engage in public life, there are huge structural and social barriers to them doing so. First, there is an issue of mobility" (p. 18). Like teens, for individuals who live in isolation, whether psychological, medically mandated or by geographic location, the virtual world may offer social interaction resulting in social capital that their physical lives may not. This may be particularly important to healthcare communities such as the online support communities that have begun to populate the Internet through many other social platforms such as Twitter via Symplur Hashtag Project. At the time of this writing, Symplur, for example, had more than 700 million tweets, 12,000 healthcare topics and nearly 6,000 healthcare hashtags ("Healthcare Hashtags," n.d.).

Social Capital

Social capital has been defined as a resource embodied "in the relations among persons that facilitate action" (Coleman, 1988, p. S100). Coleman identified three forms of social capital, including the obligations, expectations and trustworthiness of structures; information channels; and social norms. Scholars have debated the validity of social capital and continue to argue what constitute appropriate measures of social capital. Perhaps most widely cited is Putnam's (2000) definition of social capital as outlined in his work *Bowling Alone*. Putnam identified multiple functions of civil society that build strength in families and communities such as volunteerism, voting, and social organizations such as bowling leagues. He posited that each of these activities serve as builders of social capital. Central to Putnam's premise were the roles of trust and reciprocity as fundamental to the development of healthy relationships that result in social capital.

Resnick (2001) linked social capital and the activities that produce it, indicating the role of social capital as both a cause and an effect. Like many studies of social capital, Resnick's model showed social capital as both a predictor and an outcome. In successful measurement of social capital, researchers must determine whether they are using social capital to predict behaviors/activities, or if behaviors/activities result in increasing or decreasing social capital.

Narayan and Cassidy (2001) further developed the dimensions of social capital to include group characteristics, generalized norms, togetherness, everyday sociability, neighborhood connections, volunteerism and trust. Within these dimensions, they included measures such as frequency of participation, helpfulness, how well people get along, and trust in families, neighbors, in government, and in business.

Digital Social Capital

Each of these definitions and measures of social capital are based on face-to-face communication and community. How does that translate to online community? Can social capital be supported in digital form as indicated by Matusitz (2007) and Kavanaugh et al. (2005)?

Summarizing the many dimensions and/or components of social capital found in previous literature, several common threads re-emerge in defining the concept which must remain central to any form of digital social capital as well. Digital social capital can occur, first, because the ties that connect individuals with their social systems are fundamental to the development of social capital. Second, social capital can be found in measures of connectedness between friends and family (which include communities of personal social interests), civic community and work community. These communities are not only being formed, but strengthened, online. And finally, the other essential element to the creation of social capital is trust and reciprocity.

As found more recently, reciprocity is central to the success of online communities as formed by journalists (Lewis, Holton, & Coddington, 2014). In their study of online journalism communities, the authors found engaging with audiences "directly with readers, indirectly among community members, and repeatedly over time…may contribute to the development of greater trust, connectedness, and social capital" (p. 1). Similarly, Gil de Zúñiga, Jung, and Valenzuela (2012) found that even though "the growing popularity and penetration" of social networking sites are "relatively immature news sources," engagement in these platforms are likewise strong predictors of social capital and civic engagement (p. 332).

This is consistent with prior research that found that people trust their online friends equally if not more than their physical world relationships (Ridings, Gefen, & Arinze, 2002; Yee, 2006). Ridings, Gefen, and Arinze (2002) concluded that individuals may use greater discretion regarding what type of information they are willing to exchange, as "there may be certain types of information for which trust is more important" (p. 290). In other words, the information shared in these spaces may be more about intimate thoughts and feelings, not necessarily about bank accounts and mundane daily tasks. Valenzuela, Park and Kee's (2009) work likewise supports earlier research that identified benefits from engagement online when college students used Facebook. The students surveyed reported higher levels of personal contentment, social trust, civic engagement, and political participation when more engaged on the social medium (p. 893).

Social capital cannot exist without positive and reciprocal connections between an individual and any number of social networks including friends, family, social, civic, religious, volunteer or professional organizations. However, as technology has permitted individuals to connect to their networks through highly interactive and mobile tools using greatly improved multimedia methods, "connecting" is now accessible to almost anyone, almost anywhere. This does not disavow the notion of a "digital divide" that might in fact not allow remote or financially disadvantaged individuals to participate. However, these individuals are also often lacking other simple resources required to develop social capital (including transportation or the economic resources to participate in community organizations) especially when their communities lack places or programs that support civic organizations or services.

Presence

Digital social capital draws from the same principles of traditional social capital in that it represents the meaningful relationships and resources shared among individuals, built on norms of reciprocity, through the connectivity and interactivity of digital media. Additionally, interactivity in 3-D online immersive virtual worlds such as Second Life is very similar to face-to-face interaction. For many virtual "residents," the realistic environments and avatar features recreate a sense of being present in the

virtual space, inhabited by avatars, created and operated by the human at the keyboard.

Heeter (1992) identified three forms of presence that are applicable to virtual performance: Personal presence is experienced when a person believes that he or she is actually inside a virtual or remote environment. Social presence is the belief that a person is experiencing and interacting with other beings. Environmental presence represents how effectively the environment itself is able to acknowledge and interact with the user in the environment. Successful functioning in a 3-D virtual environment requires the operator accept each of these forms of presence.

Given the nature of immersion in virtual environments as supported by this sense of presence and what is known about relationship formation in these spaces, exploration of this social space as a viable communications function for organizations is important. To help understand how individuals use 3-D online virtual worlds for healthcare information and community support, the following case study of the Mayo Clinic's presence in Second Life (SL) is guided by two questions:

> RQ1: How does the mediated 3-D virtual environment of Second Life influence participation in the Mayo Clinic's online community activities?
>
> RQ2: Does the 3-D online immersive environment build meaningful social capital in a way that benefits both Mayo Clinic and its constituents?

Research: A Case Study Analysis

In order to better understand how the characteristics of a 3-D immersive medium effect the development of community and the strength of relationships in a healthcare setting, this study utilized a descriptive case study. Data were collected through participant observation at a number of lectures hosted by the Mayo Clinic in the 3-D online virtual world of Second Life and through a series of interviews with Mayo Clinic Web administrator and coordinator of Mayo Clinic's presence in Second Life (SL), Brian Kaihoi (Svea Morane in Second Life).

Mayo Clinic in Second Life

Mayo Clinic first established a location in SL in June, 2004 and opened Mayo Clinic Island in 2009. The public land profile reads, "Mayo Clinic is working in Second Life to share their model of integrated clinical practice, education and research to improve health care around the world." In addition to the main public space where Mayo Clinic hosts its public lectures, there are also additional private areas where the organization can host continuing medical education courses and secure meetings. The Clinic's Virtual World initiative in its Center for Innovation expands the Clinic's mission of research, education and clinical practice.

Additionally, Mayo Clinic hosts a group of approximately 540 "members." The group profile reads:

> The Mayo Clinic is a not-for-profit healthcare organization that strives to provide the best patient care every day through integrated medical practice, education and research. This group is a designed to connect people with an interest healthcare to each other, information and other resources.
> www.mayoclinic.com (health & wellness)
> www.mayoclinic.org (medical services)
> www.mayo.edu (education & research).

Groups in Second Life are set up to provide notices to individuals interested in program content at Mayo Clinic's Second Life location. For example, when Mayo Clinic hosts a lecture in SL, members of its group, as well as other groups who collaborate with Mayo Clinic, will get "notecards" that identify what the program is about, at what time and date it is scheduled, and a "landmark" or link to the virtual space where the event will be held.

Mayo Clinic also sponsors a second group, the Physical Therapy Alliance, a group "designed to provide educational offerings and a venue to discuss clinical, educational and administrative issues related to the practice of physical therapy."

Continuing Medical Education

In attempting to identify the most powerful and practical use of virtual world activities, Kaihoi explained,

> The people who are using it most on a routine basis are the folks in our education area. Second Life has a ton of educational activities going on already so that was an easy model to pick up on. Continuing medical education programs are happening on a very regular basis. I think I'll probably end up with close to 100 of them in 2012 that are offered inside of Second Life where people are getting continuing medical education credits…That's a fairly easily understood model for most people. It's a better model than offering webinars for all the reasons that virtual worlds are better than flat 2-D web-based tools.

He cited Stanford, Harvard, Princeton and Yale's use of virtual worlds for teaching who have reported student performance is better when classes are in SL than when attending face-to-face class. He also cited Preferred Family Healthcare Inc., in Missouri who provide alcohol and drug counseling in SL. Preferred Family Healthcare found that the clients served in SL recover faster and have less recidivism than those patients who attend counsel in bricks and mortar practice (DeAngelis, 2012).

Another powerful draw for hosting events in SL is the ability to use visual components that allow the user to visually multitask. As Kaihoi explained, "when you go to any kind of educational presentation, your eyes and your brain have no problem stitching together multiple visual inputs into a coherent whole." Our neurobiologists affirm that humans can process multiple visual inputs at once but cannot handle multiple audio inputs as well. The value of the layout of the SL screen is in that it provides multiple visual inputs including "local chat" or the side-bar conversations of participants that appear as live text chat, small group discussions, the ability to check your understanding or ask questions to the presenter; all content that becomes a visual channel with dialog that facilitates learning (see Figure 1). The brain has no problem processing the additional visual channel, where it could not handle multiple audio channels. Kaihoi shared, "My personal hunch is that's what we're going to end up finding is the reason that it's more effective, but nobody has had any discussion about the fact that it's more effective from an education standpoint."

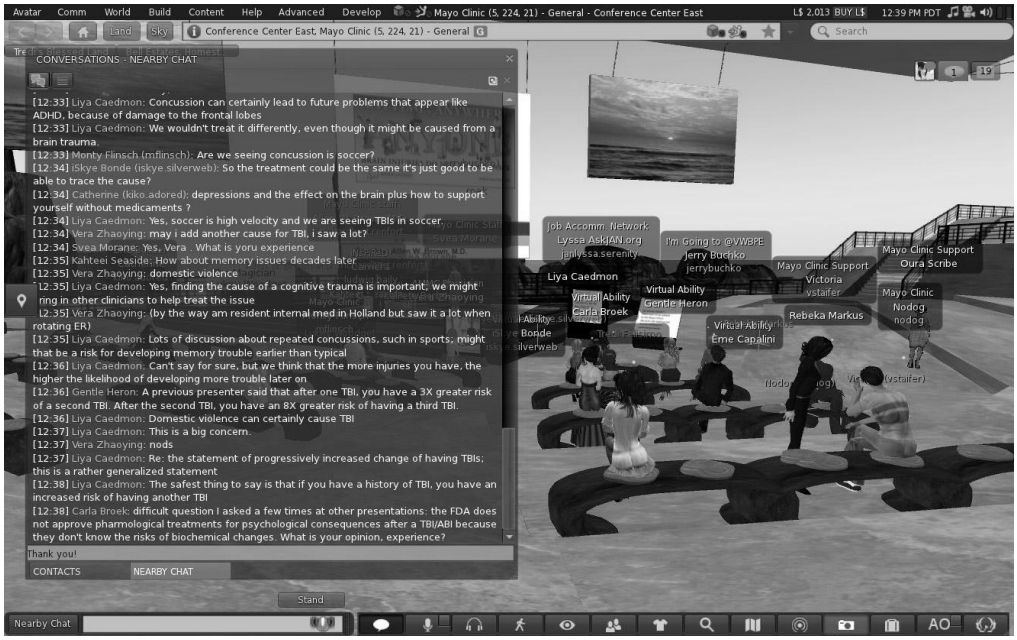

Figure 1. Local text chat during Traumatic Brain Injury lecture at Mayo Clinic in Second Life.

Building an Online Community of Avatars

Since opening the facility in SL, Mayo Clinic successfully hosted more than 100 conference presentations from its conference center. In the past year alone, the Clinic has hosted a series of lectures and continuing education programs in Second Life featuring topics such as bipolar depression, traumatic brain injury (TBI) and TBI impact on veterans (see Figure 1), deep brain stimulation, domestic violence, hernias, melanoma prevention and treatment and a virtual simulcast of the Dalai Lama who discussed "Resilience through Mindfulness" as part of his visit to Mayo Clinic. Participants have represented a blend of both internal and external audiences (dependent on content) from a diverse and international population. Mayo Clinic also simulcasts its annual Transform Symposium in Second Life, offering another discussion platform for an international audience. In 2014, Mayo Clinic virtual world administrators sent a notice to their in-world group members with the following information to promote the virtual presentation of the physical world event:

> 7th annual Transform Symposium will be streamed into Second Life at the Mayo Clinic Conference Center. This event brings together national leaders and innovative thinkers. There is no cost for Second Life residents. We will be able to participate in the sessions and discuss them together.
> Sunday, September 7 through Tuesday September 9, 2014
> See attachment for session times.
> Mayo Clinic conference center, Mayo Clinic island
> http://www.mayo.edu/transform for conference description and speaker bios.

Although attendance numbers have been collected from each of these events, Kaihoi states that traffic is not the most important measure. Rather, measurements that are important to Kaihoi and Mayo Clinic are patient outcomes and "life changing testimony." While Kaihoi and Mayo Clinic administrators are satisfied that what they are seeing in SL is important to the mission of the Clinic, what he wants to know now is how SL, "with all the social content on top of the business, is or is not a better environment." He said, "I know it is for my patients… who leave support groups together and then go off to a concert. There is power in creating those relationships."

Multiple studies have explored the benefits of the role of avatar performance in development of meaningful relationships, especially as they are experienced in health-related support groups in SL (Davis, 2011; Davis & Calitz, 2014; Norris, 2009; Partala, 2011) In a two-year study of relationship formation in SL, Davis (2011) found

> Individuals performing as avatars…revealed that although they may feel 'marginalized' in their real lives as a result of isolation, age, gender, race, or even extreme shyness, they were able to create an online persona and essentially role play their 'idealized self' and build meaningful connections (p. 16).

More recently, in a study of individuals with Parkinson's disease, Davis (2013b) also found individuals "increased social support and positive effect from emotional bonds built in their virtual world" (p. 8) as well as reports of relief of Parkinson's symptoms.

A similar example of this sort of connection was evident at a recent concert held at "Sweethearts Jazz Club" in SL to raise money for Parkinson's research and the Michael J. Fox Foundation (see Figure 2). The event raised $750,000 Linden dollars (equivalent to approximately $3,000 US), reaching capacity for the sim (101 avatars) three times during the day and attracted 1,864 blog views on the day of the event.

Another benefit the Mayo Clinic team discovered in the use of SL was the importance of the ability of the patient to create an avatar to represent the way they want to be seen. For example, patients with certain medical conditions may not be in a position to physically attend a public support group, and likewise may not want to be seen in a public setting in the state they may be in (i.e., attached to tubes, hair loss, etc.). The ability to create

Figure 2. Sweethearts jazz dance fundraiser for Parkinson's research held in Second Life.

an avatar in the image they would like to be seen, which "may portray how they feel rather than how they are" and to interact "publicly" is very important in certain activities. Virtual worlds provide an opportunity to create this visual identity in ways no other medium will.

Evaluation

As mentioned, while attendance numbers are maintained as a base traffic measure, Mayo Clinic administrators also collect "satisfaction" surveys that are requested from all face to face and SL CME participants. Additionally, Kaihoi explained that data is currently being collected on the "multi-channel delivery of education" idea that includes SL with results forthcoming. The survey data does not collect "outcomes" in the traditional sense. However, the general feedback is "yes do more of this virtual world meeting" format, so the Clinic is investing more in it. Kaihoi said,

> What we have been able to show is that people who attend in SL say "do more and I will come to more Mayo programs." This does not decrease face-to-face attendance, rather other factors do that: like cost, time away from practice and so forth. The trends are that with very little marketing, almost none, we get attendees. So we have proven there is a market and we have shown cost is almost zero thus to host in SL is almost pure profit… with the same content and almost no extra work.

To further test the potential use of CME programs in SL, Mayo Clinic hosted one program where the SL version was offered as an encore in the evening and had 20 people who paid for the face-to-face event also attend in SL at night. They paid an additional fee for the recap. One of the other benefits identified by individuals who attended both the face-to-face events as well as the virtual world event was that they could return to the same "place" in the Mayo Clinic space and meet the people they were in the conference with and continue the discussions. Kaihoi summarized,

> The notion of being able to create community after a digital presentation is a very powerful thing, whether that's for patients or employees. That's something we've never been able to do before. We've never been able to have a place that a group could come back to and review materials. We are very anxious for people to carry on the conversations.

It is these sorts of results that have encouraged Mayo Clinic administrators to proceed with future programs in SL. This is made even more attractive in an economic climate where corporate budgets are shrinking -- as there is no plane cost, no hotel cost, no meals out and physicians have ability to continue to see patients when needed. These cost savings and flexibility are big draws not only to Mayo Clinic and its constituents, but to other organizations who have also found SL can provide significant savings. Other organizations have demonstrated similar success. For example, the Radiology Society of North America which hosts 25,000 people in its face-to-face event in Chicago each year also draws thousands more in a virtual environment. Vendors pay $8,300 for a 3-day virtual booth that is created exclusively for that event. An industry of commercial virtual world developers such as On24 and Designing Digitally, Inc. is just beginning to evolve to address the new market of what some call "serious games." In 2009, IBM reported a savings of more than $250,000 in travel and venue costs and $150,000 in additional productivity gains for a total of $320,000 ROI by hosting its annual conference in SL rather than in the physical world ("IBM Saves," 2009).

With results like these, Kaihoi has successfully established the prototype and done what is essentially the equivalent of beta tests with preliminary results proving viability. He explained, "We demonstrated viability. We know there is a market."

Analysis & Discussion

While the Mayo Clinic asserts that it is still in the stage of experimenting in the use of virtual worlds, it has already begun to identify strengths and weaknesses in the space. Although the medium does not have the same level of adoption of other social media tools in its mix, Mayo Clinic has identified certain qualities of the medium that create opportunities to improve how they provide continuing medical education as well as patient care. As the organization looks to the future, it is most interested in how the virtual environment cannot just provide information, but provide care, including care where patients are not required to show up in an office. People are just beginning to explore this concept of telemedicine using both webcam technologies as well as virtual environments.

Additionally the way individuals communicate in this space is more intimate as they share conversations about life. Kaihoi reflected that in other social media, individuals are using media that features 140 characters or four sentences that may or may not be synchronous. He said, "None of those things create relationships. They may start it, but they're not developing relationships."

Initial exploration is providing evidence that although people have a greater willingness to communicate and participate in deep and meaningful discussions, they simply do not have the tool to do it. Kaihoi said,

> We haven't given them the tools to do that, except virtual worlds. The only tools I've given them are tools that help them be asynchronous, short burst, get a snippet of conversation, because nobody wants more than five minutes of news anyway.

Kaihoi explained that ultimately he will be able to report on patient outcomes of cognitive impairment therapy in SL compared to usual and customary therapies for traumatic brain injury. In the meantime, as he and Mayo Clinic look at what's next, Kaihoi stated,

> we have to identify where the gaps are in the services we're providing for people in healthcare and how can these tools either fill those gaps or do what we're doing, better. All the data is supportive of continuing that research and continuing those trials because there are people reporting extraordinary results…Patient care is where the power is…but [providing it in a virtual world] is a ways off from 'normal.'

When the developers of Second Life launched the platform, news headlines touted the site as the next new best thing in retail marketing. In keeping with the Gartner hype cycle, businesses ran into the social platform as they often do expecting great things to happen. Likewise keeping with the hype cycle, they exited when the audiences simply were not there, creating the "trough of disillusionment." In more than ten years of existence, Second Life has not seen tremendous growth more typical of social media. Rather, its traffic has held at a very level pace with the type of user representative of the consumer mentioned by Kahoi as well as Merikivi, Verhagen, and Feldberg (2013)—a user that is less interested in

a mass population, but rather an intimate experience over which he or she has some control. Much like the "slow news" movement that offers long reads rather than a 40-character tweet, Second Life has a solid and loyal foundation of users who prefer the technology because of its immersive nature and meaningful relationships formed there.

As the technology begins to reach that "plateau of productivity" and the early technological barriers begin to fall, industries such as healthcare are beginning to look again as unexpected benefits, especially in the strength of relationships and reaching audiences who may be isolated due to geography or physical and/or emotional health, begin to emerge. The potential is likewise experiencing resurgence as Oculus Rift is once again bringing focus on the power of presence in virtual environments.

Discussion Questions & Activities

1. What are the benefits of working in a virtual environment from a business perspective? Discuss economic, geographic, and managerial potential of these environments.

2. What are the risks of working in a virtual environment? Discuss the challenges of technology, of online anonymity, internet access, or other potential risks inherent in online communities. Are there ethical risks in virtual presence and how might these platforms differ from physical communities?

3. Second Life is not an online video game, but a social space offered in a traditionally gaming environment. Can you think of ways to create games in this space to further engage audiences?

4. As healthcare access and online health information continue to evolve, how do you see virtual worlds becoming more or less of a solution to providers and marketers?

5. What key audiences do you believe would be most likely to use and/or benefit from virtual communities? Do some research on typical virtual world users and consider demographics and access as well as uses and gratifications.

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DONNA Z. DAVIS, Ph.D., directs the University of Oregon's Strategic Communication Master's Program at the George S. Turnbull Center in Portland. She brings more than 20 years of experience in public relations, fundraising, and nonprofit communication to the classroom, including 10 years as producer and host of Family Album Radio, an award-winning daily two-minute radio program distributed through the NPR system. Donna earned her Ph.D. in Mass Communication from the University of Florida, studying relationship formation in 3D immersive virtual environments. Her ethnographic research continues to focus on the potential uses of virtual worlds, gamification, and other emerging social media with special interest in disabilities communities. She is also an inaugural faculty fellow for the SOJC Center for Journalism Innovation and Civic Engagement, extending her work with a support community in the virtual world for people with Parkinson's disease. Email: dzdavis[at]uoregon.edu.

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