



Screen shots from Whyville.com, where students can join a community and learn about biotechnology.

VIRTUAL WORLDS = REAL LEARNING

ONLINE COMMUNITIES OFFER TERRIFIC OPPORTUNITIES FOR TEACHING ABOUT SCIENCE. BY LEE WILSON

Mr. Hawley, my high school chemistry teacher, was fond of small explosions and lots of smoke in our lab work. He wanted his experiments to spark an interest in science and bring core concepts to life.

There have always been scientific concepts our children should experience but that are too dangerous, too expensive, or too time-consuming for school. For these activities—some of the most thought-provoking in science—we have had to settle for lectures and reading.

Virtual worlds change this equation. In a virtual world, students can use million-dollar apparatus, experiment with lethal substances, and compress years of activity into a few weeks. The only equipment needed is a computer with Internet access.

CREATING A VIRTUAL WORLD

In late 2006, the Texas Workforce Commission (TxWC) decided it wanted to spark student interest in the burgeoning biotechnology industry. Students' attitudes toward science begin to gel in middle school, so this is the age to start building the career pipeline to the sciences. However, the cost, danger, and timelines associated with biotechnology make it impractical to deploy in middle school science labs. A few isolated successes wouldn't fit the bill, either—the commission's goal was to reach thousands of kids across the state in the next year.

To help solve the dilemma, the commission turned to Whyville—a free virtual world focused on STEM (science, technology, engineering, and math) education. A virtual world is a computer-based environment that lets users interact via avatars, or graphic representations of themselves.

Developmentally, teenagers experiment with identity, crave recognition for competence, and turn outward to the larger social world. Virtual worlds such as Habbo, Teen Second Life, and Whyville serve these needs well. The social aspects of virtual worlds—encouragement, competition, and companionship—make for a new kind of learning experience. They harness the natural social focus of teens as a motivating force for engaging with the content. In fact, virtual worlds are some of the most active sites on the Web:

VIRTUAL WORLDS ALLOW US TO SAFELY TAKE STUDENTS TO THE FRONTIERS OF SCIENCE WHERE THE REALLY INTERESTING QUESTIONS AWAIT.

Since its launch in 1999, more than three million teens have joined Whyville, built online avatars, and become part of the community, averaging three to five hours a month on the site.

The site hosted more than 8.5 million educational games last year. Tapping this underlying dynamic of teen life to engage kids with biotech content is the concept behind the Texas program. The goal

is to reach 25,000 students with a biotech experience in their middle school career-education class in the next year.

Currently, Whyville is building out the Bioplex neighborhood with all the core elements of the biotech industry: bioinformatics labs where vaccines are developed, an economic infrastructure to build companies to test and sell the vaccines to the Whyville population, and diseases that affect the Whyville community. The Whyville Bioplex neighborhood is sponsored by the TxWC but is open to any Whyvillian.

THE EDUCATION TIE-IN

Because virtual worlds are created spaces, users can focus information, mitigate danger, accelerate time, and power learning with social interaction. In the case of Whyville Bioplex, this includes the following:

- Drawing attention to the instructional component: What is a virus?;
- Allowing otherwise dangerous work, such as virus and vaccine experiments;
- Accelerating feedback: vaccine trials in weeks, rather than years; and
- Encouraging collaboration as teams of researchers, marketers, and executives work together to solve problems.

After experiencing Whyville Bioplex, students intuitively understand how the industry works because they have made choices and faced the consequences. For many learners, this is much more powerful than traditional class activities.

The scientific method is an active practice. We do lab work to move beyond theory—to teach students how to be scientists. Virtual worlds allow us to safely take students to the frontiers of science where the really interesting questions await. By exposing them to the reality of science, we can engage a new generation of minds in this great endeavor. ■■

Lee Wilson is an industry consultant and blogs regularly at The Education Business Blog (www.educationbusinessblog.com).

RELATED RESOURCES

“Don’t Bother Me Mom—I’m Learning!”

Marc Prensky (Paragon House Publishers, 2006)

Educational Games Research

edugamesblog.wordpress.com

Everything Bad is Good for You

Steven Johnson (Riverhead Trade, 2006)

Games + Learning + Society

glsconference.org

Habbo

www.habbo.com

How Computer Games Help Children Learn

David Williamson Shaffer (Palgrave Macmillan, 2006)

Teen Second Life

teen.secondlife.com

Texas Workforce Commission

www.twc.state.tx.us

What Video Games Have to Teach Us About Learning & Literacy

James Paul Gee (Palgrave Macmillan, 2003)

Whyville

whyville.net

Yasmin B. Kafai: A Playground for Millions

www.gseis.ucla.edu/faculty/kafai/projects

PLAY TO LEARN

HERE ARE FOUR OTHER FREE, SCIENCE-RELATED GAMES TO EXPERIMENT WITH IN YOUR CLASSROOM.

QUEST ATLANTIS

atlantis.crlt.indiana.edu

This multi-user environment, from the Center for Research on Learning and Technology at Indiana University, tackles the complicated questions of environmental science by using a fictional parallel world. The challenge is to understand what the water problem is and to use science to change human behavior.



THE RIVER CITY PROJECT

muve.gse.harvard.edu/rivercityproject/index.html

In this interactive simulation for middle school science students from Harvard University’s Graduate School of Education and Arizona State University’s Educational Technology Graduate Program, students explore a 19th-century city wrestling with waterborne disease. Why are residents of low-lying areas more susceptible to the disease?

RE-MISSION: THE GAME

www.re-mission.net

HopeLab, a nonprofit organization that creates innovative solutions to improve the lives of children with chronic illness, designed Re-Mission to help with the treatment protocol for teenage chemotherapy patients. By “playing” the role of the chemo agents in attacking the cancer, players learn about the process.



SODAPLAY

sodaplay.com

From London-based Soda Creative, Sodaplay is an open-ended engineering simulation that encourages users to build workable models that react to gravity. Will your bridge stay up or collapse into a pile of rubble?