## Best Practices for Instructors to Facilitate Learning in Virtual Worlds

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## Abstract

Using virtual worlds for education and training to help teachers and learning organizations better serve their student populations is currently generating a lot of excitement. Questions are being asked about what are good instructional design practices that should be used in virtual worlds, how a teacher's role changes in a virtual world, and how can teachers make a successful transition from in-person or distance education to teach in virtual worlds. These are all questions that can impact an instructional plan. This research provides five reasons why virtual worlds are used in education and business and provides 15 best practices for instructional designers, teachers (in-person or online facilitators) who are making the transition from face-toface or distance education to teaching in virtual worlds. This will help instructional designers and instructors identify commonly asked questions and discuss answers about using virtual worlds for instructional plans for adult learning.

#### Best Practices for Instructors to Facilitate Learning in Virtual Worlds.

Today, scores of virtual worlds (VW) are in operation. Many other virtual worlds are under development and yet to emerge (Swaine, 2007). Virtual world activity is taking place thoughout all levels of education and other organizations that range from K through 12 schools, colleges, universities, (Educause, 2008), corporate universities and corporations (Robinson, 2008). A virtual world is a multi-user virtual environment (MUVE) that is used as a conduit for communication, social networking, presentation, and a place for collaboration and education. Teachers and students access a virtual world, running on a personal computer that is interfaced to a network and the Internet (Knittle, 2008 p.1).

#### Second Life

While there are many virtual worlds available in the market, *Second Life* is currently the most popular multi-user virtual environment, or virtual world. Within the educational landscape of virtual worlds, *Second Life* offers real world options such as its own currency, trade, customizable avatars, options to buy land, and other features that resemble the real world (Second Life website, 2008). According to statistics provided in March 2007 by Pathfinder Linden of Linden Labs, there are over 200 universities or academic institutions already involved in *Second Life*, and a subset of them own over 250 private islands (Kelton, 2007).

### **Games in Education**

Games have been shown to actively engage learners and promotes learning at all levels. Well-developed games have an intrinsic quality that enables them to be used to engage students in cognition, collaboration, simulation, and social interaction that cultivate learning (Deieterle, Clarke, 2007). The rationale for using games in education is that:

You cannot be passive in a game or simulation. Students engaged in educational games and simulations are interpreting, analyzing, discovering, evaluating, acting, and problem solving. This approach to learning is very consistent with constructivist learning, where knowledge is constructed by the learners as they actively problem solve in an authentic context, as opposed to more traditional instruction where knowledge is seen as an object transmitted from teacher to learner (Jonassen & Land, 2000 p. 116.)

This article then goes, on to say, "In constructivist learning, collaboration is important, as knowledge is socially constructed" (p. 117). Games such as massively multi-player online roles playing games (MMORPs) are games where multiple people play, interact, and can learn formally or informally.

Multiplayer games provide additional social experience within the game itself. In multiplayer games, several people can play the game at the same time using networking and Internet technologies. You can play the game, with others, against others, or both. With massively multiplayer games, hundreds or even thousands of people can play at the same time. (Jonassen & Land, 2000 p. 117).

Though a virtual world is not always a game, games have helped virtual worlds to evolve and become part of an educational methodology. Virtual worlds are now available to individuals, students, teachers, and educational organizations.

#### **Reasons for Using Virtual Worlds in Education**

Before discussing the implications and details of using virtual worlds for educational purposes, a general overview is needed to understand why so much attention has been focused on virtual worlds. Here are five reasons for using virtual worlds within an educational and business context (Robinson, 2008) of which four of the five reasons are primarily used in some form of education and training.

The first is that a virtual world can be a resource where information resides or supports other information that is available in a Weblog, a Wiki, or a Learning Management Context System. In this situation, information contained in a virtual world can be compared to information posted on a website. Take for example an employee orientation training program at such companies as Cisco Systems or Johnson & Johnson. Both companies offer employee orientation in a virtual world. The difference between an orientation developed in a virtual world versus a website is that in a virtual world, a new employee has a greater chance of being fully engaged. Traditional orientations, whether website-based or delivered by an HR manager explaining company procedures, tend to put a new employee in a passive role. Passive learning often leads to boredom and inattention. Virtual world orientations demand attention and can be fun (Robinson, 2008).

The second use of virtual worlds is establishing a place to have virtual meetings where information can be shared. This is currently accomplished with tools like Webex and Adobe Connect, but within a virtual world, this type of activity can also allow people to meet virtually in a 3D space from remote locations. And while this type of activity can be done in a teleconference, a virtual world has been shown to provide more interactivity among a group of people. This allows better interaction and exchange of ideas. And using a virtual world can be especially productive for an online learning environment or a distributed workforce.

Third is rapid prototyping. This activity enables fast development of ideas or products (such as software) because of sharing information live as well as using avatars for simulations to enable the participants to help make a process more visual, realistic, and clear (Robinson, 2008). Imagine for example being able to run beta software in a virtual world of a nuclear reactor application during one phase of a simulated installation of a nuclear power plant. This type of prototyping process would allow a group of people (avatars) to see, experience, and learn how to work with the new software without the risk of a nuclear accident.

A fourth reason is for analysis. This is a new way of thinking about using virtual worlds. In this application, a virtual world can be used collaboratively, as an analytical workspace, along with past and present data combined with ontologies to predict potential outcomes in a 3D space (Morrison, 2008). Ontologies are enabling technologies that were developed for sharing knowledge by using artificial intelligence. Their purpose is to share knowledge (that was derived from humans) so that both people and computers understand the knowledge in the same context (Davies, Fensel, Van Harmelen, 2003). An interesting application for this type of application is predicting future outcomes based on current data from the field for military or the intelligence

operations (Morrison, 2008). While analysis in virtual worlds is not thought of as a primary educational tool, it can be used for some training purposes.

The fifth use of virtual worlds is for education and training (Robinson, 2008). In the context of education and training, virtual worlds are another form of a synchronous and asynchronous distance education tool. Virtual worlds can be used to create a variety of informal, distributed, active, and immersive learning environments where rich learning opportunities exist through simulations activities, collaboration opportunities, and social experiences (Jonassen & Land, 2000 p.116). This use of virtual worlds overlap with the first four uses that are noted in this article. Fundamentally, virtual worlds involve a distributed learning environment and using virtual worlds has many of the same characteristics of online learning or e-learning.

#### **Best Instructional Design Practices in a Virtual World**

This section covers 15 best practices that helps instructional designers better understand teacher and students' needs for teaching and learning in virtual worlds.

#### Establish a Reason for Teaching in a Virtual World

There are many reasons to use a virtual world for teaching, but the first question to consider before jumping in is: does the learning situation require it (Arreguin, 2007 p.5)? This is a common question asked when performing a training needs assessment and makes sense for determining whether to use the virtual world platform. Using virtual worlds should enable educators and learners to be more creative and adaptive, engage, students and show information that cannot be seen or simulated in the real world (Robinson, 2008). For example, a virtual world could be used to give a tour of the inner working of a volcano as it is erupts or to stimulate collaboration in a group among students who are at remote locations. One of the best uses of a virtual world is to develop new environments for learning, rather than purely to replicate real life (Swaine, 2007). Sarah Robbins (Robbins et al, 2007) points out that existing teaching method such as a traditional hour lecture in a MUVE defeats the purpose of using a virtual world.

## Apply Pedagogy First, and Then Use Technology

In some instances, people get involved with thinking technology is a key ingredient for using virtual worlds for learning. The theme of using pedagogy first, then technology describes a best teaching practice when using technology (Moore, Fowler, Watson, 2007 p.46).

# Promote Active-Learning, Immersive learning, Problem-Solving, and Problem-Posing Skills

*Active learning* according to Moore et al,. (2007) is where students are actively engaged in their learning process. This means they are required to apply what they have learned, and when they do that, the student retains that knowledge (p.46). *Immersive learning* is an activity that allow students to become involved in a topic that allows them to experience a realistic connection and develop a genuine understanding of the topic (Calognoe, 2007). In another Educase Learning Initiative podcast from the 2008 conference, Teisha Roby outlines how to promote active learning by creating a rubric (a set of rules) with clear learning objectives for students to follow. In her example, five objectives were used. An interactive experience has (a) purpose. Students have to be (b) accountable. The student would need to (c) collaborate and would have to do (d) problem solving. The learning process would need to create (e) higher-order thinking skills. These objectives are an example of what is crucial to the learning of a topic in a virtual world like Second Life (Robbins et al, 2007).

#### Understand the Ground Rules for Keeping Everyone Safe When Using a VW

While this best practice has implications for K through 12, adults of all ages need to be aware of classroom rules. In the same Educause Learning Initiative podcast, the panel commented on safety in virtual worlds (Robbins et al., 2007). They noted that the ratings system used in Second Life simulate those used for TV and movies. This panels also said that teachers need to be sure all students are aware of safety and possible encounters with inappropriate behavior "on the adult grid" (such as sexually explicit behavior). Also, teachers need to make their students aware, before they sign up for a class, that a virtual world experience might be offensive. In dealing with negative aspects of virtual worlds, the panel suggested that teachers counsel students about how to pick appropriate names for avatars, how to be aware of stalking activities, the dangers of meeting strangers from a virtual world experience in real life, and privacy issues. Johnson discussed classroom rules and safe places that a student can visit during the course of the class in a virtual world. Johnson pointed out a potentially disconcerting behavior of Second Life happening occasionally when an avatar appears the first time. After teleporting, avatars may not have clothes on for a few minutes. If that type of issue is a problem, he (Johnson) is willing to offer a student another type of assignment or class in place of using a virtual world. However, he said that no one has ever taken him up on that offer. All three of this panel of experts pointed out because using virtual worlds are new, some people use the excuse that virtual worlds are not safe in an effort to avoid using them (Robbins et al, 2007). The reality is that the same fears have

plagued the Internet since it began. Johnson commented that when parents and adult students ask the teacher or complained about inappropriate virtual world sites, he tells them about the classroom rules and that each student has to take responsibility for his or her actions. Robbins adds that everyone makes decisions about where they go in-world (within a virtual world) and in real life. She said that college students are adults and need to learn how to act like an adult (Robbins et al,. 2007).

# Design the Learning Environment to be Challenging and Collaborative

A challenging course needs to offer multidisciplinary problems, have support to meet the challenges of learning and provide opportunities for reflection (Arreguin, 2007 p. 12). To accomplish this, students need to be involved with the design of the learning experience. Allowing students to research and reflect on design choices that they themselves build fosters learning. The class needs to be designed for collaboration among students, teachers, and content. Virtual worlds, such as Second Life offer a social aspect that supports both synchronous and asynchronous collaboration possibilities. Teachers need to use a student design experience and collaboration to their advantage to promote active and immersive learning. An in-world class needs to promote an opportunity for creating community by encouraging students to form groups or join established communities. This type of experience can add an interesting and unpredictable component to learning that more closely approximates real world situations. Students will see and learn about interdisciplinary issues. A well-designed instructional plan combined with an in-world site can also offer a high-quality asynchronous experience. A scavenger hunt in an engaging in-world site where two students collaborate can be very productive. Instructors need to provide the opportunity

for students to reflect on different parts of their learning experience in both new and traditional media. These activities can be facilitated with Web 2.0 tools such as blogs, Wikis, and social network sites. Additionally Web 2.0 tools provide a tool for assessment and evaluation. (Arreguin, 2007 p. 12).

# Classroom Technology Needs To Be Up-To-Date, In Good Working Condition And Be Maintained

Obviously, computer technology is used for a virtual world learning environment. Computers and associated systems need to be able to support virtual worlds without technical issues caused by using older computers or less-than-robust computer networks.

Computer hardware requires high-speed cpu's, with optimum amounts of Random Access Memory, up-to-date video cards, and fast and dependable Internet connections. There must be efficient and flexible ways to update computers and virtual worlds as current updates and patches become available. Networks and software updates need to be supported and completed in a timely manor. If technology does not work as anticipated, then learning will not easily take place in a virtual world (Campbell et al,. 2008).

#### **Personalized Avatars are Critical**

Students spend a lot of time creating detailed avatars and, in some cases, feel an avatar is an extension of themselves. This helps them be receptive to learning and they make a better connection for active and immersive learning (Robinson, 2008).

# **Overcome Student and Teacher Resistance**

One approach to motivate students is to use the-carrot-and-stick approach. That is this you can have fun in this class, but you must come and participate. When you do that, you get a grade. And the same carrot-and-stick analogy hold true for faculty. You can have fun, but you have to participate and when you do, you get paid (Robbins et at,. 2007).

#### There is a Learning Curve to Use Virtual Worlds.

Anyone who enters a virtual world such as Second Life for the first time is faced with a steep learning curve (Swain, 2007). This is especially true if you are not familiar with games. Learning about virtual worlds involves starting with the basic skills Using virtual worlds for education requires certain skills to become an effective SL resident. This includes activities such as creating and personalizing avatars. Learning how to move around (the virtual world) by walking, running, jumping, flying teleporting, and saving landmarks and later reusing landmarks takes time to master (Swaine, 2007). Communicating with text (such as instant messaging IM) or using your own voice as well as how to make use of practical functions for finding and retrieving information is an imperative set of skills. There are a number of challenges to educational organizations that are moving into virtual worlds. To make virtual worlds beneficial for learning, each teacher and student needs find a comfort zone in order to gain experience. This is often done by experimentation (Robbins et al., 2007).

### **Teachers Need Support of the Organization or Educational Institution**

To accomplish this goal, teachers need support from their organization or educational institution. Both faculty and staff need to be trained to have proficiency in a virtual world. For faculty, organizations, and educational institutions patience is required when developing skills for classes in a virtual world. Developing the right teaching competencies for virtual worlds requires hard work to master technical skills then learning the right mix of teaching methods. Because it takes time, faculty, organizations, and educational institutions need to set sensible timelines and realistic expectations to develop and deliver high-quality classes (Campbell et al,. 2008; Moore et al,. 2007).

# Using Any Type of Technology Requires Practice for Teachers and Students

To become proficient with virtual worlds requires experimentation. This is essential. In the learning process, expect teachers and student to make mistakes. Teachers and students need to learn and in that process be allowed to make mistakes and then learn from them (Campbell et al,. 2008).

### Be Prepared for Longer than Expected Implementation Times

Virtual worlds are leading edge tools for education and because of that, there are unknown and unexpected outcomes (Campbell et al, 2008).

## There are Different Roles for Teachers and Students

When instructors are placed in a new role they can find it to be "disorienting" (Arreguin, 2007). Teachers, as well as students, find themselves in more of a collaborative role. Robbins who was a speaker at the Second Life Community Convention 2007 Education Track Summary: Best Practices from the Second Life Community Convention stated "Second Life challenges the silo mentality that is pervasive in many higher education environments" (Arreguin, 2007 p.9). A silo mentality is a negative term relating to human barriers that effect how groups perform in an organization by causing duplication of tasks, fragmentation of an organization and other inefficiencies (Kelly, 2006). There are also new roles for learners. Learners need to approach education and learning in a virtual world as a social and collaborative experience. "It is a participatory culture" (Arreguin, 2007 p.10). In each case, for teacher and learners, they have to learn to adapt.

# **Teachers May Need to Adjust Their Teaching Style**

Using traditional teaching methods in a new medium such as a virtual world often does not work. Teachers need to use a travel guide model and become more of a facilitator. One strategy is to start with a familiar learning model then move away from it. This idea is to move from a teacher-centered approach to a student-centered learning approach. This method is aligned with the constructivist learning theory that fosters active and immersive learning opportunities (Robbins et al,. 2007).

## Network with More Experienced Educators.

Networking working strategies include using on-line activities such as the SLED (Second Life Educators) list serve, blogs, social networks or in-person opportunities such as at work or special events. These types of activities allow teachers and staff to have opportunities to share experience, insight and learn from others (Robinson, 2008).

## It is ok for the learning to be fun

While some people enter virtual worlds strictly for entertainment, enjoyable games for learning have rewards and engage students. A well-developed instructional plan supports creating interesting and entertaining assignments and lessons in a virtual world (Campbell et al, 2008; Kelton, 2007).

# Conclusion

Educators and students are in the early adoption stages of using virtual worlds and have interest in understanding how to successfully use them for teaching and learning. Teachers and organizations are trying to make the connection between games. virtual worlds, instructional design, teaching and learning, provision for high-quality education and training, and transitioning to use of virtual worlds. This article has provided a list of best practices that are used today for teaching and learning in virtual worlds. This list of best practices begins by pointing out that the use of virtual worlds be compatible with the educational opportunity. Once the rationale for a class is established, using good pedagogy for instructional design and teaching is essential. Good pedagogy needs to promote active-learning, immersive learning, problem-solving and problem-posing skill. A virtual world learning environment needs to be challenging and collaborative, offer multidisciplinary problems, have support to meet the challenges of learning, and provide opportunities for reflection. Rules must be established so that students, teachers, and organizations understand what is necessary to keep everyone safe in using a virtual world.

Unfortunately, there is a steep learning curve to use virtual worlds and because using a virtual world for education is a new approach to learning, in some cases, instructional designers, teachers, and organizations need to be prepared for longer than expected implementation times. Also, when becoming familiar with using virtual worlds, instructional designers, teachers and students must be aware of their changing roles. Instructional designers and teachers need to use a learner-centered approach and adjust their teaching style. The instructional plans need to be developed to make students more responsible for what they do and learn in a virtual world. In this process, mistakes will be made, instructional designers, teachers, students and organization need to aware of this and be patient. During the learning process, teachers need to network with more experienced educators. This will allow them to learn and develop better virtual worlds teaching skills. And last, while some might think the only reason to use a virtual world is entertainment, virtual worlds can be used as a powerful learning method that makes learning enjoyable.

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