

## Exploring the Value of Educational Accessibility and Learning through Virtual Worlds

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### Abstract

Virtual worlds allow for an immersive 3D experience with rich interactive content and learning potential for students. Through this technology, educators have abundant creative power to design and facilitate meaningful learning experiences. Even though online games and virtual worlds have been around for many years, their use in education has often been experimental or narrowed to a particular course topic. With the rapid changes in technology and advancements with computer interaction, virtual worlds are increasingly being used in numerous ways to improve learning and student-teacher interaction. In this editorial our aim is to briefly discuss virtual worlds in the context of education, with the focus of educational accessibility for students with disabilities.

**Keywords:** virtual worlds, accessibility, education.

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### 1. Editorial

Virtual worlds allow for an immersive 3D experience with rich interactive content and learning potential for students. Through this technology, educators have abundant creative power to design and facilitate meaningful learning experiences. A virtual world is a three dimensional computer mediated environment that exists online, often persistent, open-ended and malleable. In these online worlds, people can see each other on the screen in real time as a 3D representation that can take on any form (e.g. an avatar). Virtual worlds can serve many purposes such as entertainment, socializing, gaming, education, and business advertising. Even though online games and virtual worlds have been around for many years, their use in education has often been experimental or narrowed to a particular course topic. With the rapid changes in technology and advancements with computer interaction, virtual worlds are increasingly being used to improve learning and student-teacher interaction. Despite improvements in educational technologies, some research suggests that students with learning disabilities are not

receiving education in a format that they need (Hallahan & Cohen, 2008). Several technology based solutions for enhancing teaching and learning for people with disabilities exist, but may not be well known. Through virtual worlds such as Linden Lab's Second Life, *some* challenges in education can be addressed due to its unique characteristics. Physically getting to campus and interacting with the class is one such challenge. "Second Life is an ideal learning environment for many disabled students as it provides greater accessibility than traditional campuses, as proven by the Second Life Community Virtual Ability" (Linden Lab, 2011, pg. 4). As virtual worlds are internet-based, while being structured in a 3D context, the environment may be well suited for some students. Parents, who have children with disabilities, are increasingly considering online schools for their children's educational needs (Coy, 2014). More than 700 educational institutes are using, or have used Second Life in some way (Linden Lab, 2011). While other virtual worlds have gained popularity in the last few years, the use of Second Life has sparked many ideas and conversations. These online worlds can be used as an extension to a real campus or as an extension to the classroom (Wang & Braman, 2009). Educational institutions are using virtual

environments to design classes, experiments, field trips, and many other events and activities (Vincenti & Braman, 2011; Linden Lab, 2011; D'Agustino, 2012). Some of the events and activities include components of: distance education, presentations, recreations, simulations, just to list a few (Linden Lab, 2011).

Some students have a difficult time comprehending topics discussed in class using traditional lecture formats. Using Second Life, students could have direct access to additional resources, pictures, videos, and other information that can be beneficial. This of course would have to be setup by the instructor for the course in the online world. As Second Life and other virtual worlds possess both synchronous and asynchronous capabilities, students could choose the best learning style for them individually. Students can also maintain contact with the class and instructor similar to a real life classroom setting. In class, students are taught to use the World Wide Web to discern various types of information, but from an accessibility point of view, it is primarily text. Since this information is presented primarily as text, Second Life could be beneficial as information could be presented in a 3D interactive context. People with particular disabilities or those needing a visual approach to learning would have an advantage in this environment. This however, does pose problems for visually impaired students. To better serve the visually impaired community, text based interfaces for Second Life for instance could be used. One example is TextSL and serves as an interface that runs on top of Second Life for the visually impaired (Oktay & Folmer, 2010). In this command based virtual world one can use the arrow keys and text commands, and the avatar will respond accordingly.

Even though there are many advantages for virtual worlds to increase accessibility, there are also many disadvantages as well. One major hurdle is that many of these environments are not completely accessible to all people with disabilities, for example, the visually impaired. Additionally, the hardware requirements of using a virtual world can be problematic. Added to this burden is that faculty wanting to use these types of technologies often need better training and understanding in order to do so and to understand how to adapt classroom activities. Developing content and designing class material to work within a virtual world can be very time consuming and costly (in some worlds). Legal aspects of educational accessibility also need to be considered and better understood for educators.

## 2. Concluding Remarks

As it is estimated that over 18 percent of the world's population has a disability of some kind (Vicente & Lopez, 2010), we should be using technology in positive and constructive ways to improve lives. Due to the technology requirements of virtual worlds and computer skillsets needed to be successful, virtual worlds may not be suitable for those with high support needs (Stendal, Balandin,

Molk-Danielsen, 2011). However, some individuals with disabilities may greatly benefit from having better access to virtual worlds because of the interaction and learning potential. As the need to learn and interact with technology grows more important in our everyday lives, having alternative means to learn skills and other content is increasingly important. There is a need for a shift in redesigning virtual worlds to be accessible to nonvisual individuals or those with physical difficulties which would make input control for these environments additionally challenging. How can and should these space be improved? How can we better use virtual world technology to increase access to course material and improve interaction to better education? As technologies continue to improve, more opportunities to help educate and improve universal access and equality will emerge. Particular technologies like virtual worlds have improved greatly over the past several years. Advocating for the disability community, these online spaces not only have potential to improve education but also to help increase the confidence to learn. It just may take time for educators to catch up with the many new technical innovations to increase access to truly realize the potential of virtual worlds.

## References

- [1] Coy, K. (2014). Special Educators' Roles as Virtual Teachers. *Teaching Exceptional Children*, 46(5), 110-116.
- [2] D'Agustino, S. (2012). Immersive Environments, Augments Realities, and Virtual Worlds: Assessing Future Trends in Education. IGI Global.
- [3] Hallahan, D. P., & Cohen, S. B. (2008). Many students with learning disabilities are not receiving special education. *Learning Disabilities Multidisciplinary Journal*, 15(1), 3.
- [4] Learning Disability Today. (2009). Part of the Community. June 2009. Pg 20-21.
- [5] Linden Lab. (2011). Second Life Education: The Virtual Learning Advantage. Retrieved from: <http://lecs-static-secondlife-com.s3.amazonaws.com/work/SL-Edu-Brochure-010411.pdf>
- [6] Oktay, B. & Folmer, E. (2010). TextSL: a screen reader accessible interface for Second Life. Proceedings of the 2010 International Cross Disciplinary Conference on Web Accessibility (W4A'10) Raleigh, North Caroline.
- [7] Stendal, K., Balandin, S., & Molka-Danielsen, J. (2011). Virtual worlds: A new opportunity for people with lifelong disability? *Journal of Intellectual and Developmental Disability*, 36(1), 80-83.
- [8] Vicente, M. R., & Lopez, A. J. (2010). A multidimensional analysis of the disability digital divide: Some evidence for Internet use. *The Information Society*, 26(1), 48-64.
- [9] Vincenti, G., & Braman, J. (2011). Multi-user virtual environments for the classroom: Practical approaches to teaching in virtual worlds. Hershey: Information Science Reference.
- [10] Wang, Y., & Braman, J. (2009). Extending the Classroom through Second Life. *Journal of Information Systems Education (JISE) Special Issue on Impacts of Web 2.0 and Virtual World Technologies on IS Education*. Vol. 20. Num. 2 pp 235-248.