

# Virtual worlds: A new opportunity for people with lifelong disabilities

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**Abstract.** Online social networks are being used increasingly in all areas of society. One form of online social networks is virtual worlds where people can create their own avatars and socialize in ways emulating the real world. Virtual worlds offer a possibility for people with lifelong disability to overcome challenges of communicating and socializing they may experience in real life. In this literature review on virtual worlds, challenges and ICT support for people with lifelong disability, we identify gaps in the current research. We suggest ideas on how virtual worlds can be used to support people with lifelong disability in creating and maintaining friendships. We are aware this medium may not be suitable for all individuals with lifelong disability, but argue it is important to examine the possibility for it being beneficial for some individuals of this group.

*Key words:* lifelong disability, socialization, friendship, virtual worlds, second life.

# 1 Introduction

Human beings are social creatures; we tend to seek other human beings for communication and socialization in our day to day life. The sense of being together with others is a big part of humans feeling happy and satisfied in life. Increasingly a range of members in our society are using online social networks. Youth, students, academics and professionals use online social network as a form of communication to keep connected, to share both common interests and what is happening in their own life. Companies use these social networks for branding and to keep ahead in their competitive environments.

Numerous research projects have been conducted with the focus on how virtual worlds can and are being used to connect individuals. Virtual worlds give their users the possibility to create an alter ego which they can build new relationships with other individuals and maintain existing relationships. Furthermore, businesses are becoming more aware of the new market places that virtual worlds offer. The Swedish government has their own virtual office in Second Life, illustrating that politics are present in this 3-D virtual world. Academics are publishing a variety of papers on how educational institutions can use virtual worlds such as Second Life to reach students, to create virtual meeting spaces and even offer classes within this virtual world (Molka-Danielsen, 2009).

Virtual worlds can be manipulated in ways not possible in the real world, which makes them a suitable environment for repetitive work. The feasibility of manipulation has resulted in this environment being acknowledged as a potential rehabilitation and learning context for people with mild or moderate intellectual disability (Standen & Brown, 2005). People with intellectual disability tend to be poor at generalizing skills across settings and situations. Whereas in the real world it is difficult to manipulate and repeat situations, in a virtual world the environment can be changed and fitted to the needs of each user repeatedly (Standen & Brown, 2005).

Many adults with lifelong disability experience difficulties with communication, and this impacts their ability to interact with others and to initiate or maintain friendships. Furthermore they may experience problems with access to a range of community activities and difficulty in gaining acceptance within the general community (Ballin & Balandin, 2007). Participation and a sense of belonging are part of community inclusion and are realized to some extent by having the opportunity to talk and interact with a partner and friends. Adults with lifelong disability are less likely than other adults to have close relationships, few of them have partners, fewer have children, and many express feelings of loneliness and community exclusion (Ballin & Balandin, 2007). Through this paper we present a work in progress, where we will through an ethnographic study address these challenges people with lifelong disability face in real life and explore the possibilities virtual worlds promises.

In this paper we begin by presenting a review of some of the current literature relating to virtual worlds. We then present the proposed research method and then some theoretical frameworks which can be applied to the topic. We then outline a research topic in progress that aims to address some of the issues relevant to virtual worlds and people with disability. We also identify some of the challenges that this research presents. The last section concludes this paper.

## **2 Literature Review**

### **2.1 Virtual Worlds**

Virtual worlds have existed since 1979, when the first text-based virtual world was created (Sanchez, 2009). Today virtual worlds are recognized as a three-dimensional reproduction of the physical world. Within virtual worlds there is the possibility for communication, social interaction and economic exchange between users who are represented virtually by avatars (Chesney, Chuah, & Hoffmann, 2009; Jung & Kang, 2010). Virtual worlds are accessed by multiple users, and social virtual worlds offer their users the opportunity to determine their own experience themselves (Jung & Kang, 2010).

Compared to traditional two-dimensional web environments, a 3D environment adds a dimension in which the users can be visually represented as avatars and can move around in the environment (Baker, Wentz, & Woods, 2009). There are multiple reasons why people engage in virtual worlds; these include seeking information, socialization and entertainment. Virtual worlds let people escape from real world constraints and pursue unique activities where they meet and interact with new and existing friends and networks (Jung & Kang, 2010; Kay, 2007). Many people spend large amounts of time immersed in virtual worlds because they offer an interactive and unique place for their residents (Hannah Yee Fen, 2009).

One thing that makes online social networking unique is the ability to define a social network and through this network communicate in new ways. Most social networking sites let the users create an individual profile within the system that defines them or their personality (Kay, 2007). Furthermore, in the educational sector many colleges and universities now offer courses to students through virtual worlds. Virtual worlds are viewed as a useful tool in online teaching because they facilitate the engagement of students in an interactive environment (Molka-Danielsen, 2009). In a two-dimensional online forum the discussion is post-time, whereas a discussion in a virtual world is real-time and simulates a meeting in the real world. Interaction in a virtual world creates a sense of community even if a course does not offer any face to face meetings (Baker, et al., 2009; Hew & Cheung, 2010). Currently the potential for people with lifelong disability to use virtual worlds is underexplored and probably underutilized.

Standen and Brown (2005) state virtual worlds can be valuable rehabilitation and learning environments for people with mild or moderate intellectual disability. Virtual worlds can be used to convey rules and abstract concepts through practical experiences rather than using words or other symbols to explain their meaning. As noted above, inside the virtual environment situations can be repeated numerous times and altered to challenge the user undergoing training or practicing a range of new learning activities.

#### **Second Life**

Second Life is a three-dimensional multiuser virtual environment, created by Linden Lab, where users can communicate and have a social network within the virtual world (Bell, 2009; Ferry, Gelfand, Peterman, & Tomren, 2008). Another way of describing Second Life is that it is a virtual-reality world, where avatars lease “islands” for purposes that can be connected to real life.

This virtual world offers the possibility to sell products, conduct classes, do research, hold conferences and conduct recruiting (Bugeja, 2008). Even though there are similarities to the real world within Second Life, this environment is a relatively anonymous and “anything-goes” place. People choose who to be, how to look, and what to do. Many will create avatars that cultivate an extreme look with clothes and hair the individual would not wear in real life (Oishi, 2007). These virtual people are known as avatars and have both a first and last name.

## **2.2 Challenges for people with lifelong disability**

As discussed in the introduction people with lifelong disability are known to have challenges and difficulties in their life different from those faced by their non-disabled peers. One of the greatest challenges many adults with lifelong disability experience is difficulty with communication. Communication is intrinsic to being connected and feeling part of a community or society, consequently communication impairments can give rise to feelings of exclusion from being an active citizen (Jackson, 2006). Included in the challenges of communication there are for instance hearing problems, vision problems and speech impairments (Greenwood, 1987). The challenge of communication can lead to people with disabilities becoming isolated from their surrounding environment (Greenwood, 1987).

Also some may experience problems with access to a range of community activities and difficulty in gaining acceptance within the general community (Ballin & Balandin, 2007). The feeling of being treated as different, not being seen as equal to non-disabled is a challenge. This is due to the sense of society treating people with disabilities as if impairment in one area of function invalidates their abilities or access to opportunity in another area (Hammel, et al., 2008).

## **2.3 ICT support for disabled people**

Social networking activities may take place within a variety of virtual communities. Virtual communities can arise with the assistance of information communication technologies (ICT). Blanchard (2008, pp 2107-2108) states, “Groups of people interacting through computer-mediated communication have become common within organizations and society. One feature that distinguishes virtual communities from mere virtual groups is their members’ feelings of community. These feelings of community are more formally known as a sense of virtual community.” Virtual communities typically emerge and grow based on common interests, for example around political issues, business concepts, hobbies, health topics, religion, and education to name a few (Blanchard, 2008). McMillan and Chavis (1986) developed a construct of Sense of Community (SOC) by defining it as an individual’s feelings of membership, identity, belonging, and attachment with a group. Communities based on such constructs have certain factors in common. One central factor is they often emerge from multi-lateral voluntary collaboration among interested parties. The benefits and limiting factors of engagement for interested individuals will differ and we can propose that this can have affect on the individuals’ motives to engage in such

communities and in their eventual role or position in such communities. The sense of community is clear as a powerful force in our culture (McMillan & Chavis, 1986), however not always for good.

As noted in (Molka-Danielsen & Balandin, 2009) there is relatively little documentation on how ICT can facilitate participation by people with lifelong disability in social activities such as, for example, participation in political processes. One of the few documents to highlight how new technology can facilitate, but also can hinder disabled citizens' inclusion and participation in politics and policy performance is the report by the Democracy Committee of the Nordic Council of Ministers (ANP, 2005). This report notes that the danger of "digital divides" is that ICT first and foremost is a supplementary tool for the few people that already are politically active. That is persons that are not already included in political work do not use ICT to become more politically active. As Loader (1989) stated, "The 'information-poor' are no more a homogeneous social phenomenon than their wealthier counterparts. Fragmented and divided by gender, race, disability, class, location or religion, their experiences with ICT will vary enormously as will their opportunities to utilize it." (Loader, 1989, p. 9)

Independent of the topic of interest (e.g., political, health) there is evidence that people with lifelong disability who are able to use ICT may require additional assistive technology to facilitate their access which may not be available (Iacono, Balandin, & Cupples, 2001). As a result ICT may enhance the inequality between politically active and politically passive citizens, favoring persons with high level of education, literacy, the physical ability to use regular technology, and the financial support, either from the state or from private means, to purchase it. The few people with lifelong disability who are employed may have some advantage if their employers have or are prepared to ensure that they have appropriate support, including assistive technology to work effectively and participate in the workplace (Mank, Cioffi, & Yovanoff, 1998; McNaughton, Light, & Gulla, 2003).

## 2.4 Summary

A virtual world like Second Life gives the promise of a world where anyone can be whoever they would like to be, and have the power of living vicariously through an avatar. At the same time, virtual worlds give people the opportunity to communicate and create a social network with others without leaving their own home, meeting other individuals with the same interests as their own, building relationships, learning new topics and even attending school. Research has been conducted on how virtual worlds can be used as a learning environment for students and educational institutions (Molka-Danielsen, 2009), but this has yet to be applied to people with lifelong disability. Nevertheless, we suggest some of the experiences that have been reported may be transformed and used in a different setting, to teach social skills and create a sense of belonging for individuals who in real life experience a range of difficulties with social interactions and participation.

Some researchers have assumed that technology is an external force which can affect social relationships negatively and weaken social ties and increases the social isolation (Boase, 2008). However empirical research has demonstrated that, for example, the telephone and internet have not weakened relationships but are used to fit individual social needs (Boase, 2008). People with

lifelong disability may be able to benefit using virtual worlds to help create and maintain friendships and connections within a virtual society where they can feel included.

### **3 Research Method**

Ethnographic research is known as a one of the most in-depth research methods a researcher can conduct. Because involvement of the researcher is high and a large amount of time is spent with the participants in the research, this method provides a rich data collection. In particular it provides deep insight into the human and social factors of the participants (Myers, 1999). Ethnography is known as a research method in the discipline of social and cultural anthropology, but has also expanded into the information systems field. In addition to the traditional data sources such as interviews, documents and minutes of meetings, the researcher relies on data collected through participant observation (Myers, 1999).

Through this research the researcher will meet participants inside Second Life where she will observe the participants adventure in the virtual world. The participants in this study will be people with lifelong disability, who will be introduced to Second Life and guided into accessing this virtual world. Over a 8 week period the participants will be observed participating in activities they have chosen within the virtual world. The goal for the participants is to create friendships with other avatars and engage in activities they enjoy. The researcher will participate in the activities and observe the participants interaction with others. Also as a part of the data collection the researcher will conduct individual in-depth interviews with all the participants, in the 4<sup>th</sup> and 8<sup>th</sup> week. These interviews will be comprised of the participants's experiences with activities and friendship building in the virtual environment. By combining both observation and interviews the researcher is able to see what the participants are doing, not only what they say they are doing (Myers, 1999). To be able to understand how the participants experience and act within the virtual world it is important the researcher is present to observe and participate within the social setting. This way more rich data can be collected, not only by the word of the participants, but also through the actions of the participants.

There are benefits and limitations connected to the ethnographic approach to research. The benefits are connected to the rich data collected through this research, and the in-depth understanding of the field studied (Myers, 1999). It can also challenge what we might assume is the situation. The most important limitation of an ethnographic study is the time it takes to conduct. It requires great time spent through the data collection period, and because of the large amount of data collected the data analysis often takes longer than expected (Myers, 1999). It has also been argued ethnographic studies have a disadvantage because of the lack of breadth, the study leads to in-depth knowledge of one particular setting or context (Myers, 1999).

There are ethical issues with doing research within a virtual world. Because the researcher has to participate in the world to study it, issues like representation, privacy, responsibilities to various stakeholders are present (McKee & Porter, 2009). McKee & Porter (2009) state it is important to recognize research in virtual worlds cannot be conducted as in "real-world". They go on by stating a location in a virtual world cannot be labeled as public or private like in the real world, and it is important to respect individuals privacy even as avatars. While participating in a virtual world it is important to respect the norms of the community or communities being studied.

They also point at the importance to strive for transparency by the researcher identifying themselves as researchers when in researcher's role.

## **4 Theoretical lenses**

Through the ethnographic study there will be a large amount of data which will have to be analyzed, and there are different theories which can be applied to the analysis. In this chapter we seek to present three theories which can be applied while analysing the data collected. The theories represent different lenses which can be used to understand the results from the study.

### **4.1 The Uses and Gratifications Theory**

Uses and Gratifications theory seeks to identify audience motivations to use new media innovations, originally established in the mass communications research in the 1970's (Zhou, Jin, Vogel, Gou, & Chen, 2010). Since the internet was introduced and as a result of its rapid development, numerous researchers have conducted projects aiming to understand users' motivations and concerns about internet use, including the perspective of how it is used and the rewards and gratifications (Robert LaRose & Eastin, 2004; R. LaRose, Mastro, & Eastin, 2001; Zhou, et al., 2010). In these cases Uses and Gratifications theory has been used to explain why users decide to use a medium, and whether this is determined by the functions the medium presents for the users (Zhou, et al., 2010).

Zhou et al. (2010) have applied Uses and Gratifications theory to explain the reasons why people use the virtual world Second life. They categorized the needs of virtual world users into three main categories of individual motivations of use. These include Utilitarian needs, Hedonic needs and Social needs. Utilitarian needs include learning and education, shopping, economic and business motives. Hedonic needs refers to the process of use itself is the important motivation. Social needs include meeting and interacting with people from all around the world (Zhou, et al., 2010). However, it has been argued Uses and Gratifications theory is too individual, which makes it hard to explain or predict outside it's application beyond the people studied or the medium involved in the study (Ruggiero, 2000).

### **4.2 Social Capital Theory**

Social capital theory (Lin, 2001) offers an explanatory framework for conceptualizing the benefits individuals can derive based on their embeddedness in networks or communities. Lin defines social capital as "resources embedded in social networks accessed and used by actors for action" (Lin, 2001, p.25). Social capital is further described under three dimensions: structural, relational, and cognitive (Nahapiet & Ghoshal, 1998). The structural dimension relates to ties among actors, "who knows whom" and is related to factors such as the number of ties and centrality of actors in a network or community. The relational dimension relates to the quality of the tie that results from

the history of interactions. It is a shared resource that reflects collective bonds, goodwill, or expectations of pro-social behavior among actors (Adler & Kwon, 2002). Nahapiet and Goshal (1998) state relational capital consists of: (1) identification with the other actors, (2) the level of trust in them, (3) perceived obligations to others, and (4) the willingness to abide to group norms. Thirdly, the cognitive dimension is associated with common understanding and similar knowledge structures of the actors in a network or community. For example, actors share language and concepts. Cognitive capital is created as “shared mental models can be developed when members have similar experiences that can be imported into situations, whether those experiences were developed jointly as a team or separately through individual action” (Robert, Dennis, & Ahuja, 2008, p. 321). In summary, the benefits that an individual can derive from a virtual community will be based on the individual’s embeddedness (or social capital) within that community. Persons with lifelong disability may be less embedded into social virtual communities because they cannot use ICT to access such communities. Currently this is an area that is underexplored.

### **4.3 Embodied Social Presence (ESP) Theory**

Embodied Social Presence (ESP) Theory is a framework focusing on the embodied virtual representation as the nexus of activity in social interaction within virtual worlds (Mennecke, Tripplett, Hassall, & Conde, 2010). Mennecke et al. (2010) proposed a social actor in a virtual environment derives meaning during interactions with his or her environment through actions, context and tools. The virtual body is a tool for mediating communication. This theory points to the body being the nexus of communication. Embodied representation combined with goal-directed shared activity in a virtual or real space affects the perceptions of users. Mennecke and colleagues stated that when people communicate both objectively and subjectively, perceptions are embedded in communication. While actors have intent and goals, those intentions are instantiated through actions expressed through the body. The body is used as a tool for communication and symbolic interactions (Mennecke, et al., 2010).

Mennecke et al. (2010) presented the stages of ESP. Firstly, recognition of the other involves observing other avatars participating in activities. Secondly, recognition of digital self, where the user creates a perception of the digital self embodied in his or her own avatar. Thirdly, collaborative engagement, here the user starts interacting with others through avatars and their avatars actions. Fourthly, appraisal of the “Real” other, involves some understanding of the other as an individual. Finally, reflection on and appraisal of the self, occurs with the development of the users’ perceptions of their own digital self engaged in activities with other avatars.

<i>Stage</i>	<i>Perceptual Focus</i>	<i>Outcome</i>
Recognition of Other	The other social actor's avatar	- Perception of other avatar - Perception of Space
Recognition of Digital Self	Digital self embodied in one's own avatar	- Perception of one's own avatar - Perception of Space
Collaborative Engagement	Joint activities	- Perception of other avatar in action - Perception of one's own avatar in action
Appraisal of the "Real" Other	Actions (verbal and non-verbal) of virtual other	- Perception of the social actor "behind" the other avatar
Reflection on and Appraisal of Self	Digital self embodied in one's own avatar	- Perception of one's own actions as manifest in avatar-based social interaction

**Figure 1 The Stages of ESP, influenced by Mennecke et al. (2010, p7)**

Human beings are inherently social. We have social nature encoded in our survival instincts, and it drives us to define ourselves by relating to others. The avatar is a digital body the user wears for the online performance, and has the power very much in the same way as the user's physical body has (Mennecke, et al., 2010).

## 5 Discussion

Known challenges for people with lifelong disability include communication, access and social challenges. The ability to communicate is an important factor when considering the ability to create and maintain friendships with others. Mobility or access challenges can limit the places visited and engagement in a range of activities, thus some people are limited to their own homes by their mobility or access challenges. Other social challenges can include the ability to read body language, understand social and unwritten rules while interacting with others and low literacy skills. Virtual worlds offer the possibility to communicate with others through the internet. This can happen through written text or by voice. Virtual worlds also offer the possibility to visit new places, participate in a range of different activities such as concerts, going to bars, dancing, all accessed from the safe and known environment of home.

There are some challenges and limitations for involving every individual with lifelong disability in virtual worlds. This medium is not suitable to all people with lifelong disability, but it can have great benefits for some individuals within this group, in particular those with adequate literacy and computer skills. To be able to become involved in a virtual world, individuals need access to a computer and not everyone has this access. In order to take advantage of a virtual world there is also the need to be computer literate. A need for help and guidance every time an individual wishes to enter a virtual world, is likely to discourage those who are not computer literate from using this technology. Furthermore, each individual needs to want to interact with others. Another challenge to the involvement into virtual worlds can be the language barrier.

Because many virtual worlds are based on the English language, the use and knowledge of the English can be important to be able to enjoy time spent within a virtual world.

Not everyone will be able or want to interact with others in a virtual world. However, for those who have access, knowledge and want to get involved, virtual worlds can open a new world and offer a new opportunity to create personal relationships throughout the world.

Previous research has covered some of the challenges and successes virtual worlds have had for the educational sector; however there is little research into how virtual worlds can benefit people with lifelong disability. We are conducting a project that will focus on how virtual worlds can be used to facilitate people with lifelong disability to create and maintain friendships. We plan to take an ethnographic approach (Atkinson & Hammersley, 1994). We seek to understand how people with lifelong disability experience the use of the virtual world Second Life to create and maintain friendships using observation and participant observation. Participant observation refers to observing while the researcher is playing an established role in the scene studied (Atkinson & Hammersley, 1994).

We aim to identify the specific challenges and benefits a virtual world offers people with lifelong disability. This study will act as a starting point for further research by others. For practitioners this study may act as a stepping stone for engaging people with lifelong disability into a new world with new opportunities.

## **6 Conclusion**

In our society today we communicate through different media including the internet. Through the internet we have access to emails, instant messaging, social network sites and virtual worlds. These technologies make it easier for individuals to keep in contact and meet new people and therefore maintain or create relationships. Previous research has shown virtual worlds to be successful for educational purposes; students can access a course with location independency. People with lifelong disability are known to feel excluded within communities and may find it hard to communicate with others. We will conduct ethnographic study to examine the potential benefits virtual worlds offer people with lifelong disability. This study will be conducted within the virtual world Second Life, where people with lifelong disability will be introduced to the virtual world with support from our research team.

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