Blended Realities: A Virtual Tour of Education in Second Life

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Abstract

The educational use of Second Life's online virtual world flourished in 2006. More than 100 universities and the New Media Consortium, with over 225 member universities, museums and research centers, have a presence in Second Life. This essay on education in a virtual world begins with a description of the context and concludes with a tour of the educational courses and educators who are teaching in this virtual world, including a list of the resources and organizations that make it possible. Examples of youth education programs and university activities characterize the face of education in Second Life and reflect the successful implementation of coursework in a virtual world.

Characteristics of this Multi-User Virtual Environment

A stranger flew over onion-topped spires, hovered a moment, then joined me on the cloud where I sat. We chatted and drifted over Svarga's tropical terrain, bathed in sunset afterglow. Now and then the cloud puffed up, flashed with lightening, and poured rain, germinating seeds in the simulated ecosystem below.

Figure 1. The rich visual experience enhances learning and networking, as in this conversation on a cloud over Svarga.

Svarga's lush landscape, created by former Lionhead game developer and SL avatar Laukosargas Svarog, includes interdependent species of artificial life, complete with genes that sometimes mutate and produce new variations. (God Game, 2006)

My cloud-riding companion had read my profile. When he saw common interests, he took a seat to tell me of his plans for a research center in Second Life (SL). In this international colony of artists, writers, musicians, educators, entrepreneurs, and other playful people, there is a lot to study. The inhabitants use this world to explore emerging

ways to work, play, form social networks, develop their own culture and customs, and create their own surroundings.

This paper documents how, in 2006, formal education took root in this online multi-user virtual environment and how new kinds of learning environments and activities are emerging in this rapidly-growing world called Second Life. (http://secondlife.com/)

Figure 2. The ever-growing, ever-changing procedural ecosystem at Svarga (Emergent Life, 2006) provides a metaphor for emergent educational activities in Second Life.

Background Information

Second Life is a virtual world founded by Philip Rosedale (a.k.a. Philip Linden) and hosted and operated by Linden Lab of Linden Research, Inc. This environment is populated with content that is created and owned by its residents.

The number of accounts in Second Life grew from 230,000 in April 2006 to over two million by the end of December 2006. It broke three million in January 2007 and passed four million in February (Linden Research, 2007).

Support for Educators

This phenomenal growth is stimulated by both the ease in which new users can join Second Life and by the support infrastructure from several educational and library groups. These groups include:

- New Media Consortium (http://www.nmc.org)
- Alliance Library System (ALS, 2007) of Illinois at Info Island (Info Island, 2007)

- Second Life Educators Wiki at SimTeach (SimTeach, 2007)
- Second Life Education SLED community email list (Educators Info, 2007)
- Real Life Education in Second Life group (Second Life | Education, 2007)

The ease of use for the software tool combined with free classes on how to use the SL environment have also played a role in the emergence of education in SL. The Second Life software provides free accounts with the ability to design, integrate and texture structures, furnishings, clothing, and avatars using in world resources. Sandboxes offer open spaces for creativity, collecting more free items and sharing ideas.

The resources available to SL users include whiteboard and communication tools, language translators, information centers, and support from a variety of educational groups. A wide range of free software tools are available, including the Second Life software (Linden Research, 2007), the (GNU Image manipulation Program) GIMP (The GIMP Team, 2007), Blender (The Blender Foundation, 2007) and Avimator (Avimator, 2007). These tools provide additional graphics, design and animation and their products can be uploaded for use in Second Life.

Second Life Libraries

Educators can pick up many of these teaching tools at the Information and Communications Technology (ICT) Library, which also has many presentation tools on display to try out. Founded by Ross Perkins (Milosun Czervik in Second Life), the ICT Library is part of a cluster of libraries on Info Island, an initiative originally funded by the Alliance Library System. (Info Island, 2007)

The Second Life Library at Info Island, HealthInfo Island, and Caledon Library in Caledon's Victorian sim support researchers, scholars and residents thanks to the efforts of Lori Bell (Lorelei Junot), Carol Perryman (Carolina Keats), JJ Jacobson (JJ Drinkwater) and other distinguished librarians.

Courseware designer Aaron Griffiths (Isa Goodman in SL) helped me study robotics scripts while he designed the library gardens at HealthInfo Island and Info Island.

Second Life Publications

The SLED Picayune keeps educators and SL residents informed of education, training news in Second Life. This biweekly publication was founded by Ross Perkins (Milosun Czervik), who is also the founder of the ICT Library on Info Island (Info Island, 2007).

The Picayune contributors include Sphere Gasser covering places, Troy McLuhan as science advisor, TLTC Palisades covering people, plus John2 Kepler, Deb Regent and Intellagirl Tully, who also moderates the SL Researcher's List (slrl Info Page, 2007).

The Metaverse Messenger (The M2, 2007) publishes Second Life news, including articles about education.

Second Opinion (Second Opinion, 2007a) is a newsletter published by Linden Research, Inc. that provides resident news and highlights places and people of interest. The January 2007 edition included a column about Cybrary City (Second Opinion, 2007b) and the collaboration of Talis, the library management systems provider for the UK and Ireland with the Alliance Library System in Illinois.

The SLED listserv and a variety of email lists distribute news of interest to educators. Under the support of Pathfinder Linden, (John Lester) and the education support provided by Linden Lab avatars Claudia Linden, Robin Linden, Torley Linden and Jeska Linden, the educational community has flourished in Second Life.

The NMC Campus Observer is an elegant and picturesque blog that documents the exploits of the NMC Teachers Buzz group (www.nmc.org/sl), thanks to the efforts of Alan Levine, Nick Noakes, Larry Johnson, the NMC staff and the NMC's contributing members. It provides information and tours of SL educational sites that demonstrate how educators are using this virtual world to foster creativity and innovation. Second Life educators in the NMC Teachers Buzz group meet every two weeks and share their strategies on education in Second Life.

The Arts in Second Life

Sasun Steinbeck's guide to galleries in Second Life contains 168 listings. On display you'll find paintings, photos, sculptures and even videos called machinimas that are made in the virtual world. But that only scratches the surface of SL art. Residents design the buildings, landscape, furniture and clothing, as SL is a world created and owned by its residents. Some make a real-life living selling their creations or working as builders for hire in Second Life, a world that's big enough to attract top-notch talent, yet small enough that students rub elbows with the masters.

Figure 3. The Art and Music Center gallery at Ohio University's SL Campus (VITAL Lab, 2007)

Second Life Terminology

- **Avatar**—a representation of a real life person in a virtual world
- **Island**—a geographically separated simulated environment that holds up to 15,000 primitives
- **Listserv**—an email list; distributes messages over email to members of the list
- **Primitive**—a shape (cube, cylinder, etc.) that can be built and linked to form objects
- **Prim**—(commonly used); a shortened form of "primitive"
- **Sim**—a simulated environment where avatars gather

Examples of Real-Life Education in Second Life

Educators from around the world are identifying new ways to leverage virtual world capabilities in the online and campus classroom (ESLteacherlink, 2007; NMC Campus, 2007b; NMC Campus, 2007d; Sheehy, 2007). The following examples illustrate just a few of the ways educators are using Second Life.

Montana State University Blends Architecture, Art and Music

From his architecture studio floating high above the ground, Terry Beaubois, a.k.a. Tab Scott in Second Life, surveys his students' projects on University Island and on neighboring Enterprise Island.

Beaubois began teaching architecture using Second Life in the Fall of 2005 (Kieran, 2007). As Director of Montana State University's Creative Resource lab, he collaborated in Fall 2006 to teach a course that blended architecture, art and music and brought together faculty and students from those disciplines. Students developed machinima to demonstrate their final projects, integrating their talents.

University of Central Missouri Sends Writers Out Into the (SL) World

English composition comes to life in a University of Central Missouri class taught by Bryan Carter (Bryan Mnemonic in SL) (NMC Campus, 2007b), whose students go out into the SL community to find stories to write. Each student chooses 3 themes from 13 that include such topics as crime and punishment, social interaction, rituals, economics, and subcultures.

Carter uses SL in conjunction with Skype for voice, the Blackboard learning management system, and blogging. His Missouri students meet in Second Life at Northern Illinois University's Glidden campus, which is administered by Ali Andrews (Ali Andrews, 2007). NIU also has a number of classes using Second Life. (NMC Campus, 2007b)

NMC Symposium Tackles "Finding Legitimacy" for Education in Second Life

At the NMC Symposium on "Are We Playing Games? Finding Legitimacy in the Academy" (NMC Campus, 2006a) SL avatars Tab Scott, Josephine Junot, Ali Andrews, Amaagariwah Kawabata, Intellagirl Tully, and Jeremy Kabumpo shared their experiences and offered insights to teaching in a virtual world.

Figure 4. Perspectives on education in SL (NMC Campus, 2006a)

The English Village Helps Students from South Korea and Germany Learn English

One day, a request for help went out to the Real Life Education in Second Life group, a message that would be seen by anyone online among the more then one thousand members of that group. Paul Gerhard Preibisch, a.k.a. Fire Centaur in Second Life, needed someone to roleplay in the English Village (ESLteacherlink, 2007) while his English as a Second Language (ESL) students and teachers participated in a scavenger hunt. Kip Yellowjacket (ESL Second Life, 2007), Deanna Lancaster and a host of other educators comprise the team at Preibisch's English Village, and on any given day, you can hear them discuss how they use educational activities, conversational English and blogwork in their learning strategies.

Preibisch integrates robot assistants with his innovative game designs and voice communications to offer a great learning experience to ESL students. We shared our robot designs, then set up tents as conversational spaces for the scavenger hunt. Students asked for particular items using good conversational English, and based on the location and the item requested, gathered the items and completed the quest.

Many Disciplines Share Pace on EduNation

Later, at an English Village island egg hunt, I met Baldric Commons of Webheads (Webheads Meet, 2006) and remembered the imaginative social networking environment at the Webheads meeting space on picturesque EduNation (EduNation in SL, 2007). Webheads began with a focus on English educators, but has now expanded to include all disciplines. Visitors can use the BlogHUD, a device designed and built by Koz Farina for easy blogging from within Second Life (http://visit.bloghud.com/EduNation/).

New Media Consortium

The New Media Consortium (NMC) has been instrumental in bringing its 225+ member universities and museums into Second Life in April 2006 during the grand opening of their first island. Under the leadership of visionary and CEO, Dr. Larry Johnson, (a.k.a. Larry Pixel in SL), the NMC has more than 30 islands in design, and envisions an archipelago for creativity and learning (NMC Virtual Worlds, 2007).

At the NMC's Fall Conference in San Antonio, John Lester, (a.k.a. Pathfinder Linden), announced that there were over 100 universities and schools in Second Life (Lester, 2006). These schools are offering a variety of classes and educational programs to leverage the benefits of study and exploration in a virtual world.

Ramapo – Life on the Teen Grid

At the NMC, I met Peggy Sheehy, better known as Maggie Marat in SL, the founder of Ramapo's 8th Grade Islands in Second Life. Sheehy with help from hundreds of volunteers, erected the schoolhouse for 100 8th grade students in Suffern, NY (Suffern, 2007). The islands were developed on the Main Grid, then moved to the Teen Grid in October 2006. Fred Fuchs, a.k.a. Gus Woodward and Gus Plisskin, bears the Technomancer and all around wizard for Ramapo, and my avatar, Ryl Redgrave, joined the team on New Year's Day.

Eighth Graders in the Courtroom

In January, 2007, four classes of Ramapo 8th grade students reenacted the courtroom scene from Of Mice and Men, the John Steinbeck novel (Steinbeck, 1937) that was 6th on the American Library Association's list of 100 Most Frequently challenged Books of 1990-2000 at number six. (ALA, 2006).

Figure 5. Courtroom scene reenacted by 8th grade Ramapo students

The students were completely absorbed while portraying the Judge, Prosecuting Attorney, Defense Attorney, Court Recorder, Witnesses, Defendants, News Reporter and Jurors. Each class was split between a trial for George and a trial to determine if Lennie was guilty of killing Curley's wife and what his sentence should be.

Their debates in the courtroom were lively as they explored a wide-range of issues. Afterwards, some students expressed an interest in civil rights while others wanted to be a lawyer.

Figure 6. Boo! Feedback from the Ramapo jury when Curley is called to the stand

Global Kids and the Human Barometer

Another Teen Grid phenomenon is Global Kids, a NY-based educational project in SL run by Barry Joseph, a.k.a. GlobalKids Bixby. At the NMC, Global Kids leaders Barry Joseph (GlobalKids Bixby) and Ravi Santo (Divine Spongiform) led several activities that asked participants to choose a position on an issue and show their commitment by standing on it.

Figure 7. Global Kids spread awareness of child sex trafficking issues

The "human barometer" experiment (NMC Campus, 2006b) made us think about our positions on each issue before taking a stand publicly, and to remember Global Kids.

Figure 8. Taking a stand on an issue during the Global Kids session

Moving back to the Main Grid, the Science Lands are expanding. Troy McLuhan's science lectures, blog (Troy McLuhan, 2007), and discussions during the NMC Teachers Buzz sessions and at the International Spaceflight Museum (ISM) challenge participants to reflect and extend their understanding of life in the universe.
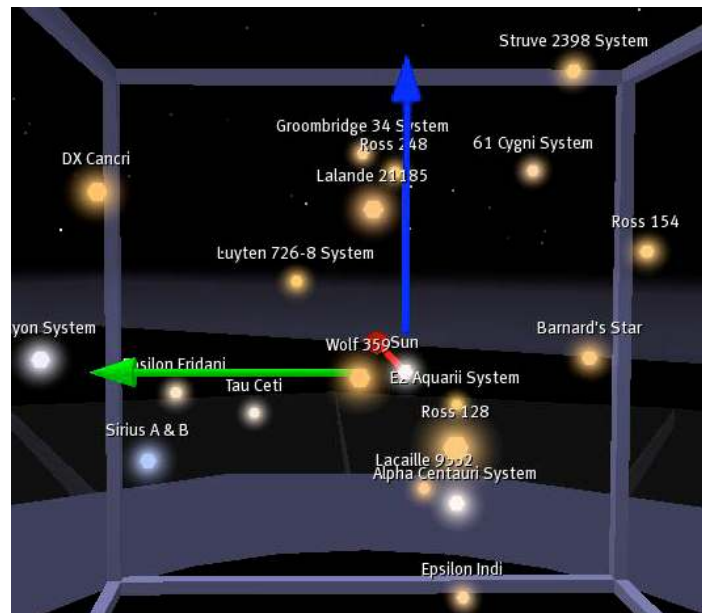
Figure 9. Nearest stars educational exhibit at the ISM

When Philip Rosedale envisioned the SL architecture, it was to provide an environment for haptic interface research (SL History Wiki, 2006). Today, Colorado Technical University (CTU) students use Second Life in several systems engineering, software engineering and user interface design classes.

Conceptual Models in the Virtual Classroom

A windmill stands before a student, the blade slowly turning. As she unlinks, modifies, and randomly reselects all of the pieces to link it again, she is startled when the entire windmill revolves around the blade. After reflecting for a moment, she recognizes the problem and the course concepts at work in this situation.

Students use Second Life for attending class sessions, social networking, exploring, and performing applied-learning activities, experiencing firsthand the effects of good and bad designs while they learn to apply the concepts. At CTU in Colorado Springs, two classes conducted projects in Second Life as part of the campus class sessions the first quarter of 2007.

Figure 10. A merry-go-round by CTU student Y. Yip

Students in CS 672 Systems Engineering Methods explored alternatives, prototyped state machines, and modeled emergent life systems using physics and problem solving skills. None of them had prior experience using Second Life, yet were able to plan, design, script, texture, animate, and deliver their projects within one-to-two weeks. The examples of student work in the illustrations uses their SL avatar names.

Figure 11. A tree that grows by D. Glasgow

Unlike Terry Beaubois' acclaimed architecture classes at Montana State University, procedures were demonstrated in class, but the bulk of the work was completed outside of class or during familiarity sessions on the PCs in the classroom.
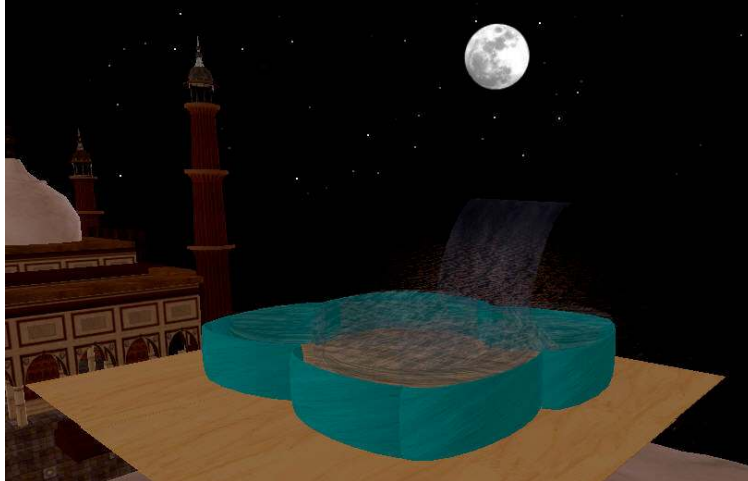
Figure 12. Water park prototype by M. duCasse

The particle star system is an example of an immersive design that can be developed and scripted the first day or two in Second Life.

Figure 13. A spinning particle star by L. Fellini

Despite the lack of lab resources and some graphics card challenges, the students completed the course requirements and exceeded them by working on additional projects.

Figure 14. A scanner prototype and textured self growing tree by D. Glasgow
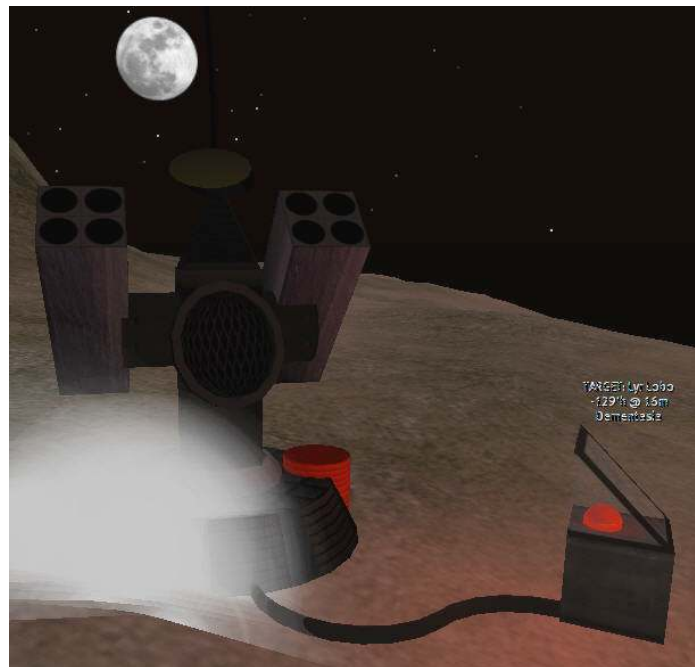

Figure 15. The scanner evolves into a weapons system by D. Glasgow

Students had an opportunity to evaluate alternatives and reject the less optimal solutions. Some of the projects students attempted were very challenging given the Havoc physics system.

Figure 16. Basketball court demonstrates a physics problem by V. Haas

A List of Educators, Librarians and Instructional Designers in Second Life

The following table depicts the educational professionals who have shared their research over the past year, their course subjects that they teach in Second Life or their field of study, school affiliation and real life names with web addresses. A few instructional designers were included due to their impact on the course methods and strategies used to teach in SL. It is by no means an exhaustive list of educational professionals who are working in Second Life. Additional information on the educators who teach and conduct research on the Teen Grid and the Main Grid in Second Life can be found at the SimTeach Second Life Education Wiki (SimTeach, 2007) and on the SLED email list, also called the SLED listserv (Second Life | Education, 2007).

Table 1. A List of Educators, Librarians and Instructional Designers in Second Life

SL Avatar Name	Educational Area of Interest	School Affiliation	Real Name
(alphabetical order)	(course subject or job title)		(used only by request or if publicly available)
Abaris Brautigan	Cybrarian and Sociomedia	Cathedral High School	Richard Smyth (Richard Smyth, 2007)
Ali Andrews	English Composition	Northern Illinois University	Aline Click (Ali Andrews, 2007)
Amaagariwah Kawabata	Integrating Technology in Curriculum, Games and VR	University of Illinois, Urbana Champaign	Sharon Tettegah (Sharon Tettegah, 2007)
AngryBeth Shortbread	Senior Lecturer Design for Digital Media	Leeds College of Art, UK	Anna Robinson
Ann Enigma	Virtual Morocco	Johnson & Wales University	Hilary Mason (NMC Campus, 2006d)
Bryan Mnemonic	English	University of Central Missouri	Bryan Carter (NMC Campus, 2007b)

Carbonel Tigereye	Games for the Web	Trinity University	Aaron Delwiche (Terdiman, 2004)
Carolina Keats	HealthInfo Island Librarian Evidence-based Library and Information Practice	Alliance Library System and University of North Carolina - Chapel Hill	Carol Perryman (Carol Perryman, 2007)
Chang Tuxing	Software Engineering Process Game, Groupthink Game	Ohio University – University Without Boundaries	Chang Liu (VITAL Lab, 2007)
Corinne Fleury	Managing a Digital Library	University of Chicago	
Corwin Carillon	Director of Enhanced Learning and Teaching	Hong Kong University of Science	Nick Noakes (Enhanced, 2007)
Danielle Damone	Industrial/Organizational Psychology	Seton Hall University	Danielle Mirliss (Exploring, 2007)
Deanna Lancaster	English as a Second Language	English Village	(ESL Second Life, 2007)
Dewey Jung	Technology in Education Culminating Seminar	National-Louis University	Craig Cunningham (Craig A., 2007)
Doug Latrell	Cisco, Networks, Microsoft certification	Thomson NETg	Doug Bassett (NETg, 2007)
Elaine Tulip	Early Childhood Education Educator Support	Chicago Public Schools Dept of Libraries & Information Services	Lisa Perez (Chicago, 2007)
Farley Scarborough	Center for Teaching and Learning	Wright State University	Jeff Hiles (WSU Center, 2007)
Fire Centaur	English as a Second Language, Designs Educational Games	ESL in Second Life from South Korea	Paul Gerhard Preibisch (ESLteacherlink, 2007)
Gary Hazlitt	Film, Design, AI, Machinima (Just Virtual, 2007)	Australian Film, Television and Radio School, in Sydney	Gary Hayes (Second Life: Universities, 2007)
Globalkids Bixby Barry Gkid	Camp Global Kids Child Sex Trafficking Interactive Maze	Global Kids, Inc. New York and SL	Barry Joseph (Global Kids', 2007)
Gus Plisskin Gus Woodward	Ramapo Technomancer GlobalKids Island move	Ramapo Suffern, NY	Fred Fuchs (Suffern, 2007)
Heidi TeeCee	Industrial/Organizational Psychology	Seton Hall University	Heidi Trotta (Heidi Trotta, 2007)
Intellagirl Tully	Rhetoric and English SL Research Listserv	Ball State University	Sarah Robbins (SL Education, 2007)
Isa Goodman	Educational Courseware, & HealthInfo Island Designer	Eduforge - SL Virtual NZ Campus	Aaron Griffiths (Eduforge, 2007)
Jared Pixel	Creative Director of New Media, Multimedia, Virtual Reality Specialist	Case Western Reserve Cleveland Museum of Art	Jared Bendis (JaredJared, 2007)
Jeremy Kabumpo	First SL Built-in Assessment Heart Murmur System	San Jose University	Jeremy Kemp (SimTeach:About, 2007)
JJ Drinkwater	Librarian and Literary Reviews at Caledon	A university library	JJ Jacobson (Caledon Library, 2007)
John2 Kepler	Chemistry -- Pedagogy	State University of NY	Harry Pence (Alchemist's Lair, 2007)
Ken Caliber	Artificial Intelligence	Buena Vista University	Kenneth Schweller (Schweller, 2007)
Kip Yellowjacket	English as a Second Language	ESL in Second Life The Oxford School for	(ESL Second Life, 2007)

		English in Germany	
Lorelei Junot	Director of Innovation Second Life Library 2.0 Founder and Chief Librarian	Alliance Library System - InfoIsland	Lori Bell (SL Library 2.0, 2007)
Lyr Lobo	Computer Science – Software Engineering	Colorado Technical University	Cynthia Calongne (NMC Campus, 2006c)
Maggie Marat Chaser Brody	Ramapo 8th Grade Teen Grid --100 Students	Ramapo Suffern, NY	Peggy Sheehy (Suffern, 2007)
Professor Beliveau	Multimedia 490: Field Research in Second Life	Bradley University	Ed Lamoureux (Lamoureux, 2007)
Robbie Dingo	Sound-Design for Games	A UK university's School of Film, Music and Media	(My Digital, 2007)
Seifert Surface	Mathematics Research	Stanford University	Henry Segerman (Henry's, 2007)
Snowbell Tiger	Literacy for Secondary Teachers in Education	Illinois State University	Jase Teoh (C&I Syllabus, 2007)
Tab Scott	Architecture	Montana State University	Terry Beaubois (Kerian, 2007)
Troy McLuhan	Science and Space Classes	International Space Museum in SL	(Troy McLuhan, 2007)
Zizou Zetkin	English Language Arts Thoughtcrime	Grand Valley State University	Robert Rozema (Secondary Worlds, 2007)

Summary

Education in Second Life shifts from the traditional classroom layout and dynamics to the opportunity to leverage the benefits of a multisensory learning environment where students can be part of the system that is being studied.

Many of the educators reviewed in this paper have made commitments of personal resources and time to design, test and evaluate education in a virtual world. The references direct the reader to their research and experiences teaching in Second Life.

We have only touched on a few of the pioneers in education. Information on the many educators who teach on the Teen Grid and the Main Grid in Second Life can be found at the SimTeach Second Life Education Wiki (SimTeach, 2007) and on the SLED email list, also called the SLED listserv (Second Life | Education, 2007).

Photos courtesy of J. Hiles and C. Calongne

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