INITIAL EXPERIENCE WITH VIRTUAL WORLDS FOR PEOPLE WITH LIFELONG DISABILITY: PRELIMINARY FINDINGS

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ABSTRACT

Information and communication technologies (ICT), including Internet and a plethora of social networking applications, are an important for people with lifelong disability in their day to day life. Such technology offers possibilities and opportunities for this group of people to enjoy a range of new social interactions. Through the internet people with disability are able to meet and interact with other individuals who struggle with the same issues or meet people sharing their interests. Virtual worlds (VW) are the latest star on the social networking horizon. Virtual worlds offer an environment that can be more attentive and accommodating to the needs of individuals with impairments in that people with lifelong disability may be able to engage in activities without experiencing exclusion and discrimination based on their disability.

Through this paper we will present the initial experiences of a group of people with lifelong disability engaging in activities in the virtual world Second Life. This research, sponsored by the Norwegian Research Council, aims to explore the affordances offered by virtual worlds to people with lifelong disability. We seek to discover if VW assist project participants to engage in meaningful activities and social interactions. This work in progress presents preliminary findings from the first five weeks of a group of people with disability experiencing Second Life. The preliminary findings show that the participants are experiencing challenges while engaging in activities in the virtual world, but with the help of teaching staff and the project team are experiencing benefits in terms of being able to engage in shared activities in the virtual setting. This paper presents our exploratory research method and initial findings. We conclude that these initial findings indicate that virtual worlds have benefits of for people with lifelong disability, such as enjoyment of activities and communicating through different features.

1. INTRODUCTION

Several researchers have found that virtual worlds (VWs) are a suitable platform for research and education in that these environments can be manipulated in ways not possible in the real world (Standen & Brown, 2005). 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 and Brown (2005) also acknowledged VWs as a potential rehabilitation and learning context for people with mild or moderate intellectual disability (Standen & Brown, 2005). In special education, virtual worlds have been shown to offer an alternative to costly or unfeasible field trips, and to offer students the opportunity to experience new countries, museums or other locations from the

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safety of the classroom (Elleven, Wircenski, Wircenski, & Nimon, 2006; Smedley & Higgins, 2005). How virtual worlds can benefit the relatively large group of people with lifelong disability in interacting and creating friendships with others is still an unanswered question (Stendal, Balandin, & Molka-Danielsen, 2011).

This paper aims to shed light on how people with lifelong disability experience and use virtual worlds for leisure activities when first introduced to the virtual world. Through observation and reporting of participants' activity within the VW, a qualitative assessment of the affordances of VW for people with lifelong disability is made. We base this assessment on field notes and interviews with participants. We report that virtual worlds seem to be a positive social experience for the participants. This paper reports a work in progress and the results are from the initial stages of five participants' experience in the virtual world Second Life.

The paper is structured as follows: Section two presents related literature on virtual worlds and people with lifelong disability. Section three presents the research method used in this initial study. Section four shows the initial findings. Section five discusses the findings. Section six presents the conclusion and limitations of this paper and presents further research.

2. RELATED LITERATURE

2.1 Virtual Worlds

Virtual worlds (VW) have existed since 1979, (e.g., Colossal Cave Adventure (Molka-Danielsen, 2009), 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 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 (Jung & Kang, 2010). 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 to their residents (Lim, 2009).

Numerous research projects have been conducted with the focus on how virtual worlds can and are being used to connect individuals (Adrian, 2009; Jung & Kang, 2010; Kaplan & Haenlein, 2009; Zhou, Jin, Vogel, Gou, & Chen, 2010). Virtual worlds give their users the possibility to create an alter ego through which they can build new relationships with other individuals and maintain existing relationships. Furthermore, businesses are becoming more aware of the new marketplaces that virtual worlds offer (Daley, 2010; Koh & Kim, 2004; Robinson, 2010). The Swedish government has their own virtual embassy 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 (Billings & Kowalski, 2009; Jia & Eder, 2009; Molka-Danielsen, 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), which in a virtual world will be represented by an avatar (Baker et al., 2009). 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 asynchronous, whereas a discussion in a virtual world is real-time and can simulate 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). When entering a virtual world, people create a virtual person to represent them in the virtual world. These virtual people are known as avatars and can have both a first and last name. They are even referred to as virtual residents. A final point is that avatars can move through the virtual environment, and interact with other avatars and objects in the virtual world (Baker et al., 2009).

Second Life is a three-dimensional multiuser virtual environment, created by Linden Lab, where users can communicate and create and build 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. Second Life 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, and it is used for business and teaching, this environment is a relatively anonymous and "anything-goes" place (Oishi, 2007). People can choose when creating and using an avatar 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).

Avatars in Second Life interact; they join social groups, social events, attend concerts and lectures (Baker et al., 2009). After creating an avatar in Second Life, the user can change his or her avatar at any given point to his or her own liking. Not only can the avatar have a different gender, body type or color than their body in the physical world, but users can choose to have a nonhuman avatar (Baker et al., 2009). Because of these possibilities, people with lifelong disability, can choose how much, or at all, of their disability they want their avatar to present.

2.2 People with lifelong disability

The UN Convention (Leonardi, Bickenbach, Ustun, Kostanjsek, & Chatterji, 2006) defined disability as follows:

"Persons with disabilities include those who have long-term physical, mental, intellectual, or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others" (Leonardi et al., 2006).

This definition is concerning all kinds of disability, temporal and lifelong disability; however in the context of this paper it is important to define lifelong disability:

"Developmental disabilities, as federally defined, are chronic impairments that occur before age 22 that may affect functional abilities in matters of self-care, learning, mobility, language, economic self-sufficiency, capacity for independent living, and other everyday skills. The impact of the impairment is lifelong while the causes are many, including chromosomal anomalies, birth trauma, mother's lifestyle during pregnancy, adverse drug reactions, and accidents such as automobile and diving that produce traumatic brain or physical injury. Thus, developmental disabilities, being functionally not categorically defined, are heterogeneous and might include individuals with Down syndrome, autism, deafness, epilepsy, polio, cerebral palsy, and the survivors of any number of untoward events that occur during life's developmental (under age 22) stage" (Ansello & O'Neill, 2010).

Many adults with lifelong disability experience difficulties not only with communication but also with negative community attitudes (Milner & Kelly, 2009), and this impacts their ability to interact with others and to initiate or maintain social connections and friendships (Greenwood, 1987). 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, friends, and others in the community (Milner & Kelly, 2009).

One of the challenges many adults with lifelong disability experience is difficulty with communication (Greenwood, 1987). 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).

The feeling of being treated as different, not being seen as equal to people without disability is a challenge (Hammel et al., 2008). It is a human right to be treated with respect by others in a person's surroundings. The Norwegian government has passed laws against discrimination of people with disability (regjeringen.no, 2008). Additionally, there is a concern about 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). Such attitudes further restrict people with disability from fully participating and being a part of the society in a similar way to their non-disabled peers (Hammel et al., 2008).

2.3 Virtual worlds and people with lifelong disability

Virtual worlds and people with disability have been in focus from various research initiatives, such as education (Elleven et al., 2006), rehabilitation (Standen & Brown, 2005; Stewart, Hansen, & Carey, 2010) and disability studies (McComas, Pivik, & Laflamme, 1998).

Virtual worlds are being used by people with disability (Babiss, 2009). Virtual worlds offer people with disability an environment where the impact of a disability may be decreasing, an environment where mobility and social interaction may be experienced (Stewart et al., 2010). Virtual worlds may remove many prejudice factors which in real life are experienced by people with disability (Ford, 2001). The ability to walk and move around in the virtual environment are affordances which are pointed at as a great advantage of the virtual worlds (Babiss, 2009).

Virtual worlds have been used in research to train people with disability in social skills, such as choosing a seat at a bus or asking if a seat at a table is free (Standen & Brown, 2005). Studies show that virtual worlds are proving to be beneficial for people with intellectual disability to learn skills for independent living. There is also evidence which shows that people with disability are able to transfer the learned skills to real world[2] situations. Also, virtual worlds are promising in teaching children street and fire safety (Coles, Strickland, Padgett, & Bellmoff, 2007), as well as adults training to face the real world (Burstin & Brown, 2010). Coles et al. (2007) stated that children demonstrated improvement of knowledge after studying street and fire safety through a virtual gaming environment. They noted that such virtual gaming environments offer children the joy of playing a game at the same time as learning and training new skills. Burstin and Brown (2010) stated that people with disability who feel unsure and discouraged in entering the real world will benefit from training in the virtual world. Their study showed that treatment can be continued over time through a virtual world, and can help build self-esteem and confidence.

In the education field, field trips may prove to be difficult to conduct from special education classrooms. Students who use wheelchairs for mobility, or require extra attention or support in other ways, may experience challenges in entering museums, visiting real world sites, and the cost of such field trips may be too high. Virtual worlds offer students with disability the chance to access different locations and experience new environments from the safety of their classroom (Elleven et al., 2006). Virtual worlds give students and their teachers the tools for new experiences without the physical barriers that the real world may have and each student is able to experience the virtual environment at his/her own pace.

Although virtual worlds are promising and may enrich the overall quality of life for people with disability (Stewart et al., 2010), they may not be suitable for everybody (Standen & Brown, 2006).

[2] The concept of Real World in this paper refers to the physical world outside of the online 3D environment. It is also commonly used in virtual world research; see Standen & Brown, 2005.

Standen and Brown (2006) stated the current 3D technology excludes those who have profound disability and who have a limited understanding of the 3-dimensional space. Furthermore, how people with disability can utilize virtual worlds for leisure activities and social interactions is yet an unanswered question (Stendal et al., 2011).

2.4 Embodied Social Presence Theory

Social presence has been defined as the degree of awareness of other individuals in an interaction, and also the appreciation of an interpersonal relationship through such interaction (Short, Williams, & Christie, 1976; Tu & McIsaac, 2002). The degree of social presence is a subjective measure, where it is combined by the characteristics of the medium used and the user's perception (Tu & McIsaac, 2002), which is an extension of the view presented by Short et al. (1976). Short et al. (1976) said the perception of social presence is dependent on the attributes of the medium alone. It is widely agreed that social presence should be viewed as an experience, which varies from moment to moment, and differs between individuals (Shen & Khalifa, 2008; Tu, 2000).

Embodied social presence is used when social presence in virtual environments is being discussed (Durlach & Slater, 2000; Mennecke, Tripplett, Hassall, & Conde, 2010). Not only is the sense of social presence with others important, but also the relationship and sense of social presence between the human and the avatar. Where we in a physical environment have the starting point of acknowledging the presence of others, in a virtual environment the acknowledgement of the avatar as a representation of self is crucial (Durlach & Slater, 2000; Schultze & Leahy, 2009).

Durlach and Slater (2000) presented a model of the general structure of relationships in a shared virtual environment. Their model showed the relationship between the human who is guiding the avatar and the avatar itself. They stated each human participant will interact with and develop a relationship with his or her own avatar, with other avatars and other humans through interaction in a virtual environment (Durlach & Slater, 2000).

3. RESEARCH METHOD

Due to the interest of understanding how virtual worlds create personal value and possible challenges in engaging in a virtual world, this study uses a qualitative research approach. Qualitative research is appropriate when we need a complex and detailed understanding of an issue that is new or poorly understood (Creswell, 2007). This project is part of a large scale project which focuses on virtual worlds to reduce loneliness for people with lifelong disability, and improve attitudes towards for this user group.

3.1 Participants

This article presents findings based on a group of five participants with lifelong disability. One of the participants has a physical disability and four participants have mild to moderate intellectual disability. All five participants are over 18 years of age, have access to and use a computer and do not use any extra assistive technology for computer access. The participants were recruited through the networks of the research group, and are supported by staff or teachers. All five participants are located in Norway, and are followed in the Second Life sessions by their teachers who provide support if needed. The teachers' role has been to give technical support for the participants when a situation which is challenging occurs, such as helping the participants to teleport or accept objects sent to them in the virtual world. The teachers help the participants with practical situations, but have not influenced or been directly involved in the observation sessions. The teachers were introduced and trained in the use of Second Life prior to the participants in this study. To ensure the anonymity of the participants, the specific disability and location in Norway are not being enclosed in this article.

The project has been conducted in accordance with the Personal Data Act ad Health Register Act. All participation is based on informed consent and participants can withdraw from the project at any time

with no reason given and no penalty. Ethical clearance from the Norwegian Social Science Data Services (NSD) for the research was obtained.

3.2 Data collection

The primary data collection method for this study is participant observation. Participant observation is appropriate when the researcher is concerned about human meanings and interaction from the participants' perspective (Jorgensen, 1989). Participant observation is particularly appropriate when the study is exploratory, descriptive or for generating theoretical interpretations (Jorgensen, 1989).

Through this research a member of the research team has met five participants with lifelong disability within Second Life and observed their adventures in the virtual world. There have been 4 sessions with participants thus far. In addition after a summer break, 4 additional sessions with the same participants are planned for the fall 2011. The meetings have been, and will be held once a week, each meeting lasting for an hour and a half.

The researcher who meets with the participants each week we identify as the "session mediator or SM" in this article**.** The participants in this study have been put into two groups which have met in Second Life during different time slots. One group of three females and one group of two males have met the SM in Second Life. The participants are supported by geographically local teachers and research team members. For the purpose of this article we will call these supporters "teaching assistants or TA". The purpose of the TA is to maintain a working environment for the study and not to interfere in the virtual activity once a session underway. The TA supporting a session can change from session to session. The TA, if present in the virtual world, takes on a passive role.

The SM is the same researcher at each session. The participants are located at a different location in Norway from the SM and the SM has never met the participants in person. Ensuring the SM is "blind" to the identities of the participants gives the participants the opportunity to choose what to disclose and to have control over their own identity. The SM has participated in and initiated the activities and observed the participants' interaction with her and with each other, and has thus become a temporary participant of the field group as described by Walsham (1995).

In addition, the SM has used individual in-depth interviews with three of the participants. These interviews were conducted in the week after the last of the four sessions in the virtual world. It can be argued that the interviews should be conducted face-to-face to be able to read body language and reactions to questions from the participant but this would destroy the anonymity which is a feature of this project. Even though the interview effect may be reduced when conducting interviews within the virtual world or by phone (Jacobsen, 2005), it was decided to do this to keep the Second Life session times solely for activities and interaction.

By combining both observation and interviews the researcher (SM) is able to see what the participants are doing, not only what they say they are doing (Myers, 1999), to ensure triangulation of data. To develop an understanding of how the participants act within the virtual world and perceive their interactions, it is important that the researcher is present to observe and participate within the social setting (Myers, 1999). Interviews can be used to check the observations to determine whether situations or meanings have been misunderstood, in this way secure triangulation in the data (Bryman, 2008).

The focus of the data collection has been to understand how the participants are experiencing their first weeks with use of Second Life. We have collected data concerning communication, experience with activities and how the participants experience Second Life's interface and technical challenges. Data collection has also been guided by the technology capabilities offered by virtual worlds (Davis, Murphy, Owens, Khazanchi, & Zigurs, 2009). Davis et al. (2009) stated that there are four main metaverse technology capabilities when discussing virtual worlds, communication, rendering, interaction and team process. Measurements of these capabilities are based on the participants own expressions of their experience and opinions of the sessions and activities engaged in in Second Life.

4. FINDINGS

Through the four sessions conducted in Second Life so far, the participants have engaged in activities ranging from flying, playing football, ice skating to visiting locations such as the virtual Grand Canyon. In these activities the participants have been supported by the SM avatar and their teachers (TA), who as described earlier are in the same physical location. The findings presented in this section are supported by the field notes from these sessions and quotes from the interviews conducted. Interviews were conducted in Norwegian and the quotes presented here are translated to best capture their meaning. Figure 1 shows pictures of two of the activities that the participants have been introduced to in Second Life. The findings presented in this study may not be different from the experiences people who do not have any disability are experiencing. Based on these preliminary findings we have not focused on this aspect. However, studies on how people with disability are experiencing virtual worlds for leisure activities have not been conducted previously and this exploratory study is focused on the experiences of this minority group.

Figure 1 Playing miniature golf and riding in an adventure park in Second Life

Through the sessions in the early stage of this research, the participants are showing and expressing experiences with four main aspects of the virtual world. These topics are shown in Figure 2.

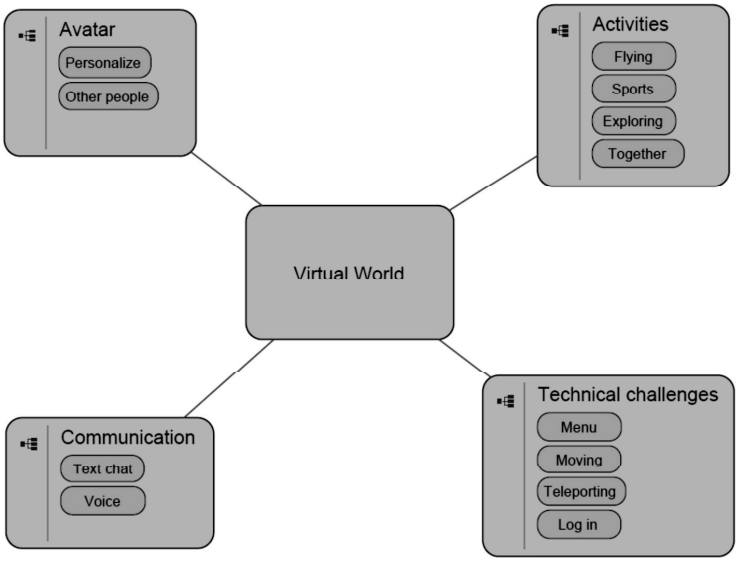

Figure 2 Four main aspects of the virtual world found in this study

4.1 Activities and general experience of Second Life

Generally all the participants express joy and excitement about spending time in the virtual world. Together we have engaged in a variety of activities, such as diving, ice skating, carousels, football and dancing. These activities have been chosen by the SM, however in each session the SM has asked the participants about what kind of activities they wish to engage in. Based on their wants the SM has tried to suggest activities to their liking. The participants have visited locations such as virtual Grand Canyon, beaches, amusement parks and golf courses. When asked which activities are most fun the participants have different opinions. One of the participants enjoyed playing ball the best, while another enjoyed the boat ride the most. A third expressed the most enjoyment in visiting a haunted house in an amusement park.

Second Life offers their users to fly in the virtual world, which also has been experienced by the participants in this study.

"It is ok to fly. It feels a little different than moving around in other ways."

"It is great to fly. It is fantastic."

Being able to explore the environment through flying is also shown through our observations to be something the participants enjoy. As soon as there is a little time where there is not a special activity happening, all participants seem to fly off somewhere. The freedom this represents seems to be of great importance in the virtual world.

Moving from one location to another in Second Life is done through teleporting. Landmarks are given to the participants by the SM and the participants need to accept these landmarks to be able to teleport to the given location. Teleporting requires using the menus in the application window and choosing the wanted location, and has shown to be a challenge for the participants. Even after doing this multiple times, help to perform teleporting is required.

Controlling the avatar while walking or flying is sometimes a challenge for the participants; however with practice this has become something they experience becoming easier.

"At first it was a little difficult to move around, using the arrow keys on the keyboard, but it is becoming easier."

Through the observations we note this is sometimes an issue. The participants' avatars are falling off cliffs, walking off ramps and trails, also when flying participants has expressed in sessions getting lost while trying to get from one spot to another. Even with these challenges the participants are expressing positive experiences by engaging in activities in Second Life.

"It is fantastic, it is all new to me, and I want to do this more. Fantastic"

When asked if they would like to experience Second Life on their own, without the support of the SM or any of their teachers they answer positively.

"I would not exclude it. Maybe not right now, but in the future. I want to learn more first"

"Yes, I would like to go in by myself; I could have done that all the time. I just need to get a computer first."

4.2 Technical challenges and barriers

While all participants in this study are familiar with the use of computers and ICT, the use of virtual worlds has some challenges. All participants access Second Life in a computer lab which is set up to support Second Life. This ensures the best possible experience from a technical standpoint.

However, the participants are expressing challenges in logging into the virtual world. Because the participants are using a computer lab, and not their personal home computer, they are not able to store the log in information at the computer. The participants express that accessing the virtual world is becoming easier over time:

"It is easy to access (Second Life), it used to be harder"

Also, Second Life is set up with the feature of right and left clicking objects to be able to access activities or animate the avatar to do certain movements. While trying to explain these features to the participants during the sessions in Second Life, we noticed some challenges in clicking at the right spots on the screen to be able to use the functionality in Second Life. This notion was confirmed by one of the participants, referring to a session on a paddle boat:

"To hit things (objects) on the right spot is a little hard. For example, yesterday when we were on the boat I tried to click it to move it, but it would not move"

Also, during the sessions the participants have tried to click on objects and ended up sitting on the object instead of using it. When clicking on the object the participants have also experienced not being able to get the required menu to access the activity.

Another issue experienced by the participants is the language of the Second Life application. The main language in Second Life is English, and with Norwegian being then main language for most of these participants, the language barrier creates some challenges as exampled by the following statements:

"English is a little hard. It works in a way, but as a whole it is a little hard."

Another participant asked:

"Is it possible to get Second Life in Norwegian, it is hard to understand when it is in English?"

While English is the main language in Second Life, the application can be down loaded with other languages at menus and icons. One of the participants is using a Danish version of Second Life, due to the close relationship between Norwegian and Danish, yet this created a challenge when the SM was trying to explain where to click and what to do. The SM uses an English version of Second Life, and it took some time before she realized one participant had different words in the menu and required extra help from the teachers when trying to follow her directions in Second Life.

While some of these technical issues also may apply for non-disabled individuals, the participants in this study are pointing at these issues as challenging.

4.3 Communication

People with lifelong disability often experience challenges with communication for various reasons, such as having trouble talking or not being included in interaction with others. Second Life offers the opportunity to communicate through both text chat and voice. During our sessions we have had experiences with both of these features. Communication with the participants and the SM has been challenging. A few of the participants do not express themselves through either of the communication features a great deal, and it is hard for the remote SM to know whether or not the participants are hearing or seeing what she is trying to communicate. Although communication with some of the participants is challenge for the researcher, nevertheless the participants do express opinions and experiences using the two communication features.

The voice feature in Second Life is set up where any individual is given the opportunity to talk with others through a headset with microphone, or microphone and speakers. The participants in this study note the importance of the voice feature for their interaction in Second Life. While the text chat feature is used, there are some challenges connected to this form of communication. One of the participants said:

"Voice is best for me, because it is hard to find the keys on the keyboard to write"

This quote was supported by other participants:

"I do better with voice. At home I have a program on my computer which helps me with the writing, in the lab I do not have this and that makes the text chat harder."

"It is fun to see text on the screen, it was a little hard at once, but it is easier now."

During the sessions in Second Life, the main communication feature used has been voice. However, as during some of the sessions the voice feature in Second Life has not been available or not

functioning the way it is supposed to, we have had communicate through the text chat. When communicating through text chat the communication has in our sessions gone down to a minimum and as a researcher the SM had not been sure whether or not the participants understand what she was trying to communicate or if they are seeing what she was writing. However, with the help of the TA the participants still have been able to engage in activities and for example teleport to a new location.

So far the communication has been concentrated within the group which at any given point is meeting, but the participants say that they wish to communicate with others as well. While the participants have experienced other avatars being at the same locations as our group in Second Life, the communication with these new avatars so far has been limited.

"It is interesting when there are others around, not only our group"

However, on the other hand one of the participants is a little hesitant when asked if it would be interesting to go places where we could meet others:

"Yes, I would like that. I like others, but it may make things a little harder. It is hard to understand when there are others around"

He is worried multiple people talking or writing at the same time will confuse him and he will not understand who is addressing who and he will not understand what is being said.

4.4 Own and others' avatars

Second Life offers their users the opportunity to design their avatar in the way they wish. Before the participants met with the SM for their first session in Second Life, all of them met with a member of the research team to access Second Life and create their avatars. In this meeting the SM was not present, physically or in Second Life. The participants in this study have not changed their avatars since the first session, and most are expressing they are happy with the way their avatar looks.

"My avatar is nice, it is made just the way I want it."

When asked if they would like to change their avatar, or how they would like their avatar to look they say they are happy with the way their avatar is at the moment. Only one of the participants wishes to change the avatar in the future.

"My avatar is a real great guy. I wish he had a mohawk, a green mohawk, short pants and a plaid jacket."

Since choice of what to disclose is an important affordance of virtual worlds, it is interesting to note by viewing the avatars the participants are not disclosing anything about their disability. They do not say anything about their disability while in Second Life. The SM has on purpose left the topic of disability for the participants to bring up, because they should be offered the opportunity to share what they feel comfortable sharing in this regard.

Also, being around other avatars has also been something the participants have enjoyed. It seems to be of no importance that other people are represented as avatars in the virtual world; the participants refer to them as people and not avatars. One of the participants expressed concern about another avatar we met in one of the sessions:

"She was all alone there. I felt a little sorry for her, being all alone, while all of us were in a group"

In Second Life, one of the functionalities is to add other avatars on a friend list. By sending a request to the participants the SM has been added on all of the participants' friend lists. However, to date she has no knowledge if they are adding people outside of our group to their friend lists. However, creation of friendships between avatars has been pointed at by the participants as important during our sessions in Second Life:

"I have gotten friends"

In our experience from the sessions in Second Life, the groups seem to have tighter bonds between themselves and towards the SM from session to session. They are the same group of people meeting each time, which gives them all the opportunity to learn to know each other and create friendships.

The participants are communicating more easily with each other and with the SM, and express their feelings and opinions to a greater extent.

5. DISCUSSION

Being able to personalize their avatars in a way they feel comfortable with is shown in the differences of the way the five avatars look. By creating the avatars to look as individuals is an important feature in Second Life (Baker et al., 2009; Oishi, 2007). However, as stated before, only one of the participants still wishes to make changes to his appearance. The participant wishes his avatar to have a green mowhawk, which in real life may be seen as outrageous and not appropriate, but in Second Life will be seen as a statement of individuality (Oishi, 2007).

The participants seem to be identifying with their avatar while being in Second Life, but when asked about their avatar in different settings the avatar is referred to as her or him. When logged into Second Life, all of the participants are referring to themselves as I and to other avatars as you, her or him, which can indicate there is a feeling of being present in the virtual world. This notion may be seen in connection with Embodied Social Presence Theory (ESP), which states that individuals are first creating a relationship with their avatar and then are able to see the avatar as self (Mennecke et al., 2010). When the participants are in the virtual world, this connection seems to be strong. Not only by them talking about their avatar as themselves, but also by reacting with sounds, such as laughter, to falling, bumping into each other or doing activities. ESP also points at the feeling of being present with others in the virtual world. Even though the feeling of presence is a moment to moment experience (Shen & Khalifa, 2008), the sense of being present in the virtual world, being together with others and sharing experiences are feelings the participants of this short study are showing. The participants are acknowledging each other within the virtual world through laughs, words and other sounds.

Through the sessions we have spent our time engaging in various activities, which can be activities most of us take for granted in real life (Stewart et al., 2010). While the SM for now has been the one suggesting activities, the participants are showing more initiative in what activities they wish to engage in. However, the participants are still expressing a wish for the SM to act as their guide in Second Life and come up with ideas and suggestions for activities. The experience of doing activities together and exploring new places is pointed at as positive by the participants, which also has been pointed at as an important factor in previous research (Stewart et al., 2010).

Communication is one of the known challenges people with disability experience (Milner & Kelly, 2009). While some of the participants were not communicating much in the first two sessions, this has improved over time. The participants talk more and give opinions on activities they wish to engage in. The voice feature enables the participants to express laughter and joy in a more spontaneous way through the sessions, whereas the times they communicate through text chat is only experienced by the individuals in the same physical location as themselves. The participants communicate with each other through Second Life, but also talk with each other outside of Second Life. They are able to do this because they are located in the same physical location, and are experiencing Second Life together in more than one way. While Second Life offers an environment to meet other individuals and create new friendships (Stewart et al., 2010), so far the participants in this study have mainly engaged in activities as a group. While the participants in this study are most comfortable with using voice, the fact that they are able and willing to communicate through text chat shows they are taking advantage of the technical capability for communication which the virtual worlds offer (Davis et al., 2009).

The technical challenges experienced by the participants may decrease with training in use of the virtual world, however it does indicate Second Life may have a challenging layout and interface to people with lifelong disability. There have previously been calls for a more intuitive and better built interface of virtual worlds so that they are more suitable for people with intellectual disability (Standen & Brown, 2006). The participants experience that moving around in Second Life requires them to practice how these moves are being done. With physical challenges, moving the mouse to the right place to right/left click may require mobility which is not available. However, all participants are

showing improvement in skills in using and exploring the virtual world and hopefully will take over the sessions and activities in the future, which eventually may give greater knowledge about their use and experience of the virtual world.

6. CONCLUSION

This paper presents preliminary findings of how people with lifelong disability are experiencing the use of the virtual world Second Life. While there are some challenges experienced when using the application, the participants discuss the value and joy of using the virtual world. Virtual worlds are showing potential for people with lifelong disability to experience leisure activities and enjoy socializing with others. The feeling of engaging in activities together and communicating with each other through the virtual world are seen as positive experiences. Since we so far in this study have not focused on socializing with strangers, the participants are socializing with each other and with the SM in the session. Also, use of the virtual world and the positive experiences seem to be increasing over time, and the participants may show to be taking more control over the activities in future sessions.

While this study shows promise for adding value to people with disability engaging in activities in virtual worlds, this paper presents the only preliminary findings from an ongoing study. Further research regarding this topic will continue to build on the knowledge of how people with disability are using and experiencing virtual worlds and their affordances.

The participants are located in the same physical location during the sessions, this may account for the limited communication between participants within the virtual world. Ideally, participants should be in different physical locations to increase the in-world communication.

Also, this small study only includes new users of the virtual worlds, consequently, how people with lifelong disability are experiencing use of virtual worlds over a longer period of time cannot be answered here. Future studies of experienced users of virtual worlds may give valuable knowledge about the use and affordances of virtual worlds for people with lifelong disability.

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