

Electronic Constructivism 2010: Innovative Tools, Virtual Travels, and Great Teaching

Maureen Yoder
Lesley University
myoder@lesley.edu

Abstract

Great teachers have always motivated their students to go beyond information gathering and rote learning. Socrates encouraged the youth of Athens to question and discuss. [1] Lev Vygotsky believed students could learn more effectively by collaborating. [6] Jerome Bruner promotes active learning. [2] These types of constructivist practices, enhanced with emerging technologies, provide opportunities for learning never before possible. Constructivist classrooms include analysis, transformative thinking, and the creation of original products that demonstrate new knowledge. Electronic field trips to imaginative environments, innovative Internet tools, and multifunction devices are enabling students to design, record, publish, and share their original creations. This paper, and the subsequent presentation, will provide participants with examples of inspiring instruction using promising technologies.

*“Education is the kindling of a flame, not the filling of a vessel”
Socrates (470 BC-399 BC)*

*“The only person who is educated is the one who has learned how to learn - and change”
Carl Rogers (1902 – 1987)*

Introduction

Igniting students’ curiosity and building an environment that encourages and supports their creativity can also invigorate teaching. A constructivist approach involving project-based, student-centered activities can result in students taking an active role in their own learning and engaging in thought-provoking challenges. Students must go beyond purely factual information. [2]

By providing an environment in which their students are encouraged to be thoughtful, imaginative, and inquisitive, teachers can observe their students engaged and motivated. When students work together, they face the rewards and challenges of collaborating with their peers. [6]. Critical to this approach is the articulation of the challenge, often one or more questions and scenarios. Educators can modify an already good curriculum to create interesting challenges for their students. Exciting results occur when existing technologies and Web 2.0 applications are integral aspects of information gathering, data analysis, and presentation possibilities. Anecdotal evidence indicates that student retention increases and standardized test results improve. More experience with virtual worlds, combined with formal research, is needed to authenticate these findings.

Virtual worlds

The development of 3D immersive worlds has offered a promising convergence of constructivist teaching in an imaginative and open-ended setting offering opportunities for interaction never before possible. Specifically, students become increasingly engaged in virtual environments when their avatars are invited to participate in scenarios recreating reality in a way not possible in real life. Interactions with historical figures come alive and historical events can be played out in real time. Collaborations with students around the world can take place in an environment where their avatars can interact as if they were in the same location. Virtual field trips can propel

avatars into situations and settings more realistic than any classroom. These adventures take place more authentically in virtual worlds than anywhere else.

The phenomenon of walking and flying within virtual environments, taking on personas, and connecting with other avatars, can be exhilarating. The excitement about the learning that occurs, is evident to the educators using MUVes in their classrooms. Informal observations indicate that students are motivated, creative, and engaged. The type of observation and research needed to quantify learning in this way is in transition. The River City project, at Harvard University, has been developing methods of gathering and reporting data in virtual worlds, and reporting thoughtful reflection on student learning within MUVes. [4]

Creative designers using innovative, new technologies are opening up opportunities for additional, more sophisticated 3D environments in the future. It is imperative that educators put aside any misconceptions about MUVes and explore the most promising methods of using them to support learning. They can then share their observations and suggestions with others, building interest and support among their colleagues.

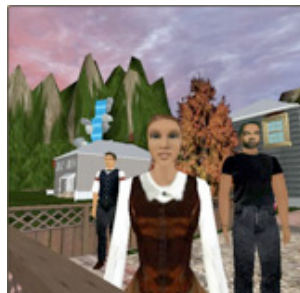


Figure 1. River City MUV

One of the most successful efforts to involve students in virtual worlds is Global Kids, an organization with a mission “to educate and inspire urban youth to become successful students and global and community leaders by engaging them in socially dynamic, content-rich learning experiences.” Global Kids has designed a variety of projects that engage students in worthwhile efforts to promote global understanding. “Virtual worlds can provide an assortment of learning opportunities, from identity formation to social networking, entrepreneurial skills, and financial literacy,” says Barry Joseph, the director of Global Kids’ Online Leadership Program. “Global Kids has responded by developing programs that formalize this informal learning to support youth leadership development around social and global issues.” What’s great about the Global Kids projects is that they mix virtual-world technologies with real-world challenges, engaging young students in socially responsible efforts that can have a real impact on the world they live in at the same time that they improve their chances for a promising future. “We have to think of ways to use games not just to escape reality but to re-engage with reality,” writes MIT professor Henry Jenkins. Global Kids is “talking about real things that touch real people.” [5]



Figure 2. Global kids in teen second life

Websites that provide resources for innovative teachers

Other technologies, including powerful website resources and handheld devices, can also contribute to a constructivist environment. Student access to websites such as the Library of Congress (www.loc.gov) archives can enable them to gather information quickly, analyze it, and create original work that includes authentic information, photographs, and videos.

With Gapminder, (www.gapminder.org) a multi-dimensional database, students can chart their data with color, shape, and movement, creating a lively, informative demonstration that can prompt rich discussions and further studies. Tracking the path of a hurricane on their cell phone can inform students of news happening as they watch. Traveling through the towns mentioned in *The Grapes of Wrath* or visiting the locations in Shakespearean plays can be accomplished with Google Lit Trips and used for history and English classes. (www.googlelittrips.com)



Figure 3. Gapminder, a multi-dimensional graphing tool

The real power, however, is generated by the type of questioning teachers provide, and the tasks they ask their students to accomplish. Teachers should include more than questions that can be answered with the factual information students find. When students participate in virtual worlds, Web-based field trips, and sophisticated data gathering, they can report factual information but then go beyond reporting and begin to create hypotheses, their own imaginative worlds, or Google earth based field trip.

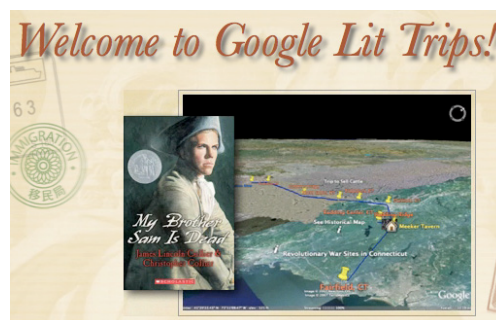


Figure 4. Google Lit Trips

Recent Findings about an Emerging Field

Beginning in 2000, Dr. Christopher Dede has been the Principal Investigator of the River City project, funded by the National Science Foundation. Ongoing and extensive data collection combined with extensive efforts to observe students using the immersive environment, have resulted in nine years of reporting out on the learning that takes place. Students navigate through a 19th Century village where people are becoming ill. They take extensive notes and use 21st century skills and the scientific method to observe, gather facts, and create a hypothesis. Dede considers MUVES to be the “next generation interface” for a generation of students used to multi tasking, instant communication, “ubiquitous computing” and augmented realities. Dede explains,

Students typically are already engaged in a 24/7 world of information-seeking and gathering. Moreover, they are often engaged in virtual communities for creating and sharing knowledge. However, the information and knowledge with which they interact is generally not related to their academic material. The challenge for educators is to engage students' considerable media skills in activities that are related to academic fields and disciplines and that make learning academic content and skills interesting and relevant. [3] [4]

“The biggest challenge educators will face will not be the technical skills, according to Dede - it will be ‘learning a new pedagogy and unlearning the pedagogy of assimilation’ – ‘teaching by telling and learning by listening’.” [3][4] This new pedagogy will involve teachers learning to promote interaction and exploration in a way that will still accomplish their curriculum goals and objectives – a challenging task. [7][8]

Asking Good Questions

Years ago, students were asked in grade school to “write a report about George Washington.” In the past, they went to the encyclopedia and turned to the “W” volume. On 3_5 cards, they copied down information about Washington’s background, his involvement in the Revolutionary War, and his ultimate legacy as our first president. On lined paper, they transferred their notes into sentences, using their very best handwriting. They convincingly articulated the facts in their own words, and their penmanship was legible. They were given a good grade. There was no analysis, however, no collaboration with other classmates who basically went through exactly the same process they went through, and unless they read the papers in front of the class, no one heard their words except for the teacher.

Imagine, though, how different the experience would have been if the assignment were: “Compare President George Washington’s foreign policy to President Barack Obama’s foreign policy. Create a conversation that the two might have had if they could communicate across the centuries using email, or another current technology.” This type of question would involve a definition of terms. What IS a “foreign policy”? It would require research on the part of the student. George Washington’s foreign policy is summarized in his farewell address, which can easily be found on the Internet. Discussion would be necessary to compare Obama’s policies with Washington’s. For the culminating project, students would need to compare and contrast their findings then construct a dialog the two might have had. Demonstrating it in the form of a podcast, digital movie, animation, or other technology would be the original product, the outcome of the activity. The process the students went through would be where the most learning took place. [7]

Conclusion

Virtual worlds are enabling educators and their students to venture into realistic and imaginative online environments never before possible. When teachers, as skilled moderators and facilitators, guide their students through these adventures, then challenge them to create their own artifacts and environments, true constructivist learning can take place. As safe, educationally sound MUVES grow in number, the possibilities for active involvement and creative thought also proliferate. Based on the paradigm shift in education, where student centered learning replaces traditional rote learning, virtual worlds provide an exciting new range of online and face-to-face applications for innovative curricula.

Other powerful Internet based resources are enabling students to find authentic resources, analyze data, and present original and effective presentations.

What is always critical are the methods teachers use to engage and challenge their students. Enticing students with exciting online adventures, then extending the experiences with challenges to create original products, are ways to bring constructivist methods to the classroom, strongly supported by the most useful technologies.

References

[1] Benson, Hugh (2000) Socratic Wisdom. Oxford: Oxford University Press.

- [2] Bruner, J. (1973) *Going Beyond the Information Given*, New York: Norton.
- [3] Dede, C. (2004). If Design-Based Research is the Answer, What is the Question? *Journal of the Learning Sciences*, 13(1), 105-114.
- [4] Dede, C. (2009, January 13). LITRE Expo 2009 Interview. Goldberg
- [5] Global Kids Online Leadership Program. (2006). Retrieved February 8, 2010 from Global Kids Web site: <http://olpglobalkids.org/library/podcasts/>
- [6] Vygotsky, L.S. (1978). *Mind in society: The development of higher mental processes*. Cambridge, MA: Harvard University Press.
- [7] Yoder, M. (2006). Adventures in electronic constructivism. *Learning and Leading With Technology*, 34 (1).
- [8] Yoder, M. (2009). Walk, fly, or teleport to learning. *Learning and Leading With Technology*, 37 (2).

The Amish, the Mennonites, and the Plain People. (n.d.). Retrieved May 30, 2000 from Pennsylvania Dutch Country Welcome Center Web site: <http://www.800padutch.com/amish.shtml>

Biographical Sketch

Maureen Brown Yoder is a Professor in the Technology in Education program at Lesley University, Cambridge, MA. Dr. Yoder teaches “Emerging Technologies”, a course incorporating the newest and most innovative technologies, using a constructivist and project based approach. In 1997, she was appointed the Program Director of the Online Masters Degree Program in Technology in Education.

Dr. Yoder is passionate about using inquiry-based teaching, and assists educators as they create thought provoking questions, direct students to rich Internet resources, and facilitate transformative thinking - in both online and traditional classroom environments. She has written and presented extensively on WebQuests, online resources, and “Electronic Constructivism,” a term she coined. She inspires teachers to use a variety of constructivist approaches to inspire and motivate their students.

Dr. Yoder has conducted workshops on these topics nationally and internationally, most recently in Spain, South Africa and Argentina. She began her career as an elementary school classroom teacher then taught middle and high school technology classes before becoming a university professor. She received her doctorate at Boston University in Educational Media and Technology.

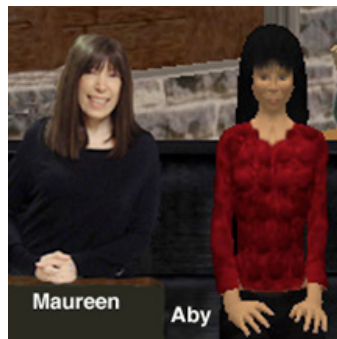


Figure 5. The author and her avatar