# Establishing Virtual Learning Worlds

## The Impact of Virtual Worlds and Online Gaming on Education and Training

**By**

**Barton K. Pursel**
**Lead, Learning Solutions**
**IST Solutions Institute**
**The Pennsylvania State University**
**814-865-7718**
**bpursel@ist.psu.edu**

**Keith D. Bailey PhD**
**Assistant Professor of IST**
**Manager, Instructional Technolog**
**IST Solutions Institute**
**The Pennsylvania State University**
**814-865-8953**
**kdb163@psu.edu**

**Abstract**

Video games in today's society have moved from a cult phenomenon to a mainstream leisure activity. One reason for this is the emergence of online gaming, where people interact, socialize, and learn in online environments. While online game populations rapidly increase, the attrition in online courses remains to be an issue. Based on the needs of today's students, along with the level of interactivity and other traits of online game worlds, educators need to look into incorporating elements of online gaming into online learning environments, creating Virtual Learning Worlds (VLW).

> Games fully leverage technology to facilitate 'edge' activities – the interaction that occurs through and around games as players critique, rebuild, and add onto them, teaching each other in the process. Players learn through active engagement not only with software, but with each other as well" (Herz 2001).

**Games Today**

It is probably safe to say that gaming, whether it is via consoles or computers, complex games or simple games, has moved from a cultural phenomenon enjoyed by a small fraction to a mainstream leisure activity and medium of entertainment. In an article posted on MercuryNews.com the Entertainment Software Assocation (ESA) is referenced as stating , "50 percent of Americans over the age of six play computer games" (2004, paragraph 6). This is a large percent of the population in the United States! In the past, the stereotype was that video game players (also referred to as gamers) were adolescents, primarily in middle or high school. The results of an online survey published by an America Online | Press Release in early 2004 actually found that women over 40 years of age were the dominant demographic who play online games (2004).

The increase in the number of gamers has had a direct impact on the annual revenue generated by the games industry. For example, in 2003, the gaming industry generated more net profits, over $11.2 billion in sales (Hernandez 2004), than the box office. The gaming industry is still growing rapidly, approximately 3 times as fast as the movie industry. One of the reasons for the game market expanding is the proliferation of Online games, Massivley Multiplayer Online Role Playing Games (MMORPGs) [Insert link to definition 1, MMORPG] and various other types of virtual worlds (Second Life, Sims Online, There) [Insert Description 1 - SecondLife][insert description 2, the sims online][insert description 3 – There], which account for approximately $1.5 billion dollars in sales annually. Richard Bartle, author of Designing Virtual Worlds, identifies some characteristics that help define virtual worlds:

> A computer implements virtual worlds (or network of computers) that simulate an environment. Some—but not all— of the entities in this environment act under the direct control of individual people. Because several such people can affect the same environment simultaneously, the world is said to be *shared* or *multi-user*. The environment continues to exist and develop internally (at least to some degree) even when there are no people interacting with it; this means it is *persistent* (2003, "Some Definitions").

The $1.5 billion dollars in sales does not take into account software and subscription-based revenue, but only the revenue generated from players selling in-world real estate, products, and services to other players. Such buying and selling takes place directly between players, and also through third party services such as ebay and the Open Gaming

Market (OGM). The Open Gaming Market is a relatively new avenue for gamers to not only buy and sell virtual goods, but also swap virtual goods with other players. [insert description 4 – open gaming market]

Many gaming professionals have forecasted online gaming to become the number one form of gaming in the future. More and more people are getting involved with online gaming now that consoles (Xbox, PS2) [insert link 5 – xbox][insert link 6 – playstation 2] are coming pre-packaged with network adapters for broadband gameplay. Companies like Electronic Arts and Microsoft are investing millions of dollars on large infrastructures to support online gaming networks, projecting that online game play is the future of gaming.

**eLearning**

Online gaming continues to gain momentum and popularity, as each game or virtual world is released. So why is it that at this moment in time when online gaming is growing exponentially that online learning appears to be dwindling? With the inception of elearning, organizations and academia envisioned a learning revolution. People could be trained at their desktops, anytime, anywhere, in a very effective manner. Just in time (JIT) learning was going to be the way of the future, and elearning was going to enable this.

So where are we now? Elearning is still around, but the buzz that it once held is long gone. Ask employees and students about their experiences in elearning, and you will probably get very mixed reactions, many of them negative. With a few exceptions, most elearning is poorly designed. Developers attempt to utilize 'antique' instructional design methodologies that are designed (and worked well) for instructor led, face-to-face training and education, but do not work as well for elearning.

Skeptics of online education have been claiming that it is not successful due to the significant increase in attrition with students taking these courses. Wilkinson has shown attrition numbers to be as high as 86% and as low as 35% (n.d.). Other sources have varied significantly, showing dropout rates between 20 and 50 percent (Frankola 2001), 26% (O'Connor et al. 2003), about 70% (Alexander 2003).

While these numbers vary drastically from source to source, they do show a disturbing pattern. They demonstrate that on average there is a dropout rate of nearly 50%. Based on the sources listed above, that means one out of every two individuals taking online courses will dropout of the course. Let's put this statistic into perspective; if a student or employee were to take an exam, would a 50% be an acceptable level of mastery for a course? I sure hope not! If one were to look at this statistic from a passing or failing standpoint, online learning would be receiving a failing grade. So why is online learning failing? It our contention that the issue stems from two of the primary limitations of online learning: lack of interactivity and lack of motivation.

One of the most commonly noted limitations of online learning is the lack of interactivity within courses (Kirby 1999; Berge 1999; Box 1999; Online Course Development n.d.).

Moore classified interaction in online learning as fitting into three possible categories: learner to content, learner to learner, and instructor to learner (1989). Palloff and Pratt stated that the "keys to the learning process are the interactions among students themselves, the interaction between faculty and students, and the collaboration in learning that results from these interactions" (1999, 5). Furthermore, the lack of interaction can have a significant impact on learning outcomes as "frequent student-faculty contact in and out of class is the most important factor in student motivation and involvement" (Regalbuto 1999, 25).

Another highly viewed limitation is the motivational factor impacting the success of online learning. Several authors support this notion as they have documented the lack of motivation as a potential cause for a lack of satisfaction in online courses (O'Connor 2003; Diaz 2002; ELearning in a Virtual World n.d.).

Given these two issues with elearning, it might be time to look at a new, innovative approach to educating and training people via the Internet. These approaches need to take into account the learning needs of today's students.

**The New Student**

One thing designers of elearning need to keep in mind is that today's students are fundamentally different than past generations in the way they think and process information. The students of today are not the students that our educational system was designed to teach (Prensky 2001). Being brought up in the information age, surrounded by a wide variety of technologies, has altered the way current generations process information and learn. Students today don't view technology as an optional part of the educational experience: being raised with technology all around them, they demand technology play a large role in education. They expect technology to be a natural part of any learning environment (Oblinger 2003). Technology is, and has been since they were born, an integrated part of their lives. Today's students are innovative, investigative, thrive on multi-tasking and multi-processing information, and are highly exploratory and independent (Leung 2002).

Now that we are starting to understand the needs of the new student, several key factors can be identified as being critical to the learning environment. The ideal learning environment needs to:

- be customizable to the needs of each individual student
- provide students with immediate feedback
- be constructive
- motivate students to persist far in excess of any externally imposed requirements or demands
- build long-lasting conceptual structures

(Oblinger 2003)

What has academia's answer to the demands of the new students thus far? Learning Management Systems (LMS) appear to be the number one medium for delivering elearning at the college level at this time. These are supposed to help elearning, foster

interactions, and create a virtual environment for learning. What do most LMS provide? Email, message boards, chat features, drop boxes, file sharing areas, and maybe a few synchronous presentation tools. This still does not provide adequate opportunities for additional interaction; this is just a centralized area for most asynchronous student-to-instructor interactions to take place.

With broadband subscriptions finally overtaking narrowband subscriptions, and broadband adoption in the Unite States at a 27% growth rate (Nielsen||Ratings 2004), new elearning approaches are starting to become feasible. Products such as Centra [insert description 7 - Centra], a synchronous learning environment, can now be used to connect people in a virtual classroom, allow VoIP communication [insert definition 2 - VoIP], and real-time demonstrations of various tools and concepts. Macromedia's Breeze [insert description 8 - Breeze] is allowing educators around the globe to conduct seminars and workshops online in real-time, but unfortunately all the communication takes place in small text-based Instant Messaging (IM) windows. Apple's iChat [insert description 9 - iChat] has the potential to allow for multiple people to meet virtually over the web in real-time video and audio, but due to a large gap in market share, this technology will probably not be utilized or explored to its full potential. These environments offer synchronous, real-time communication, but they still lack any significant degree of interaction aside from person-to-person communication. The time is now to take the next step in virtual, online learning platforms to help meet the demands of the new student and move the educational system forward.

**The Game Approach**

What types of online environments not only have a great deal of interactivity, but also foster large communities and create environments for collaboration and learning? Virtual worlds [insert definition 3 – virtual world]. The combination of virtual worlds and online gaming approaches could lead to monumental advances in online education and large-scale training. This combination could overcome the current issues of lack of interactivity and motivation in online learning.

Many researchers are now focusing on how to take game-related design concepts and implement them in an educational setting. M.I.T's Comparitive Media Studies program (http://web.mit.edu/cms/) is examining how games can help create a better pedagogical approach to creating learning environments, and CMUs Entertainment Technology Center (http://www.etc.cmu.edu/) is evaluating how games can be utilized for non-entertainment purposes. Game developers have a lot to contribute to academics in the way they create a successful game, using such strategies as:

- Creating and maintaining a high degree of interactivity within the game world
- Keeping the content of the game interesting enough so the player continues to return to the game
- Making the game difficult enough to be challenging to the player, but easy enough so the player does not get frustrated
- Offering customizability on the part of the player, leading to replayability and user-created content
- Build reinforcement into the game through instant feedback

- Give frequent rewards to the player to keep motivation levels high
- Develop an environment to promote online communities

From an educator's perspective, aren't a lot of these principles what we try to embed in educational experiences? Not only that, but a lot of these principles align with the needs of the new student, particularly the high degree of interactivity, the online communities for collaboration and communication, instant feedback, and the rewards systems. These principles also can lead to greater levels of motivation.

We are not suggesting games are *the* answer to our educational woes. The current strides in elearning can be integrated into a more game-like approach to help enhance our educational system and meet the needs of the new student. Envision some of the functionality of a LMS combined with all the interaction, social, and community building opportunities of a virtual world? The opportunity to innovate the entire field of elearning is limited only by designers' and developers' creativity. Instead of just getting an email from the instructor, a student could actually visit a virtual classroom, a synchronous, graphical environment, interact with instructors in a meaningful way, as well as interact with other students. Not only can students interact with people, but with the environment. Go to a virtual library, a place with a collection of resources that lead to relevant places on the web, or provide you direct access to class-related files. Have a virtual team meeting in a café, where students can share virtual resources, complete assignments, problem solve, and simply interact with classmates…something that has been missing from elearning for a long time. Instead of providing the cookie cutter, limited impact elearning courses that are out there now, why not provide an extremely rich, engaging, user driven/instructor facilitated learning environment within a virtual world?

Research points to the social aspect of online gaming as one of the biggest attractions for players. Nearly everyone uses instant messaging technology (IM) nowadays, but when adding a graphical layer to this, with a virtual representation of yourself (avatar), people appear to be much more engaged. Virtual worlds and the real world are bleeding together more and more. People are paying real money for virtual goods, selling real-estate, and even suing other players for virtual theft of in-game goods. People not only have emotional investments in virtual worlds now, they have large economic investments. People immerse themselves in these virtual worlds. Imagine people being able to immerse themselves in such a world that also happens to be where virtual classes take place that provide limitless educational and training opportunities? These virtual worlds foster huge online communities, that are user driven and contain large knowledge bases and interconnected networks of players. These types of networks in an educational setting would be invaluable. They would be created by students, for students. A place where students could share information, collaborate, and innovate in ways never seen before, with the instructor's role shifting toward facilitation vs. teaching.

**Virtual Learning Worlds**

Higher education needs to push the boundaries and devise an innovative, new approach to elearning. Combining elements of current asynchronous and synchronous learning environments, coupled with characteristics of virtual worlds [insert video 1 – There], could lead to monumental strides in educating the next generation of students. With the

creation of a Virtual Learning World (VLW), interactions become much more meaningful, and a learning community can thrive. Students can now login to a persistent online environment to interact with others, explore class-related materials and environments, or simply to socialize and chat. The elements of an LMS would also be included, so students would be logging in to hand in assignments, attend virtual class meetings, give virtual presentations, and much more. The Virtual Learning World would be the single container for all things related to the student's education, as well as a place for entertainment and fun. There is incentive to login and to meet new people who will play a role in furthering your knowledge, education, and training needs.

References

Alexander, S. 2004. Do not pass go. http://www.onlinelearningmag.com/onlinelearning/magazine/article_display.jsp?vnu_content_id=1355614 (accessed August 19, 2004).

America Online | Press Release. 2004. Press Releases. http://media.aoltimewarner.com/media/cb_press_view.cfm?release_num=55253774 (accessed August 22, 2004).

Bartle R. 2003. What are virtual worlds?. http://www.peachpit.com/articles/article.asp?p=99703 (accessed January 25, 2004).

Berge, Z. L. 1999. Interaction in post-secondary web-based learning. *Educational Technology* 39(1): 5-11.

Box, K. 1999. *Human interaction during teacher training courses delivered via the internet*. Paper presented at the Society for Information Technology & Teacher Education Conference. San Antonio, TX, February.

Diaz, D. P. 2002. Online drop rates revisited. http://ts.mivu.org/default.asp?show=article&id=981 (accessed August 19, 2004).

Elearning In A Virtual World. n.d. http://www.bcinow.com/demo/oel/Exploring_Advantages.htm (accessed August, 19, 2004).

Frankola, K. 2001. Why online learners drop out. *Workforce* 80: 53-60.

Hernandez, G. 2004. Sales up, but prices down, on video games. http://www.azcentral.com/ent/vgames/articles/0128gamenews.html# (accessed March 25, 2004).

Herz, J. C. 2001. Gaming the system: What higher education can learn from multiplayer online worlds. http://www.educause.edu/ir/library/pdf/ffpiu019.pdf (accessed October 9, 2003).

Kirby, E. 1999. *Building interaction in online and distance education courses*. Paper presented at the Society for Information Technology & Teacher Education Conference. San Antonio, TX, February.

Leung, L. 2003. Impacts of the net-generation attributes, seductive properties of the internet, and gratifications-obtained on internet use. *Telematics and Informatics 20*(2): 107-129.

Moore, M. G. 1989. Editorial: Three types of interaction. *The American Journal of Distance Education 3*(2): 1-6.

Nielsen//NetRatings 2004. Fifty million internet users connect via broadband, rising 27 percent during the last six months, according to Nielsen//netratings. http://www.neilsen-netratings.com (accessed August 5, 2004).

Oblinger, D. (2003). Boomers, gen-xers, and millennials: understanding the "new students". *Educause Review, 38*: 36-48. http://www.educause.edu/ir/library/pdf/erm0342.pdf (accessed June 2, 2004).

O'Connor, C., Sceiford, E., Wang, G., Foucar-Szocki, D., and Griffin, O. 2003. *Departure, abandonment, and dropout of e-learning: Dilemma and solutions*. James Madison University, Human Resource Development. www.masie.com/researchgrants/2003/JMU_Exec_Summary.pdf (accessed March 25, 2004).

Online Course Development. n.d. Course Consulting Services. http://www.online-learning.com/consult_home.html (accessed August, 29, 2004).

Palloff, R. M., & Pratt, K. 1999. *Building learning communities in cyberspace*. San Francisco: Jossey-Bass Publishers.

Prensky, M. 2001. *Digital Game-based Learning*. New York: McGraw-Hill.

Regalbuto, J. 1999. Teaching at an internet distance: the pedagogy of online teaching and learning. http://www.vpaa.uillinois.edu/tid/report (accessed July 15, 2000).

MercuryNews.com | 02/13/2004 | Academics get serious about video games. 2004. Academics get serious about video games. SiliconValley.com. http://www.siliconvalley.com/mld/siliconvalley/7948592.htm (accessed April 23, 2004).

Wilkinson, D. J. n.d. Turn on, Tune in, and Drop Out - Designing responsive learning environments. http://www.traineasy.com/news/Featured%20Article1.htm (accessed August 2, 2004).