Virtual Environments and K–12 Education

A Tour of the Possibilities —Part 1

by Kelly Czarnecki

The 2007 edition of the Horizon Report by the New Media Consortium and the Educause Learning Initiative predicted that in 2 to 3 years, virtual worlds will greatly impact teaching, learning, and creative expression. These scalable and highly creative environments are being used by educators all over the country in a variety of settings and in a variety of ways.

Also in 2007, Cathy Arreguin and Ross Perkins wrote the article "Real-Life Migrants on the MUVE: Stories of Virtual Transitions" in *Learning & Leading with Technology*. It is a great overview of what multiuser virtual environments are, how educators are using them, and what teachers can look for when deciding which virtual environment fits their needs and why. A year later, many of the projects mentioned in the article have grown by leaps and bounds, and hundreds of additional virtual environments have sprung up as well.

This article offers a look at projects using virtual worlds that are currently "happening" in K–12 schools, what we're learning from them, and what we can continue to learn by charging full steam ahead with these fascinating educational tools.

If you haven't been paying close attention, you may be surprised at the number of virtual world projects and platforms out there! I've chosen to cover five robust and representative ones in my reporting. Two based on/in

images courtesy of http://holymeatballs.org, http://ramapoislands.edublogs.org, and http://www.youtube.com

Teen Second Life—Science in Second Life and Suffern Middle School in Second Life—are featured in this part of my article. In Part 2, I'll cover projects based in three different "worlds"—Whyville Texas Challenge/Whyville; The River City Project/Active Worlds; and Quest Atlantis, in its own "world."

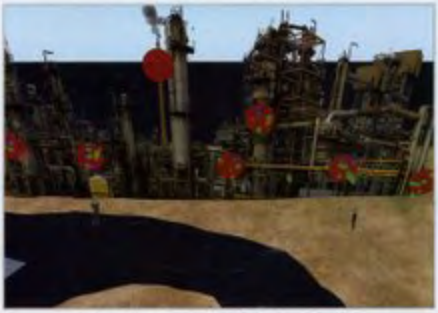
TEEN SECOND LIFE

Teen Second Life (TSL; http://teen.secondlife.com) is a 3D virtual world created by Linden Lab designed for teens ages 13–17. User-generated content defines this virtual world. Everything from a blade of grass to clouds in the sky can be designed by the user. Its "big brother" Second Life is for those 18 and older and is a separate "grid" from TSL.

SCIENCE IN SECOND LIFE

Cathy Arreguin is a curriculum developer for Global Kids (www.globalkids.org) through its online leadership program directed by Barry Joseph. Thanks to the 2007 Motorola Innovation Generation Grant (http://tinyurl.com/22wtd6) the organization was awarded, Arreguin and Global Kids have developed a new curriculum for the Brooklyn-based High School for Global Citizenship freshman physical science class (http://hs-gc.org) that will "enable educators to utilize the

Students explore energy consumption in these premade houses on Teen Second Life.



Students explore a unit on fossil fuels in Teen Second Life.

virtual world of Second Life to engage students in exploring global science, technology and programming." (To get an idea of what the interface of TSL looks like, view the video about Science in Second Life at http://tinyurl.com/5gq3k2.)

The class is taught by science teacher Tracy Rebe. For the first semester, it was taught in the traditional manner, using a textbook and an instructor. During the second semester, the students and teacher spent time learning Teen Second Life and fitting the science curriculum into the virtual environment. The TSL-based science curriculum is intended, however, as a *supplement* to classroom learning rather than comprising the total science curriculum. Nor is it meant to be used as a distance course; reflective discussion takes place *in the classroom*, not in TSL.

The curriculum is designed to map to the state standards of New York, which are fortunately very broad, with the overarching goal of enabling students to be able to write more scientific labs and to write them more effectively. In that sense, Arreguin says, they want to teach the kids how to be citizen-scientists in the future—they want them to learn how such citizens think and evaluate information.

The projects the students have been involved in while in TSL capitalize on the fact that, according to research on virtual environments, learners like to modify their own environment. One activity consisted of touring a virtual version of Naples, Italy, and conducting a trash dump survey there by gathering information from multiple resources including chat bots, or programmed robots, that would chat about the environment when clicked on to do so. (The bots, by the way, are intentionally designed to be ethnically diverse, both male and female, and from varying socio-economic levels so that students can see that being a scientist is a legitimate choice for them.) Students made comparisons to their own trash disposal in real life and created a comic/graphic story to tell what they learned through their exploration of virtual Naples.

Another unit focused on fossil fuels and coal mining, where students were able to go through a mine, collect data, and make predictions. Exploring alternative forms of energy is central to the Science in Second Life curriculum. A typical activity involves collecting data on the amount of real life waste produced, adding the information to a virtual brownstone house, and calculating the household's carbon footprint to help understand the impact of the occupants' choices.

Creating or looking at videos and photos, blogging, and other Web 2.0-based activities are an important part of the online engagement as well. What happens in Science in Second Life doesn't necessarily stay there, as there are lots of opportunities for sharing any content the class creates. Global Kids' Holy Meatballs blog (www.holymeatballs.org), tagged HSGC (High School for Global Citizenship), contains entries posted by the students.

Why should learning take place in a virtual world at all, even if it is just a supplement to the class? Community manager for Teen Second Life Claudia L'Amoreaux says educators need to think about bringing virtual worlds into the classroom for the relevance they bring to the many students who have already discovered their value, as well as to prepare the students for the information environments and globally distributed work teams they will surely encounter later.

Also, Arreguin points out that virtual environment simulations lend themselves to situations that are otherwise too dangerous or hazardous to work in, such as the Naples trash dump project. There might be activities that are otherwise physically impossible to engage in, such as sampling the atmosphere over the Arctic Circle as well as in the New York area, that can indeed be done in TSL. Since the knowledge is contextualized to the students' real life and the world is brought to them in a unique way (professionals in the field can visit fairly

RESOURCES

Arreguin, Cathy and Perkins, Russ
"Real-Life Migrants on the MUVE: Stories of Virtual Transitions."
Learning & Leading with Technology. May 2007. Vol. 34, No. 8. pp.16–20.
http://metaversedl.org/ISTEart.pdf

Panganiban, Rik
"Best Practices for Non-profits in Second Life–Fall 2007."
www.holymeatballs.org/pdfs/BestPracticesforNon-profitsinSecondLife_012008.pdf

"The Horizon Report," 2008 edition
Report produced by the New Media Consortium and the Educause Learning Initiative that seeks to describe and identify emerging technologies likely to have an impact on learning-focused organizations.
www.nmc.org/horizon

Izzy Neis
Blog for "Online Communities, Entertainment, Kid Empowerment, and Safety."
http://izzyneis.wordpress.com

RezEd
Online hub for educators using virtual worlds.
www.rezed.org

easily in a virtual space, for example), it is more engaging to them than simply reading tables in a textbook. And interacting in a virtual world offers the potential for different personalities to be heard. "The loud kid doesn't necessarily overwhelm the quiet one," Arreguin states.

Besides having fun, how are the students doing in this ongoing project? Now that they are familiar with the interface, Arreguin says they are able to work much better in teams, to focus on the tasks at hand, and to complete their team missions. She notices that students' knowledge and competency have substantially increased, and that they put greater thought and care into what are now much more complete answers than they did at the beginning of the program. "We're offering students additional ways to learn. If as a result of this project, students say, 'I can be a scientist,' that would be huge," says Arreguin.

In addition to being a curriculum developer for Global Kids in Teen Second Life, Cathy Arreguin instructs and consults for San Diego State University. She can be reached at cathy_arreguin@mac.com.

SUFFERN MIDDLE SCHOOL IN SECOND LIFE

Since 2005, school library media specialist Peg Sheehy has spearheaded New York's Ramapo Central School District's involvement in Teen Second Life. Currently, 1,200 students and 45 teachers have access to the school's six islands, and about 800 users can log in simultaneously—which they did for their Cinco de Mayo festival. Their projects link classes across the entire curriculum, classes such as music (students' clips can be linked to their music shops and a concert will be performed in-world), foreign language (students celebrate cultural days with authentic virtual food, dress, and dance), and history (students dress in the theme of the American Revolution). More comprehensive information can be found on the project's blog here at http://ramapoislands.edublogs.org.

Sheehy explains that when she first tried to introduce TSL at Suffern Middle School, she left a laptop running the virtual environment on her desk to help prompt conversations with curious teacher colleagues about tying TSL into the curriculum. Add to that the growing student excitement and anticipation as word about the project began to spread and teacher buy-in began to grow.

Her goal for the Suffern Middle School in Second Life project has always been "to provide a learning environment for the 'shifted learner' that will engage them and address their learning styles." It seems to be happening. The current high participation rate is engendering additional cross-curricular activities. Students who wouldn't associate with one another in real life do so now in TSL; discourse is much more authentic, and students take more risks and chances since they feel safe participating through an avatar.

Sheehy recommends that teachers who wish to undertake a similar project in Teen Second Life first define exactly what they want students to know or be able to do that the virtual platform would illuminate. In addition, in order to ensure the technology is in place and the funding is there, she highly recommends professional consulting help rather than depending on volunteers. She used FireSabre Consulting (www.firesabre.com), which helped design, set up, and support the school's Teen Second Life presence. She also runs her own service, MetaVersEd, Ltd. (http://metaversedl.org), and is available to respond to educators' inquiries about starting up in Teen Second Life.

Peg Sheehy, school library media specialist at Suffern Middle School, can be contacted at psheehy@ramapocentral.org.

***Kelly Czarnecki** is the technology education librarian for teens and youth, ImaginOn, the Public Library of Charlotte & Mecklenburg County, North Carolina. Contact her at kczarnecki@plcmc.org.*