Virtual Worlds: An Alternative Method of Communication for Children with Autism Spectrum Disorder

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Abstract
Individuals with autism often experience difficulties in communicating. Online virtual worlds offer one avenue of communication for these individuals, with a rich choice in methods for communication. Use of these virtual worlds is already occurring in places such as AutCraft, a Minecraft world specially built for children with autism. A closer look into current use of these virtual worlds will offer insight into the practices of the community.

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Autism; Virtual Worlds; Communication;

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction
Children with autism[1] often exhibit difficulties in social skills and communication [1]. Those with autism have been found to have a propensity towards computer use [5], which makes them the good candidates for computer supported communication [3]. In particular,

[1] The term *autism* will be used to denote Autism Spectrum Disorder as defined by the DSM-V [1].

children with autism enjoy playing in virtual worlds and can become easily immersed in them [8]. Using virtual worlds as a form of social support and means of communication is one important avenue of exploration because it is already a pervasive practice and can inform future design of communication systems for this population. Some work has already been conducted in this field [4,7], but there is more to be investigated including current practices of online autism communities in these virtual worlds.

Background

Previous research has suggested that virtual worlds have potential as a therapeutic tool for children with autism [4]. In particular, they have the potential to teach social skills, which can then be translated into real life scenarios. Virtual worlds are persistent online virtual environments that can include one to hundreds of players in the game at any one time [8]. Examples of virtual worlds are Second Life, World of Warcraft, and Minecraft.

Second Life has been investigated as a potential virtual world to support communication of children with autism [7]. Second Life is an open-ended environment with no clear goals or direction. Several positive interactions were observed while students were in Second Life including an increase in communication and conversation with peers compared to interactions within the classroom [2]. In this study, children participated in an environment designed and created specifically for them. All the children were members of the same physical classroom and interacted with each other in their physical environment as well as in the virtual world. In tailoring the virtual worlds for the class, achievements, goals, and other objectives were added to the environment. Researchers created this environment, leaving open questions about the potential for alterations and environments made by the users themselves or their parents.

Figure 2. Two players having a playful snowball fight in Minecraft.

Many different methods of communication exist in virtual worlds. Examples include communicating via text in the chat window, using voice chat with a microphone, or through in-game visual cues (*e.g.,* an avatar dancing). Thus, many choices are available for children with particular communication needs, which allows them to have social interactions in a way that is most affordable for them.

Minecraft for Children with Autism

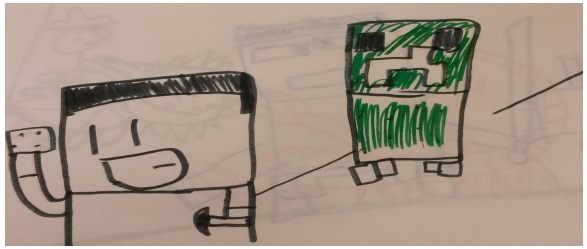

Figure 1. Child's drawing of their character in Minecraft.

Many children with autism conveyed interest in the computer game Minecraft (see Figure 1). Minecraft is an open-ended, free play style game through which players can interact in a virtual world with no particular goals or play requirements [6]. Minecraft can be played as either a single or a multiplayer game. As a multiplayer game, the game can be as interactive as the individual player desires (See Figure 2).

There are entire Minecraft worlds dedicated to children with autism (see Figure 3). One particular server is

Figure 3. Opening of new AutCraft world for children with autism.

Autcraft[2]. This server is set up with specific measures in place with the intention of creating a fun, safe environment for children with autism. These measures include giving each player the ability to keep their items safe from other players, turning off violent monsters, and monitoring activity via administrators and moderators. This allows individual players to feel safe in the environment and not fear bullying, which other studies have found to be a problem [2]. My research will employ direct observation of participants in the game and interviews with participants, parents, and the server's moderators to better understand these types of servers.

Workshop Participation

Participation in this workshop is essential for advancing this research agenda. First, a broader discussion of how people are designing, developing, and evaluating technologies for children with special needs will provide insight into the current practices and ways to disseminate this work. Second, discussion of this research agenda surrounding virtual worlds will provide important contributions to the larger workshop discussion. In particular, this project highlights issues of adoption of technology and current alternative communication practices. Finally, this workshop provides an excellent opportunity for networking among individuals interested in communication for children with special needs. Additionally, this workshop provides opportunities for collaboration with people working in related areas as well as the expansion of our research agenda to include other issues brought up by other workshop participants.

[2] www.autcraft.com

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