

Virtual Worlds Best Practices in Education

March 2012



Mission Statement

The Virtual Worlds Best Practice in Education (VWBPE) is a community-based conference that provides opportunities for participants in all virtual worlds to share current teaching, learning, and research practices in 3D virtual environments. Conference presentations focus on teaching/learning, scholarly work, projects, events, activities and new and innovative tools for virtual education. Presenters will focus on the identification of best practices in education designed for 3D virtual world technology.

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Acknowledgements

The Virtual Worlds Best Practices in Education conference is held in trust for the Educational Community by Rockcliffe University Consortium who are responsible for the financial, copyright, and infrastructure concerns of the conference. The VWBPE Executive is made up of members from Rockcliffe's Board of Directors and Advisory Board.

The VWBPE Executive would like to thank each and every community member that has volunteered their efforts towards this year's conference. It is the dedication of these volunteers to the promotion of best practices in the education industry that makes this conference possible.

VWBPE Executive

Name	SL Name
Kevin Feenan	Phelan Corrimal
Kae Novak	Kavon Zenovka
Chris Luchs	Abacus Capalini

VWBPE Organizational Committee

Chair	Name	SL Name
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Finance / Logistics	Kevin Feenan	Phelan Corrimal
Posters	Chris Luchs	Abacus Capalini
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Pooky Amsterdam

Programs

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EduMachinima Fest

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Abacus Capalini
Knowclue Kidd
LeeDale Shepherd
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Aly Warrior
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Catherine (Cat) Flippen
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Rawlslyn Francis
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Rawlslyn Francis
Ridvan Ata
Sabine Emad
Scott Anstadt
Shailey Minocha
Teri Lind

Communications

Abacus Capalini
Karla Schorzman
LoriVonne Luster

Media Outreach

Bluebarker Lowtide
Catflippen
Claudio Darin
Dailin Shaido
John Mcknight
LoriVonne Luster

Presenter Training, SL Mentors, Technical Gurus

Ageliki MeKanic
Alessia Greggan
Becky Adams
BJ Gearbox
Calliope Lexington
Dailin Shaido
Delightful doowangle
Edith Halderman
Elli Pinion
Frankie Antonelli
Illiana Lorefield
iSkye Silverweb
Jennette Forager
Lolli Sapphire

Ludo Merit
Muze Ackland
Orange Planner
Petlove Petshop
Pim Peccable
Reg Halostar
Sloan Skjellerup
Thinkerer Melville
Trip Tremmor
Wolwaner Jervil

Social

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Cat Thexois
Coz Okelly
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Izzylander Karu
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Mandie Mimulus
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BigRed Coyote	BJ Gearbox	Bluebarker Lowtide
Cat Flanagan	Cyber Placebo	Dailin
Dirk McKeenan	DyVerse Resident	Edith Halderman
Elektra Panthar	Esparanza Freese	Ewan Bonham
Grizzla Pixelmaid	illiana Lorefield	Karelia Kondor
Ladyslipper Constantine	Laura18 Streeter	Lloud Laffer
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PilarTeach	PhylisJohnson	Pionia Destiny
Shon Charisma	Stephen Sixpence	TestHarvey Resident
Ti Mosienko	Trip Tremmor	Valiant Westland

Stage and Region Managers

Ageliki MeKanic	AgileBill FireHawk	BJ Gearbox
Bluebarker Lowtide	Cyber Placebo	Dailin
Devon Actor	Elektra Panthar	Esparanza Freese
Fran Gustav	Grizzla Pixelmaid	Jens Nerido
KateMinola Resident	LoriVonne Lustre	Ludo Merit
PilarTeach	Pinksamurai Fairlady	Pionia Destiny
Roc Furse	Sabine Emad	Sabine Poliatevska
Serena Offcourse	Sloan Skjellerup	Stylianios Mystakidis
Tender Skytower	Trip Tremmor	

Security

Bjorn Bolissima
Cain Aster
Tender Skytower

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2012 Conference Summary

Raw Numbers

The 2012 Virtual Worlds Best Practices in Education Conference has been another very successful event for Educators interested in using virtual world technologies in the classroom. Some of the raw number for 2012 include:

- Over 2000 unique attendees (taking into account participants that had more than one alternate account);
- Average participation time was approximately 3 hrs per person;

On balance all numbers seem to suggest a flattening out of participation compared to other years. This appears to be a positive in terms of community development. While the general trend has appeared to be a scattering of the educational community to OpenSim and other venues as a result of recent changes introduced by Linden Lab in 2009, Second Life appears to still be where the community roots are firmly established.

Conference Highlights

We were fortunate enough this year that the purpose built 200-seat master work of Firery Broome and Paramparamm Papp continued to be available to the community giving participants another opportunity to view this awe inspiring build.



Another purpose build facility this year was the machinima and poster exhibit area. Designed by the build crew including Brock Jumanya, Firery Broome, Izzy, LeeDale Shephard, LuciPearl Sorbet, Paramparamm, and Roc Furse. This exhibit area featured two sim regions with stunning wrap around scenery.



While the number of presentations this year were smaller than in previous years, the quality of the presentations were definitely higher. Invited speakers represented a larger proportion of the presentations highlighting some of the best innovations to come out of the previous 12 months. This include more interactive, hands-on participation including a massive open online course (MOOC) prepared by the good folks at Front Range Community College extending the options for participation beyond the normal three day event itself.

Summary

Overall the conference once again proved the power of open collaboration and the ability of a community to come together to showcase the best of what is available. The conference itself would not be possible without the support of several dozens of volunteers who have been engaged in all aspects of the conference from planning, building, training, and communication within and among their peers. It has been our privilege to be forefront of where new technologies are leading education and collaboration and we are looking forward to many more years to come.

Kevin Feenan
SL: Phelan Corrima
President, Rockcliffe University Consortium
VWBPE Executive Committee

2012 Online Content

As part of every VWBPE Conference, the conference organizers attempt to make as much of the conference materials available to the educational and research community as possible. As the conference is based, as much as possible, on an open source model, educators and researchers often find creative ways in which to use social media and other content aggregators to make their materials available.

Below are just a few of the many sources that you may use to find information on VWBPE

VWBPE.ORG	This is the primary portal into most things related to VWBPE. Most of the information on past conferences can be found under the FAQ section of the website
Twitter	http://twitter.com/vwbpe This is one of our main sources for news on the conference and best practices.
Facebook	Fan Page: http://www.facebook.com/vwbpe?fref=ts Group: http://www.facebook.com/groups/67701516968/ The VWBPE Group has over 1000 members dedicated to the advancement of best practices within virtual environments. There are a number of relevant link and articles published by members which can help keep you up to date on happenings around the metaverse.
Treet.tv	http://business.treet.tv/shows/bpeducation Treet TV has been a partner helping to provide video based content to the educational community since the early inception of the conference back in 2007.
Metaverse TV	http://metaversetv.com/ Metaverse TV provides a number of educational programs include a few lectures from past conferences. Look-up VWBPE in the search box.
YouTube	http://www.youtube.com/results?search_query=VWBPE Lots of people have recorded various snippets and other components of the VWBPE conferences over the years. You can find many of these by doing a search for VWBPE.
SlideShare	http://www.slideshare.net/search/slideshow?searchfrom=header&q=VWBPE SlideShare is the most common source for slide decks (powerpoint) of past lectures.
Flickr	http://www.flickr.com/search/?q=VWBPE&f=hp Snapshots and information on past conferences.
pinterest	http://pinterest.com/search/?q=VWBPE pinterest is a new social networking platform that is just starting to take off this year. You can find snapshots and information by searching VWBPE.
EventBrite	http://vwbpe12.eventbrite.com/ Each year we use eventbrite in order to communicate information about next year's conference to those people who registered in previous years. This is an excellent source of information for those wanting to stay in the know ahead of everyone else (registration perk).

2012 Episode Listing for Best Practices in Education

Representing Latino Cultural Heritage in the Age of the Social Web

<http://business.treet.tv/shows/bpeducation/episodes/bpe2012-065>

Episode 65 Broadcast 17 March 2012

The Smithsonian Latino Virtual Museum (LVM) is a cross-platform immersive education initiative based on bilingual mixed media experiences created to enhance visitor's knowledge, understanding and appreciation of Latino Cultural Heritage through innovative and engaging online experiences. Learn more about LVM as a virtual museum model for digital learning and outreach through a brief behind the scenes discussion with Melissa Carrillo, LVM creative director and founder. Ms. Carrillo will be joined by research scholar from the Smithsonian National Museum of American Indian (NMAI) Cynthia Vidaurri and LVM lead artist Stacy Fox to share behind the scenes best practices curating in virtual spaces and the power of virtual worlds as learning spaces. Other special guests include artist/poet/musician Nancy Lorenza Green and writer poet/founder of Mouthfeel Press Maria Miranda Maloney.

Pedagogical Learning Technology Products and Content

<http://business.treet.tv/shows/bpeducation/episodes/bpe2012-060>

Episode 60 Broadcast 17 March 2012

Educators must keep abreast of new learning technologies. Pedagogical learning technology products include: self-paced elearning courseware; digital media referenceware; collaboration-based or social learning; simulation- or game-based learning; cognitive learning; and mobile learning. These learning technology products may contain one or more of the following content: packaged or custom content; value added services; hosted or installed tools and platforms; and personal learning devices. Use of these learning technology products in academic settings varies widely from country to country. This information is based on market research by Ambient Insight.

Using Virtual Worlds as a Tool for Project-Based Learning

<http://business.treet.tv/shows/bpeducation/episodes/bpe2012-063>

Episode 63 Broadcast 17 March 2012

Peek inside two project-based programs within NIAUniverse: daVinci Worlds and the RealWorld-InWorld NASA Engineering Design Challenge (RWIW). Within daVinci Worlds, middle and high school students team to synthesize and organize their learning by constructing knowledge spaces in this virtual world setting. In RWIW, college engineering students virtually mentor middle and high school students to refine NASA-inspired engineering design solutions. Steps of the engineering design process are displayed and models built InWorld. For those interested, a tour of NIAUniverse will follow this presentation. To join the tour, you will need to download NIAUniverse. Temporary usernames/passwords will be shared.

Interview with Pathfinder Lester

<http://business.treet.tv/shows/bpeducation/episodes/bpe2012-064>

Episode 64 Broadcast 16 March 2012

John Lester (aka Pathfinder Lester), Chief Learning Officer, ReactionGrid Inc. talks about Jibe as a multiuser 3d virtual world platform accessible via a web browser or standalone client.

Business case-study analysis through cross-cultural online student collaboration

<http://business.treet.tv/shows/bpeducation/episodes/bpe2012-062>

Episode 62 Broadcast 16 March 2012

More than fifty university students from Switzerland and Australia were virtually brought together in groups of four to analyze a marketing case study. Each team member was assigned a role, Marketing Manager, Operations Manager, Finance Manager and Market Expert. Information on the case was distributed throughout a Second Life location and each member of a team had to locate information relevant to their role in the virtual world environment. Analysis and a proposed solution from each group was only made possible by effective information sharing and collaboration within groups. Presentations took place in Second Life and the best solution from each country awarded a prize. In our fifty minute presentation we share the details of implementing this approach to case-study learning and discuss the strengths, weaknesses and improvements uncovered during our first implementation. We also discuss with the audience how this method could be transposed to other areas. The possibility may be offered, to those interested, to visit the platform where the simulation took place to experiment it by themselves.

3D Virtual Worlds in K-12 (International) Schools

<http://business.treet.tv/shows/bpeducation/episodes/bpe2012-061>

Episode 61 Broadcast 15 March 2012

David W. Deeds, as IT Manager/Teacher for Changchun American International School in Jilin Province, China, has been using 3D virtual worlds in K-12 (international) school education for three years: Second Life, OpenSimulator, Quest Atlantis and Minecraft. By the time this presentation is given, Alice and Unity3D might be included in the list as well. Although used primarily for the International Baccalaureate Organization's Technology and Information Technology in a Global Society courses, 3D virtual worlds have been featured as part of English and, perhaps of particular interest, several cross-curricular efforts with Art, Music and Science classes. He used Second Life as an integral part of computer science and English courses for three years in a university and college setting before switching venues to K-12 schools. David was invited to present on his work with 3D virtual worlds at seven international educational technology conferences during 2011, among them the Association for the Advancement of Computing in Education's Global Learn Asia Pacific in Melbourne and ED-MEDIA in Lisbon. He also presented inworld to the Bavarian Center for Gifted Children on the strengths of 3D virtual worlds regarding not just gifted or talented but also special needs education. After describing the classes conducted using the different environments, he'll use a "What Worked, What Didn't" format to discuss both lessons learned and plans for future classes. In Second Life he's Deed Davids. Come visit his Second Life K-12s Inworld cybercampus: <http://slurl.com/secondlife/Teaching/79/199/21/>.

WoW in Schools: The Hero's Journey

<http://business.treet.tv/shows/bpeducation/episodes/bpe2012-059>

Episode 59 Broadcast 15 March 2012

Peggy Sheehy and Lucas Gillispie have been taking students into World of Warcraft for several years as part of their school programs. The results have been quite surprising about this unconventional learning environment.

Epic Win, Epic Fail

<http://business.treet.tv/shows/bpeducation/episodes/bpe2012-058>

Episode 58 Broadcast 15 March 2012

Keynote speaker Marianne Malmstrom, known as Knowclue Kidd in SL has taken her classes into every grid in efforts to foster creativity.

2012 Poster and Video Awards

2012 marks the second year that the VWBPE Conference introduces award categories to encourage friendly competition showcasing best practices. We are pleased to announce the winners.

Posters

For a complete online listing of all entries please go to: http://vwbpe12.vwbpe.org/v12_posters.php

Award	Title	Presenters
Best Example of Educational Practices in a Virtual World	Maya Island	Stylianios Mystakidis
Best Interactive Display	Musical Odyssey	Kate Miranda
Best Use of Conference Theme	Virtual Pioneers	Andrew Wheelock
People's Choice	Senior Project® Center at P4DL, Inc. (K-12)	Kathleen Norris

Machinima

For a complete online listing of all entries please go to: http://vwbpe12.vwbpe.org/v12_machinima.php

Award	Title	Presenters
Brave Beginner	Testis Ovary Tour	Doug Threebeard
Be Epic!	Understanding the Holocaust Project	Andy Wheelock
Virtual World Outreach	Second Life Student Projects for English Composition and Literature Courses at Florida State College at Jacksonville	Rawlslyn Francis
Educational	Maya Island: a Library Exhibit and Tour	Valerie Hill
How-to	Massively Minecraft How To: Minecraft Skin by Ninabanina (age 11)	JoKay Wollongong
Teen	Project M.I.S.T - Minecraft in Schools, Transforming Education! by the Project Mist Team (age 14-15).	JoKay Wollongong
Teen	Massively Minecraft: Check out what we made!	JoKay Wollongong
Digital Storyteller	Time Travelers - Episode 4 : The Pattern	Russell Boyd, Pooky Amsterdam & James Canton
People's Choice	A Year in the Life	Russell Boyd & Pooky Amsterdam

2012 Conference Proceedings

Track: Keynote

326: "Resistance is futile: making a case for virtual worlds"

Author(s): Joe Essid

VWER Roundtable Meeting When no one challenges you for calling Second Life a "legacy" application, and a campus technologist says to you "Oh, no one talks about Second Life anymore," you know that hard times have come to 3D immersive learning. In our text-chat session, we will indeed be epic, by focusing not so much on arguing with such individuals but arguing for the use of virtual worlds in learning. In this financial and administrative climate, what cases can be made? What resources key to making a good case? Come to this special meeting of the Virtual Worlds Education Roundtable and share your ideas.

330: A Brainstorm on Games and Simulations in Teacher Education

Author(s): David Gibson

The session will present ten minute overview of a few overarching ideas about the next 2 - 3 year horizon and then ask people to add to a public dialog that will shape a handbook for institutional leaders in higher education. The handbook is slated for publication by the National Technology Leadership Coalition and the American Association of Colleges of Teacher Education. We'd like to list all attendees who contribute to the ideas, as a sort of crowd sourced manifesto of the mass intelligence of those who attend to and are interested in this topic.

328: Epic Win! Epic Fail!

Author(s): Marianne Malmstrom

Knowclue Kidd - Opening Keynote

339: How Immersion in Virtual and Augmented Worlds Helps Students in the Real World

Author(s): Chris Dede

The 2010 National Educational Technology Plan identifies immersive media as among the most powerful emerging technologies for learning. This session describes our research in designing and studying immersive virtual worlds, as well as augmented realities enabled by mobile devices, as resources for instruction and for assessment, as well as student motivation.http://isites.harvard.edu/chris_dede

333: Interview with Pathfinder Lester

Author(s): John Lester

John Lester (aka Pathfinder Lester), Chief Learning Officer, ReactionGrid Inc. will be talking about Jibe as a multiuser 3d virtual world platform accessible via a web browser or standalone client.

<http://jibemix.com>

<http://reactiongrid.blogspot.com>

<http://reactiongrid.deviantart.com>

335: Massively Minecraft

Author(s): JoKay Wollongong

<http://massivelyminecraft.org/>

325: WoW in School: the Hero's Journey

Author(s): Peggy Sheehy; Lucas Gillispie

For more information on the projects please go to:WoW in School wiki
<http://wowinschool.pbworks.com/Edurealms> blog on World of Warcraft in schools
<http://edurealms.com/Associated> tour 6am - 730 am on Friday March 16th, SLT Departure Area on Posters This tour is a World of Warcraft Field Trip With The WoW-in-School Project. This 90 minute session/tour starting at 6 am SLT on Friday March 16 is for educators who are new to WoW. Participants will receive tours with experienced WoW players - and did we mention students! Sisters of Elune Realm, United States Server. Registration for the field trip is required please email abacuscapalini@gmail.com Participants will be emailed with login and server information. This tour does require you to register for a free account and download an application that can take 2 hours or longer depending on the computer. You will also need to download Ventrilo at <http://www.ventrilo.com/>

329: Yes, We Do Want Those Stinkin' Badges! Personalized Learning in 3D GameLab.

Author(s): Lisa Dawley; Chris Haskell

3D GameLab, a game-based learning platform, and the National Oceanic and Atmospheric Administration (NOAA) teamed up to create "Planet Stewards," an environmental literacy curriculum for high school students. This project was a recent winner in the DML Badges for Lifelong Learning competition. Planet Stewards allows students to create their own personalized learning pathways in environmental and science literacy. Using NOAA's content and 3D GameLab's game-based learning platform, students are engaged by choosing among quests. Students earn experience points, levels, and badges to demonstrate their achievements in weather, climate, coastal, ocean and lake science, all aligned to National Science Standards. Learn more about Mozilla's initiative to build the nation's first infrastructure for creating certified badges.

<http://3dgameclab.org.shivtr.com/>

Track: Best Practices Showcase

247: A Cloud Topoanalysis Montage for Learning in Virtual and Cloud Computing Spaces

Author(s): Cynthia Calongne; Andrew Stricker; Erven McGinnes III; Paul Tomaso; Shane Archiquette; Josue Martinez

In Fall 2011, a Virtual and Cloud Computing Architecture class set in Second Life developed presentation devices that illustrate the pathways for understanding what makes virtual worlds and cloud computing spaces compelling. In a collaboration with two professors, the students will demonstrate these Cloud Topoanalysis Montage exhibits and share their learning insights during this unique presentation that uses a 3D rezzer to exhibit the content. Strategies and tips for hosting similar educational projects are highlights of this session.

262: A Panel On: The Rejuvenation of STEM "Cells"• By Avatars

Author(s): Veronica Pistoia

Abstract A Panel On: The Rejuvenation of STEM “Cells” By Avatars Presenters: Dr. Larysa Nadolny, Educational Technology-West Chester University; Dr. Jodi Reeves, Engineering Technology & Media-National University; Dr. Jean-Claude Bradley, Chemistry Scientist & E-Learning Coordinator –Drexel University; Dr. Charles Lesko, Technology & Computer Science - East Carolina University
 Mediator/Author: Veronica L. Pistoia-West Chester University, Biology Graduate Student
 Static...tedious...exhausting...mindboggling. These are words that often parallel students’ experiences with learning fundamentals of Science, Technology, Engineering, & Math (STEM). The inception of the well-known virtual world (VW) Second Life, by Linden Lab in 2003, has begun to create a one hundred and eighty degree twist on STEM so that it is now just beginning to be more accepted by students of myriad ages as: Stimulating, Tangible, Engaging, and Meaningfully Multifaceted. What student would not find standing next to a molecular model they constructed in a VW classroom, absorbing? Second Life has sparked professionals around the globe to revamp their teaching methodologies. Secondary Schools, Universities, Business, & even NASA are working to emulate the engaging and realistic ambience that Second Life and other virtual worlds deliver, made evident by 80,000 plus users at any point in time (Lang & Bradley, 2009). Microbiology, Math, Physics, Computer Science, Engineering, Science & Ethics, Ecology, and Immunology concepts are being instituted in these worlds. With the assistance of established professors from STEM backgrounds, this panel will address: Technology Acceptance Model, Current VW Designs, STEM Objectives vs. “Real Life” Skills, and Future Projections of VW’s As Mainstream Learning Tools.

300: Be Epic: learn how to make machinimas from scratch in five weeks.

Author(s): Angela Rizzo

The author describes her experience in learning how to make machinimas which took place during the five weeks of the 2012 MachinEVO, an EVO sessions (#2012evo) workshop for video productions of language learning conversations in Second Life.

254: Best Practices Presentation: 3D Virtual Worlds in K-12 (International) Schools

Author(s): David Deeds

David W. Deeds, as IT Manager/Teacher for Changchun American International School in Jilin Province, China, has been using 3D virtual worlds in K-12 (international) school education for three years: Second Life, OpenSimulator, Quest Atlantis and Minecraft. By the time this presentation is given, Alice and Unity3D might be included in the list as well. Although used primarily for the International Baccalaureate Organization’s Technology and Information Technology in a Global Society courses, 3D virtual worlds have been featured as part of English and, perhaps of particular interest, several cross-curricular efforts with Art, Music and Science classes. He used Second Life as an integral part of computer science and English courses for three years in a university and college setting before switching venues to K-12 schools. David was invited to present on his work with 3D virtual worlds at seven international educational technology conferences during 2011, among them the Association for the Advancement of Computing in Education’s Global Learn Asia Pacific in Melbourne and ED-MEDIA in Lisbon. He also presented inworld to the Bavarian Center for Gifted Children on the strengths of 3D virtual worlds regarding not just gifted or talented but also special needs education. After describing the classes conducted using the different environments, he’ll use a “What Worked, What Didn’t” format to discuss both lessons learned and plans for future classes. In Second Life he’s Deed Davids. Come visit his Second Life K-12s Inworld cybercampus: <http://slurl.com/secondlife/Teaching/79/199/21/>.

198: Building Educational Assets Within Virtual Worlds

Author(s): Roxanne De Leon

For a number of years, corporations, military, and education have used a number of virtual environments to immerse learners in engaging ways. The resources that have been created are endless and incredibly varied. In today’s educational environment, it is quite common for teachers to spend endless amount of

hours creating materials to make curricular connections. Although Second Life is designed for people 18 and older, it has many excellent educational environments, which can be used to introduce or reinforce multi-curricular content for multiple grade levels. Participants will learn how to create Virtual World Based Educational Assets (VWBEA), research and find resources while exploring Second Life and finally will use video tools in the creation of these VWBEA. Join me as we explore diverse worlds to create educational assets to enrich content, clarify curriculum, and reinforce skills in an engaging manner for all students.

223: Business case-study analysis through cross-cultural online student collaboration, using a virtual world environment, to simulate the complexities of gathering and analyzing relevant background data.

Author(s): Sabine Emad; Wade Halvorson; Leslie Bonjour

More than fifty university students from Switzerland and Australia were virtually brought together in groups of four to analyze a marketing case study. Each team member was assigned a role, Marketing Manager, Operations Manager, Finance Manager and Market Expert. Information on the case was distributed throughout a Second Life location and each member of a team had to locate information relevant to their role in the virtual world environment. Analysis and a proposed solution from each group was only made possible by effective information sharing and collaboration within groups. Presentations took place in Second Life and the best solution from each country awarded a prize. In our fifty minute presentation we share the details of implementing this approach to case-study learning and discuss the strengths, weaknesses and improvements uncovered during our first implementation. We also discuss with the audience how this method could be transposed to other areas. The possibility may be offered, to those interested, to visit the platform where the simulation took place to experiment it by themselves.

303: Choice and Play, Versus Structure in Supporting New SL Users

Author(s): Nicole Miller; Justin Allison; Kui Xie

One of the biggest challenges in using SL is the initial learning stage. While much literature references the steep learning curve to using SL (Baker, Wentz, & Woods, 2009; Cheal, 2009; Condic, 2009; Luo & Kemp, 2008; Molka-Danielsen, 2009; Sanchez, 2009; Shen & Eder, 2009; Waters, 2009), there is limited research on various methods of providing new users with training to reduce those challenges and to reduce the steep learning curve. It has been suggested that play, creativity, and group activities are beneficial in orienting students to SL (Sanchez, Molka-Danielson). This session will discuss how students were trained to use SL using two different methods. One group was given step-by-step instructions with a user manual and videos to support their transition into SL. The second group was given lots of resource options to choose from depending on how they felt they learned best, including a get started guide, videos, website instructions, and an interactive simulated carnival environment where they could play while learning new skills. Individual training was followed by group training where play and discovery was part of the learning process. These two training sessions were followed by an official class session. This presentation will discuss the nature of the training how the students perceived their experiences in SL. In general, limited skill difference existed by the end of the class session between the two groups, but in almost all areas, the participants in the step-by-step individual training reported higher skill levels at each stage of the process.

271: Cocoon Lives Again Virtually: Epic Dreams of The Golden Years

Author(s): Phylis Johnson

In 1985, Ron Howard received accolades for the science fiction classic Cocoon about a group of senior citizens that encounter alien powers, consequently making them feel alive and young again. For many, Second Life is such a cocoon, a place for them to rediscover vigor and explore life with new energy, while retaining their wisdom and perspective from their life's experiences. Many of those who build, design and you might say rule Second Life are retirees and those that are willing to take on new challenges and technologies. Forget about those stereotypes of "old" people. Virtual worlds might just be that fountain of

youth for the seniors who thrive on thinking young, having still goals to conquer, no longer for earthly treasures, but for a sense of self-actualization and contribution to the future. The baby boomers were set in front of the television and now they are a part of the audio-visual immersive experience, as if they have walked in to their television set with a mindset to turn their dreams and ideas into realities. Bradbury, Postman, McLuhan, and others have speculated on the role of media in the future. I argue that virtual worlds are not only a wonderful resource for contemplating and archiving the past, but for envisioning the future through the lens of those who have lived through the recent past. Media is not merely a passive experience; it is truly active and engaged, full of discussion and activity, and social networking that comes natural to the older, skilled communicator. Yet, there is an awareness that virtual worlds are targeted toward younger audiences increasingly, although a significant number of the active participants are over 40. The corporate push is to bring in younger audiences, yet the baby boomers will remain a viable audience for years to come, and significant contributors of these new worlds. They have the historical perspective to understand the potential of technologies, for they grew up as the technologies matured and evolved. One of the biggest problems of relying on membership statistics is that older people occasionally (or more often than not) lie about their age to seem younger than they are, in an effort to appear, what they think is, relevant to younger participants. This paper is a call to acknowledge the strong base of middle-aged active participants, who have risen out of their cocoons, to dream, build, and envision a new future – and to prove once and for all – learning is always life-long. This presentation will showcase contributions of some of these “cocoons.” Phylis Johnson, PhD (Sonicity Fitzroy, SL), professor of sound and new media studies in the Department of Radio-Television at Southern Illinois University, Carbondale, IL (USA), is the author of four books, including *Second Life, Media and the Other Society* (Peter Lang, 2010) and *Machinima: The Art and Practice of Virtual Filmmaking* (McFarland, 2012). Her next project, *Moving Sound: The Cultural History of the Car Radio*, connects the radio to the road, technologies and mobility (Peter Lang, 2014). She has published and presented in numerous journals, internationally and has more than 20 years of professional media experience. Dr. Johnson is also a journalist and media maker in Second Life, and teaches regularly inside the virtual world. She is also the chief strategic officer for Lowe Runo Productions, LLC, a machinima and full-service media company.

270: Cutting Through The Virtual Hype: Being Authentic is Being Epic

Author(s): Phylis Johnson

What Do You Really Need to Know about Social Media Lessons from Real and Second Life Journalists Social Media, Social Networking, and Social Burn-Out – are you getting lost in the sea of sociality, which is image-driven rather than reality-based media messages. What’s with the media hype? Is social immediacy as important as the quality of the content? Do you really have something to say? What, When, Where, Why and How are the rule-of-thumb questions for most journalists in communicating a news event or issue to their audience - and how you answer them may help determine their relevance to your target audience and purpose. For those working and teaching, and spending extraordinary time and effort within virtual worlds, we sometimes forget that our virtual world is a medium. Communication is a significant social element in everything one does in a virtual world. In Second Life, the media is fairly sophisticated, from film and television productions, radio broadcasts, to print and online magazines and newspapers, to artistic installations. In many aspects, it reflects real life media and offers advantages to unique community partnerships. In real life, not-for-profit organizations often create partnerships with media organizations to get their message out and to promote community events. For instance, many school districts and universities consider media an essential part of their community outreach, perhaps targeting at-risk populations. What should you know, as an educator, about the virtual world of media, and how might this knowledge help you formulate real and Second Life classroom and campus communication strategies. This session helps educators cut through the hype of social media, illustrating unique ways to partner with in-world media and how to make social media effective for their needs – instructional and community-building, as well as helping them to share their “story.” The presenter relies on her own journalistic experience, as well as tips and perspectives from top journalists of Second Life. Phylis Johnson, PhD (Sonicity Fitzroy, SL), professor of sound and new media studies in the Department of Radio-Television at Southern Illinois University, Carbondale, IL (USA), is the author of four books, including *Second Life, Media and the Other Society* (Peter Lang, 2010) and *Machinima: The Art and Practice of Virtual Filmmaking* (McFarland, 2012). Her next project, *Moving Sound: The Cultural History of*

the Car Radio, connects the radio to the road, technologies and mobility (Peter Lang, 2014). She has published and presented in numerous journals, internationally and has more than 20 years of professional media experience. Dr. Johnson is also a journalist and media maker in Second Life, and teaches regularly inside the virtual world. She is also the chief strategic officer for Lowe Runo Productions, LLC, a machinima and full-service media company.

291: Engaging Literature Students Through Role Play and Set Creation in a Virtual World

Author(s): Rawlslyn Francis

I will discuss how I use Second Life in my online college literature courses to engage students in the exploration and understanding of literary genres. This presentation is best suited for educators interested in learning how to integrate virtual activities into the curriculum of a literature/humanities course and how to assess the results of students' efforts. Participants will understand how virtual worlds offer the unique ability to move beyond static discussion threads in a learning management system and challenge students' understanding of a story by recreating the setting and impersonating the characters. By immersing students in the virtual creation of a literary genre, they gain a deeper understanding of the cultural influences that shape a piece of literature.

236: Experience in Applying Virtual Worlds to Training in a Business Environment

Author(s): AgileBill Krebs

Virtual Worlds hold great potential for interactive education. Such delivery can produce better learning results than less interactive formats. However, advocates experienced in immersive environments may be unprepared for the shock to clients in the business world. This presentation presents an experience report of one organization's effort at deployment. The initial failures built lessons for future approaches. First a set of virtual world tools were tried in turn. Second Life, OpenSim, VenueGen, Web.Alive, Teleplace, Telepresence, Skype, Lync, Webex, Unity3d, and Sococo were all used in an environment of distributed teams spanning a twelve hour timezone gap with many locations. 207 people tested some of the tooling approaches for fourteen months. The experiences have shown patterns of failure and success in meeting needs, uses of, and deployment for virtual technology. Is the tool for distance collocation? Or can it be used for mostly co-located teams? What are common objections of the curmudgeons? What steps need to be taken to maximize chances of success? How do the tools fit together in a larger strategy? What metrics can highlight early warning signs of trouble? This presentation lays out the lessons learned, and recommendations for success.

224: Interactive Base Number Sheets in a Virtual World

Author(s): Rebecca Reiniger; D.Cooper Patterson; Anna-Marie Robertson

ItOnlyTakes1 and Dream Realizations (#2 Poster Session VWBPE 2011) are combining forces in using virtual worlds to teach and broadcast their belief that number sense in individuals can be enhanced visually. Numbers have shape and color no matter what the container size (base). This, in turn, makes expressions and equations very easy to recognize. We can then derive algebraic equations from data alone and you can 'see' it. This is a journey from pre-Kindergarten through science, technology, engineering, and mathematics (STEM). Teacher and Student Base Number Sheets (BNS) editions allow for pre-arranged curriculum or free play. These products are available for use with your classes when you sign on to research with Dream Realizations on our wiki. We will demonstrate their use and interactivity giving you some insights into the control text involved behind the boards.

248: Introduction to Conscious Communication

Author(s): Laurel Ley; Jon Fleming

Societally, we are at a crossroads in how we conduct ourselves. Today's environment includes a growing awareness and realization that our future collective fulfillment is dependent on our ability to exist and work in an interrelated fashion. This will take a shift of epic proportions in both the educational and business fields to facilitate such a transformation. In the fashion of Socrates, by reconsidering the way we relate and by learning new ways of communicating, we can build stronger relationships with our allies as well as those we inspire to a different way of thinking and feeling. Not only do we feel and work better with easier relationships, but the real "winners" are the individuals who will have fuller, richer lives and are more productive. "The very technology that as recently as the 1960s seemed about to betray us into a dehumanized future is instead proving a powerful medium for people in organizations to achieve direct connections in disregard of rank or division, thus giving means and impetus to a more humanized workplace. In this context, it is understandable that we are beginning to speak of our organizations in a more humane language, to talk of cultures and values, relationships and inspiration, mentors and meaning, instead of using the old factory language of input and output, supervision and control." (source: Sally Helgesen, "The Web of Inclusion: Architecture for Building Great Organizations")

277: Life on an Epic Scale

Author(s): Peter Miller

Immersive environments such as OpenSim regions provide the opportunity for students to explore and annotate biological data in novel ways. In an era typified by information overload, they also offer opportunities to focus, personalise and share the experience of such investigations. During the past year a region on the New World Grid called BioZone has been developed on the theme of mycobacteria. The latter include agents responsible for serious human bacterial infections such as tuberculosis and leprosy. Exhibits now available or under development include two types of immersive bibliographic search tool, an evolutionary pathway for the genus mapped as paths, a walkround, touch-sensitive genome of *Mycobacterium tuberculosis*, a large-scale protein structure derived from a mycobacterial virus, a fly-through section of a mycobacterial cell and an immersive visualization of some gene regulatory networks from *M. tuberculosis*. In these examples the merit in "being epic" in terms of scale is primarily in providing sufficient shared space for individual student avatars to work while still providing an overall context. While some students (and general visitors) may also find the scale of the build to be inspiring or intriguing, this aspect needs to be tempered with an awareness of the dangers of cognitive overload and lack of cohesion. The paper will present ideas for ways in which this issue might be addressed in the future.

319: MachinEVO

Author(s): Heike Philp

MachinEVO was a 5-week workshop for the production of language learning conversations recorded in Second Life which took place in January/ February 2012 with some 128 participants, all of which were language educators. During the 5 weeks the participants learnt machinima production skills thanks to a small group of expert advisors and produced some 20+ machinimas. What was amazing about this workshop is that whilst we asked for SL experience, we were blown away by not only the high number of participants but also the high level of activities which are attested to by the 44 blogs, 100+ photo uploads, 86 video uploads, 120 forum posts and up to 10 live sessions inworld a week. During this presentation we would like to demonstrate some of the highlights of the productions as well as introduce some of the winners of the MachinEVO award.

388: Machinima Demystified: The Experts Share Their Secrets

Author(s): Odette Blanch (SL: Graycon Sonata); Chantal Harvey; Bernard Drax; ThinkererSelby Evans

In this session, notable Second Life machinima creators will share their expertise through interviews and a panel discussion. You'll learn how to plan a project from start to finish while avoiding time-consuming pitfalls. This session is applicable to all sectors of the educational community. Questions posed to the panel will focus on important issues for educators producing machinima to promote their work and for

teachers assigning machinima as a class assignment. Participants will leave with a better understanding of what tools are required to take advantage of machinima through software selection, in-world tools, video techniques unique to virtual worlds, scene creation, set design, location scouting, and managing your time from start to finish. Sample work from the panelists will be available for preview before the session.

318: Massively Open Online ... Virtual Worlds, Games and Education

Author(s): Kavon Zenovka; Karla Schorzman; Stasia Weston; Tanya Smedley; Cat Flippen; Chris Luchs; Alysyn Middleton

The purpose of this session is to identify, discuss and explore an emerging movement in learning enabled by technology and taking place outside the formal F2F classroom format. Using the learning theory of connectivism, personal learning networks, social media and open content, traditional students and life longer learners are forming their own personal learning plans. Educators are also finding opportunities outside of structured professional development training to use social networks to have greater access to peers and mentors. This session will include information for Virtual Worlds, Games and Education MOOC setup as a post-conference synchronous and asynchronous course starting on March 19th and running for 4 weeks.

235: One Big Soup

Author(s): Muze Ackland

One Big Soup Muze Ackland Productions is a multicultural entity that considers all cultures and sub-cultures an ingredient. One Big Soup is building a diversity network celebrating these cultures through the many interactive means available such as music, art, architecture, legends and language. We know how to help bring about cultural understanding using 3d web technology. Through multicultural education we can bring balance in the world by restoring cultural respect and honoring each others place in it. Just as in nature, when the removal of one seemingly insignificant element in nature and adversely effect or affect the entire ecosystem in an area. Balance is the thing needed in order to restore harmony in any such system, ecology, economics, political power, spirituality, etc. We acknowledge this truth and realize that every culture has something to offer the world. They are all an ingredient of One Big Soup we call "the world". Welcome to the 3D Web..It's where we are now and growing every day. If you zoom out, take a snapshot, zoom out again and again, you will see the network is ever expanding and accessible.

322: Pedagogical Learning Technology Products and Content

Author(s): Gentle Heron

Educators must keep abreast of new learning technologies. Pedagogical learning technology products include: self-paced elearning courseware; digital media referenceware; collaboration-based or social learning; simulation- or game-based learning; cognitive learning; and mobile learning. These learning technology products may contain one or more of the following content: packaged or custom content; value added services; hosted or installed tools and platforms; and personal learning devices. Use of these learning technology products in academic settings varies widely from country to country. This information is based on market research by Ambient Insight.

238: Popularisation and Outreach of Science in the Italian Second Life Community - Best Practices

Author(s): Calliope Lexington; Talete Flanagan; Giovanna Giovanna Delphin; Loris Talon

Second Physics, founded by Talete Flanagan, is an Italian no-profit group for the popularisation and outreach of science in Second Life. Since 2009 Second Physics has been carrying out the projects: "Scienza on the Road", "Cafè della Scienza", "Scien&Art", "Second Campus" and "Doppio Cerchio", that have strongly contributed to the popularisation of science, physics in particular, among the Italian

community in SL. Some of these projects are realized in collaboration with other SL groups engaged in the cultural aspects of the metaverses. For VWBPE12, Best Practices Showcase, Best Practices Presentation, Second Physics proposes a cooperative lecture - "The epic of Science!" - a special event of Science on the road, since 2009 a project in collaboration with Immersiva.2life, group for the popularisation of culture and art. Scienza on the Road is an itinerant project, to reach a varied audience in the Italian lands. This guarantees the maximum diffusion and stimulates the integration of the Italian communities. The conversations are broadcast in web streaming. The subjects dealt with comprise Sub-nuclear physics, Cybernetics, Emotional Economy and Science and Scientific Fiction, Molecular Biology, Optics, Mathematics and many others. Physicists, teachers and experts with RL teaching and popularising experience give lectures on scientific subjects, often with the help of interactive tools - sculptures, fractals, atomic models, optical illusions. The special lecture planned for VWBPE will extract from the already given lectures specific cases that will show how "Science is really epic!". The lecture will be in Italian, with a brief introduction and translation on a dedicated blackboard for the non-Italian speaking attendees. The audience can ask questions and discuss with the lecturers.

288: Practices in Rhetoric and Academic Use of Spanish Language

Author(s): Montse Veyrat

I will expose in a power point with some pictures the results of the work with my students to introduce them in the Second Life World, the preparation of the classes, the organization that I have built to reach the results that I needed to evaluate their work and finally, their own very special work. The matter that I teach at my University is related with Linguistics (General Linguistics, Translation, Rhetorics, Applied Linguistics, Neurolinguistics, Intercultural Pragmatics...), so the subjects of their works always must refer to this themes. My students are beginners in the graduate of History of Art and Modern Languages and others Philologies in two different Faculties; then, those belonging to the Grade of Art they have to choose a theme based on any matter they were interested but mandatorily it should be treated under the point of view of rhetorics and art. And those who were membership of Linguistics group in Philologies, they have to do his work about a matter related with language, its use, the contrast about some spanish varieties... and so.

215: Session 1: Learning numbers: Intro to subQuan (pre-K & up)

Author(s): Rebecca Reiniger; D.Cooper Patterson; Anna-Marie Robertson

ItOnlyTakes1 and Dream Realizations (#2 Poster Session VWBPE 2011) are combining forces in using virtual worlds to teach and broadcast their belief that number sense in individuals can be enhanced visually. Numbers have shape and color no matter what the container size (base). This, in turn, makes expressions and equations very easy to recognize. We can then derive algebraic equations from data alone and you can 'see' it. This is a journey from pre-Kindergarten through science, technology, engineering, and mathematics (STEM). so we have broken it apart in three sessions. In Session 1, we will introduce you to numbers in a way never seen before, thanks to the beauty of virtual worlds. The content established in this session will be the springboard for following sessions as we will teach you how to subQuan, recognize number shapes, and colors. Our research has shown us that four and five year-olds are capable of recognizing four digit numbers in a very short period of time. Allow your eyes to see as we take you on this journey. Pre-requisite for Session 2 - "Application of subQuan to Algebra (4th Grade & up)" and Session 3 - "subQuan to Polynomial Derivation and beyond... (8th Grade & up)".

217: Session 2: Application of subQuan to Algebra (4th Grade & up)

Author(s): Rebecca Reiniger; D.Cooper Patterson; Anna-Marie Robertson

ItOnlyTakes1 and Dream Realizations (#2 Poster Session VWBPE 2011) are combining forces in using virtual worlds to teach and broadcast their belief that number sense in individuals can be enhanced visually. Numbers have shape and color no matter what the container size (base). This, in turn, makes expressions and equations very easy to recognize. We can then derive algebraic equations from data

alone and you can 'see' it. This is a journey from pre-Kindergarten through science, technology, engineering, and mathematics (STEM), so we have broken it apart in three sessions. Please note that the previous sessions are a pre-requisite for the latter. Session 2 is a continuation from the introduction of subQuan. We will be applying our ability to subQuan to recognizing metapatterns to derive Algebraic expressions and equations by sight. Come find out how our use of a virtual world impacts the depth of learning number concepts and the foundational concepts of STEM. Session 1 -"Learning numbers: Intro to subQuan (pre-K & up)" highly recommended. Pre-requisite for Session 3 - "subQuan to Polynomial Derivation and beyond... (8th Grade & up)".

219: Session 3: subQuan to Polynomial Derivation and beyond... (9th Grade - HigherEd)

Author(s): Rebecca Reiniger; D.Cooper Patterson; Anna-Marie Robertson

ItOnlyTakes1 and Dream Realizations (#2 Poster Session VWBPE 2011) are combining forces in using virtual worlds to teach and broadcast their belief that number sense in individuals can be enhanced visually. Numbers have shape and color no matter what the container size (base). This, in turn, makes expressions and equations very easy to recognize. We can then derive algebraic equations from data alone and you can 'see' it. This is a journey from pre-Kindergarten through science, technology, engineering, and mathematics (STEM), so we have broken it apart in three sessions. Please note that the previous sessions are a pre-requisite for the latter. Session 3, as our final session in the series, subQuan metapatterns are investigated further and polynomials are derived from data only. We move beyond the virtual world, but still within it, into a Google spreadsheet to highlight the functionality of a differences table and its application to STEM concepts. Session 1 -"Learning numbers: Intro to subQuan (pre-K & up)" and Session 2 -"Application of subQuan to Algebra (4th Grade & up)" highly recommended

246: Tapping the Potential of Open Blended Courses in Virtual Worlds

Author(s): Stylianos Mystakidis

This presentation describes how the Library & Information Services (LIS) of the University of Patras designed and launched the first ever Greek university's training program in Virtual Worlds to enhance its user training activities and generate institution-wide teaching innovation.

213: Teaching and learning in Second Life as Part of a Blended Approach: reflections and lessons learnt

Author(s): Ridvan Ata; Sheila Webber

This paper aims to illuminate teaching experiences of the course moderator and the teaching assistant in a freshman-level module and explore the contribution of SL to students' learning process through the educators' eyes. The virtual world Second Life (SL) is being used as a part of blended inquiry-based approach (using physical classrooms, Blackboard, web-based resources and SL) in an Information Literacy class for 1st year undergraduate students at the University of Sheffield. We begin by describing the evolving programme design (Webber, 2010a, 2010b), the structure of the module and characteristics of learning activities that take place in the class, including identifying the rationale for using Inquiry Based Learning (IBL) as pedagogy with the disciplinary goals. We also detail some of the interventions and strategies that were adopted, such as an exhibition space of nine SL mini-islands, designed for the students' information problem activities. In reflecting on, and evaluating, the learning and teaching experiences we draw on evidence from: students' interviews, chatlogs, inworld snapshots, and our own notes and records. We conclude this paper by evaluating our experience of teaching to facilitate student learning, and identifying key lessons learned about: the usage of SL in relation to learning outcomes; practical issues in using SL with freshman students; and the value of SL for a sustainable Inquiry Based Learning approach (IBL). Keywords: Inquiry Based Learning, Blended Learning Environment, Virtual Worlds, Virtual Teaching, Information Literacy

263: Teaching Prejudice and Discrimination Using Second Life

Author(s): Serene Tan; Rui Jun Lee

Welcome to Maletopia, a Second Life build that seeks to facilitate students' exploration of ideas in prejudice and discrimination, one of the topics in the General Paper (GP) curriculum. The presentation will cover the rationale, objectives and design of the lessons revolving around Maletopia, which will be implemented in April 2012, by the GP Unit from Innova Junior College (Singapore, Grades 11-12). Through adopting the identities of their avatars, it is envisaged that Maletopia provides a stimulating environment for students to 'leave behind' their actual identities and engage in fruitful dialogues for enhanced understanding of prejudice and discrimination issues.

243: Tech Stewarding in Second Life

Author(s): Amber Judge

Tech stewarding is the process through which a community of practice is guided from their current state towards a more ideal state via the tailoring and implementation of a technological tool that addresses the specific and personal needs of the community. In this session, an overview of what tech stewarding is and how it pertains to virtual worlds will be explicated. The steps in the process of tech stewarding will be reviewed in order: approaching a community of practice, emergence of issues, choosing an issue and viable technological solutions, consulting the community, collaboration and leadership for implementation of the solution, observing interactions, outeractions, reactions and results, and obtaining feedback. The benefits and limitations of technological tools that can be implemented as solutions in virtual worlds, specifically Second Life, will be discussed.

194: The Past, Present, and Future of Virtual World Education

Author(s): Valerie Hill

The University of Washington Certificate in Virtual Worlds has graduated three classes of students (2009, 2010, and 2011) and a new class will graduate in June 2012. Representative graduates from each class, along with a current student, will share best practices of education from a variety of perspectives. Topics will include history, art, educational curriculum, new media formats, virtual libraries, and predictions for the future. Panelists will demonstrate collaboration across the globe through diverse professions, languages, and transmedia.

245: The Saga of UW Maya Island: Digital storytelling, context- and game-based learning in Virtual Worlds

Author(s): Stylianos Mystakidis

Graduates of University of Washington's Virtual Worlds Certificate Program analyze diverse instructional design techniques that were utilized in the development of UW Maya Island. UW Maya Island (<http://tinyurl.com/uwvw11>) is the graduates' final project of 2011 University of Washington's Virtual Worlds Certificate Class. It has been designed and developed in 9 weeks by an international team of 13 members. It became an Editor's Pick in the Second Life Destination Guide in July 2011 and attracted more than 5,000 visitors within 2 months. Today it hosts the activities of the Maya Island Society (<http://uwmaya.wordpress.com/>) which have been featured in a CNN's i-report. UW Maya Island features learning archetypes designed and developed according to the 3D instructional models proposed by Kapp & O'Driscoll (2010). These comprise learning experiences that immerse visitors and elicit active learning around ancient Maya Civilization. More specifically, visitors of the Maya Island are encouraged to complete a quest to become Maya physicians in order to save a village from an epidemic (digital storytelling), discover facts and practices of Maya Science (Astronomy, Agriculture and Fishing) in immersive builds (context-based learning) and win a Triathlon to learn about Maya Mythology & Culture (game-based learning). Panelists will provide insights based on qualitative and quantitative data.

aboutcollaborative virtual immersive learning environments' instructional design, development & programming,user experience & feedback,integration of web 2.0 tools and social media for virtual community building and event promotion.

272: Theorycraft: Quantitative Analysis in World of Warcraft

Author(s): Abacus Capalini; Michael Liucci; Kavon Zenovka

This session will explore the cognitive surplus that exists inside the World of Warcraft MMORPG and on fan sites. With over 11 million players, World of Warcraft enjoys the surplus productivity of these players as they have developed extremely detailed meta data for free. Many of these meta data sites focus on the quantitative analysis and the idea of optimizing performance according to each class of player. Participants will be given a glimpse of the world of theorycraft and see that players are not just playing, but the creating models, algorithms based on game mechanics as well as macros and mods.

264: Use Open Sim and Second Life to Help Students Conquer 3Ds Max

Author(s): Hsiao-Cheng Han

Students who have never used 3D software have a fear of high-end software such as 3Ds Max or Maya. I have found the building interface of SecondLife and Open Sim are similar to 3Ds Max but much easier to learn; therefore, I have used Second Life and Open Sim to conquer their fear of 3D software. Since I was not able to afford an island in Second Life and had no resource to build my own Open Sim, I use the Sim-on-Stick for teaching. It is almost free for the students and me, and the results are very rewarding. After students had visited Second Life and learned to build in Open Sim, I taught them how to use 3Ds Max, which has a small learning curve for them. Students also learned how to make sculpty to import objects from 3Ds Max to Open Sim. This semester, students have learned how to use Second Life/Open Sim, 3Ds Max, Goldwave, Camstudio, and Movie Maker. Their final project is a short machinima to introduce their Open Sim world. I asked them to upload their videos to YouTube and have an exhibition in Second Life. They were more motivated because their work can be seen by people from around the world. To use Second Life and Open Sim teaching 3D animation course helps students build their confidence and creates stronger motivation to learn higher end 3D software.

321: Using Arts Processes for Learning in Second Life

Author(s): Niela Miller

I have been developing new ways to use SL's technology ie building, textures, digital photos and painting to enable students and clients to do problem solving by creating symbolic representations of the self, an idea or a challenge and to work directly with the creation for increased insight, awareness and options. I will do a few demos showing students how to make use of SL tools and we will discuss various applications for teachers and students involved in meaning-making curricula such as philosophy, psychology, or any learning situation in which participants are free to explore ideas and creative solutions to problems.

389: Virtual Education Secrets At The Builders Brewery

Author(s): DeAnn DuFaux; Sen Maximus; Auryn Beorn; Xavier Stockington; Supermius Maximus

Tips for Vitual Teachers such as Tools of the trade, how to handle students, class clowns, griefers, hecklers, and how to market the class.

367: Virtual World Residency

Author(s): Randy Hienrichs

Teaching in virtual worlds requires you to understand avatar psychology, virtual worlds culture, 3D architecture, cybergogy, virtual assessment, augmented technologies, cloud based computing and the latest research in social computing. Such a curriculum is really only the beginning of the multidisciplinary skills and processes required to create, teach and learn in virtual worlds. This talk explains how being truly certified in teaching in virtual worlds is imminent, and why it requires not only a robust dialogue and program, but that it requires internships, residency and attending practitioners who can guide new teachers to understand, use and create gaming, virtual worlds, and the immersive Internet.

369: VWBPE Pre-Awards Show: The Art of Micro-Story from Tweet to Machinima

Author(s): Fourworlds ra

The Art of Micro-Story from Tweet to Machinima" will explore some of the innovative ways ultra-short form mediums are being used for storytelling and creative expression, including:

- Head Injury Theater – Slice of life tweets from a woman caring for two teen daughters, a sister with cancer and a mother with a head injury
- The Virtual Court Jester – Razor sharp parody echoing emerging virtual world news
- Deep Tweets – A machinima series based on social network posts
- 100 Word Stories – A weekly challenge inspiring written word, voice performance, comics and videos
- Micro-Rants – A series of thematic social network posts published over the course of a day

Track: Exploration of Virtual Worlds

231: A Tour of Calisto Encinal's Mi Casa Es Su Casa

Author(s): James Abraham

Loosely-based on San Miguel de Allende, Mexico, Mi Casa Es Su Casa models a truly immersive interactive educational space for students of Spanish. The project currently offers role-playing opportunities as well as over 20 individual, self-correcting interactive game-like activities to promote language learning. The space has served students for weekly instruction since the fall of 2007. After the tour, participants will have a better understanding of how the virtual world platform can be leveraged for language learning. They will also gain knowledge about how to create a truly interactive immersive experience for their students.

297: Basics of Cloud Computing

Author(s): Lyle Tompkins

Cloud Computing is the new paradigm in IT services and Second Life is the best way to offer the most accurate picture of what it means. Using a poster and a link to youtube.com playing on that poster in Second Life, we plan to show the major pieces of Cloud Computing including the Portal In (client to supplier), Virtualization, Redundancy, Security, Cost and Portal Out (supplier back to client) but more importantly show how Second Life can be used to educate on many different levels. The level of teaching anyone the basics of Cloud Computing is on a par with teaching Internet use, Information Technology or any other technical tools that one has to start with the basics and work their way up from there. In Second Life this was demonstrated by rooms represented by clouds with each station (room) exhibiting one of the major pieces of Cloud Computing in an entertaining manner. For example, the intent to demonstrate virtualization is a ghostly clear poster with the description spoken when touched through the use of videos created by the designers. Redundancy is shown by twin speakers who voice the meaning and use of redundancy in Cloud Computing. Cost would be displayed by a Banker who will describe the utility style pricing of all services in the Cloud. This demonstration of the power of any Virtual World to be an

educational universe at all levels is meant to inspire others to develop courses in other fields such as K-12, basic College Courses, Corporate training courses and more.

390: Behind The Scenes Tour Of Builders Brewery

Author(s): DeAnn DuFaux; Sen Maximus; Aurnyn Beorn; Xavier Stockington; Supermius Maximus

Builders Brewery, one of the premier building and creative schools in Second Life, is conducting a tour of their facilities, showing what makes a successful classroom environment.

286: Chinese Space Program Simulation

Author(s): Scott Grant

A proof-of-concept simulation of the Chinese space program has been set up on Monash University 2 Chinese Island. The purpose of the simulation is to demonstrate an interactive and experiential learning model focused on Chinese culture (with some language elements), both modern and historical, and aimed at Year 7-9 students. Australian high schools are facing a high attrition rate of non-background learners of second languages, particularly Asian languages. This simulation has been designed to be a platform for learning about the modern Chinese space program and its historical roots. The simulation provides learners with the opportunity to fly a mission in a Chinese Shenzhou rocket up to the Tiangong 1 space station which in real life was placed in orbit in late 2011. However, in order to be qualified for a mission, learners will have to undergo some initial training back on earth that involves learning factual and historical information about gunpowder, rockets and the modern space program. In addition to the content, quizzes and simulation to be demonstrated in Second Life, teachers would be able to design a whole range of associated learning activities to be carried out by students both in the virtual and real world. The whole simulation aims at bringing the learning of cultural and linguistic knowledge alive in a fun, interactive and experiential way and was designed with middle school learners of Chinese language and culture in mind.

324: Club Penguin Tour

Author(s): Edith Halderman

Join us for our annual romp in Club Penguin!

220: EVE Online Tour

Author(s): John McKnight

Notorious for the steepest learning curve in online gaming, EVE is in some ways the antithesis of SL, not least of all in players' objections to the introduction last year of avatars. What makes EVE so different, so hardcore, and yet such an object of passionate support, much like SL? Come on this tour of stunning spacescapes, mindbogglingly huge space stations and giant fleets of warships - and meet members of EVE University, EVE's pre-eminent teaching organization. May include a special event with EVE University students, professors and combat pilots, currently under negotiation.

Download: <http://vwmooc.files.wordpress.com/2012/03/eveonline-orientation-for-vwbpe.pdf>

239: Exploring Science on the New World Grid

Author(s): Peter Miller

The session will comprise an introduction to the OpenSim-based New World Grid and visits to a range of science-related regions.

208: Going MAAD - The Growth and Educational Possibilities of Museums in Inworldz

Author(s): Alicia Corts; Barbara Zanzig; Bill Spurlock

This tour will explore the educational possibilities in Inworldz, an alternative universe to Second Life. The tour will both explore the building possibilities and benefits of Inworldz as well as how those are being used by The Museum of American Architecture and Design, or MAAD, one of the premiere education sites in this other virtual world. From Indian theatres to full sim builds of a 1950s town, this tour will present the possibilities of virtual spaces in a grid that caters to builders.

366: Smithsonian Latino Virtual Museum (LVM) Tour

Author(s): Melissa Carrillo

The Smithsonian Latino Virtual Museum (LVM) is a cross-platform immersive education initiative based on bilingual mixed media experiences created to enhance visitor's knowledge, understanding and appreciation of Latino Cultural Heritage through innovative and engaging online experiences

253: Taking a proactive approach to virtual campus tours - 3D Virtual Campus Tours

Author(s): Andrew Hughes

Traditional campus tours provide potential students first-hand experience of a campus; however, their biggest drawback is that driving distance often limits that experience to the few who live close enough to take them. In the last decade, a variety of technological tools have been developed to provide the campus tour experience to a wider geographic audience. Most have fallen short in duplicating that experience, as might be expected of such a technology in its early stages. Today, however, we'll explore the evolution of the virtual campus tour to its current state, providing an astoundingly realistic immersion in the campus experience in the web browser. 3D Virtual Campus Tours has revolutionized the way students view a campus online. We would like to share with school representatives why it is so important to take a more proactive approach to recruiting and engaging the video game generation entering college. Rather than potential students viewing the information in a passive manner, why not engage students by providing the opportunity to actually walk around the campus just as they would in an on ground campus tour? Real time communication through voice and text chat along with life-like 3D replications of the campus offers not only a true representation of the campus, but does so in a way that the generation entering college is accustomed to.

279: The Four Bridges Project - A Virtual Sustainable Community

Author(s): Amy Cross

Four Bridges is a virtual sustainable global community model founded on the four principles of respect for nature, universal human rights, economic and social justice, and a culture of peace. As our mission indicates, we are a model community. We have been in a state of constant evolution since our beginning in February 2009. A large portion of what we do revolves around education. We believe that awareness is education is awareness. It is a circuitous process of understanding and change making and we are committed to providing excellence in the projects and presentations that we undertake and share them "open-source" with the Four Bridges Community as well as the Second Life Community at large. Through our Student Volunteer Program, we provide students and faculty around the globe the opportunity to work in an international and interdisciplinary environment on projects of social significance relative to community. Through presentations and seminars, we open education to the larger community on topics of sustainability, activism and wellness. We are looking into the possibilities of offering a series of certificates and badges in many areas such as Transformative Mediation, Nonviolent Conflict Resolution, Digital Activism and Universal Design. Our recent affiliation with the University of Maine will provide many levels of academic advancement including accredited courses, certificate programs and course design. <http://fourbridgesproject.org/>

371: Tour of Maya 2012

Author(s): Stylianos Mystakidis

UW Maya Island (<http://tinyurl.com/uwvw11>) is the graduates' final project of 2011 University of Washington's Virtual Worlds Certificate Class utilizing 3D instructional design techniques such as digital storytelling, context- and game-based learning.

Track: Games & Simulations

195: Approaching Training For Generations Entering The Workforce

Author(s): Andrew Hughes

The training industry is changing rapidly, with new technologies and new advances in virtual worlds and gaming engines happening almost daily. With all the new virtual worlds and engines emerging, what effect does this technology have on our training initiatives and generations entering the workforce? What demand will the new generations put on us to advance our way of using social and formal education practices? This presentation discusses how virtual worlds and cost effective gaming engines are being used as effective tools to engage, educate, and entertain the new workforce. You'll hear the experiences of organizations that are successfully using virtual worlds and gaming engines to build their immersive training and lessons learned from Designing Digitally, Inc.'s client builds. This session will provide participants with what to do to engage the new workforce entering the job market and how training will need to be approached differently than in the past. This session will help participants prepare better for both short-term and long-term decision making about what to do to train future generations entering the workforce.

222: Demonstration of a Virtual World English Lesson: The Cypris Chat English Learning Community

Author(s): Mike McKay

A common problem in the language learning classroom is the inability for students to have an adequate amount of time to practice speaking. In countries where English is not common this poses a substantial problem. Teachers in these countries also feel they cannot properly teach students due to their own insecurities related to speaking English. But what if teachers from around the world could help these teachers and students in a virtual world created for the purpose of learning languages. Over the past three years, the author has found that for a large population of English learners, virtual worlds such as Second Life are more rewarding than classroom learning. Interactivity as well as global cultural awareness and sharing have made the experience of learning English both motivating and fun. In this presentation/demonstration the Cypris Chat English learning community will demonstrate how tutors and hosts offer language learning and practice opportunities to our members. This will give attending teachers and educators the chance to see firsthand a lesson being taught. Cypris Chat members will be given a typical lesson and then be available for questions from the audience thereafter. Attendees are welcome to record the lesson and share with colleagues to demonstrate how effective virtual world learning can be. Presented by Mike McKay/Professor Merryman and the Cypris Chat community Website: <http://cyprischat.org> YouTube: <http://www.youtube.com/user/CyprisChat> Flickr: <http://www.flickr.com/photos/cyprischat/>

282: Enhancing a Scavenger Hunt Game to Increase Student SL Skills and Content Knowledge

Author(s): Wendy Keeney-Kennicutt

We know that Second Life has a steep learning curve for students new to virtual worlds. However, many students skip basic orientation instructions. I have altered a commercial scavenger hunt (A&A Networked

Scavenger Hunt by Alice Klinger) to help my first year chemistry students (1) develop SL skills such as working with inventory, chatting, interacting with objects, taking photos, as well as (2) start to visualize molecules in 3-D. This project had to be asynchronous since I have 600 students in my university class. Of the students polled, 86% found that this game was useful for developing SL skills. I will be demonstrating the game, allowing the audience to play and sharing my changes.

320: First Responder Round Table Discussion

Author(s): Patrick Thorkveld

Catastrophic Planning and Management, CP-MI, of FIRST RESPONDER-SL to VWBPE for a round table discussion on the First Responder Training Site. They intend to invite several representatives of various task forces to discuss the upcoming training operation at First Responder in Second Life. They will invite representatives of the US military, Doctors without Borders, the Red Cross, fire brigades etc. and the task forces responsible response to national and international natural catastrophes such as tsunamis, earthquakes, hurricanes and other natural and man-made disasters. The challenge that First Responder has set out to meet is to bring these groups together in a simulation training site in Second Life. Catastrophic Planning and Management Institute has contributed to the development and definition of the National Response Framework for disasters and also worked with Joint Forces Command to create this sim in Second Life. A pilot of this capability was also presented to the appropriate USA Congressional committees for approval. The project maintains official not for profit status and receives no funding. The experiential immersion experience which the CP-MI teams created in Second Life is a truly amazing project that not only role-models the high level of technical simulation possible, but also illustrates how through the efforts of a small group a whole expert community in Second Life is formed, as well as a movement that has started to attract the free offering of services. For example, major corporations have offered to contribute components to assist in dealing with national and global disasters. CPMI is a not for profit organization which works with USA Federal agencies and well as components of the Department of Defense and has been cultivated to participate in projects with the United Nations and NATO. Their purpose is specifically to review and develop and integrate processes and applications which exponentially expedite the capability for catastrophic management.

251: One School's Approach to Vocational Transition: Gaming

Author(s): Kim Flack; Dave Flack

This World of Warcraft (WoW) presentation will focus on the delivery of skills that enable students to build on college and career readiness. WoW itself allows students to build on diverse skills as collaboration with others near and far, technical skills as they interface with their own computer platforms and perhaps most importantly, allows them to build academic skills in a format where they have enjoyed a modicum of success, i.e. gaming. When the paradigm has shifted from traditional classroom delivery models into a more supportive learning community, results can be impressive. I will incorporate students from my class into this presentation since they are true consumers of this product delivery. My presentation will utilize existing websites and cite various sources. ¶»¿

292: Soccer Mini Game

Author(s): Max Platt

A mini game involving any number of players. Players push ball into a goal.

260: The SLAM system: learning languages through your avatar

Author(s): Darren Green

Students learn Spanish through immersion by wearing a HUD system that enables them to watch, listen and participate as their avatar interacts with others. This project explores the potential for presentation

and practice of language learning material in virtual worlds through use of game-play and social interaction to increase students' motivation.

Track: Invited Speakers

327: Gutenberg to Spielberg

Author(s): Gord Holden

The writings of Marco Polo played a role in supplanting the western tradition of learning through questioning and debate with the "text-based" memorization pedagogy of the orient. While the invention of the printing press greatly enriched the availability of ideas and thoughts, it also added voluminous amounts of information to be processed as part of a standard education. Now, Kindles and their kin make the sharing of digitized text more efficient, contributing to an overwhelming overload of facts. The resulting textual gridlock may in fact be making personalized learning an oxymoron, as students have increasingly less time and opportunity to internalize anything other than what others have written about what THEY think. What to do? The movie "Avatar" posits that a deeper more profound learning can be gained by experiencing issues first hand. (What a concept.) My hope for this session is to demonstrate that while a picture may say "a thousand words," a unit of learning built and/or experienced in a contextually authentic virtual setting that is a shared interactive environment may in fact say "millions of words." This is not science fiction, but part of the "engagification of education" that needs to take place, and how my students love to learn. I will look forward to showing you both what they have built and the experiential learning environments they participate in. Immersive Technology 4 Learning
<http://immersivetechnology4learning.ning.com/>

336: Representing Latino Cultural Heritage in the Age of the Social Web

Author(s): Melissa Carrillo

The Smithsonian Latino Virtual Museum (LVM) is a cross-platform immersive education initiative based on bilingual mixed media experiences created to enhance visitor's knowledge, understanding and appreciation of Latino Cultural Heritage through innovative and engaging online experiences. Learn more about LVM as a virtual museum model for digital learning and outreach through a brief behind the scenes discussion with Melissa Carrillo, LVM creative director and founder. Ms. Carrillo will be joined by research scholar from the Smithsonian National Museum of American Indian (NMAI) Cynthia Vidaurre and LVM lead artist Stacy Fox to share behind the scenes best practices curating in virtual spaces and the power of virtual worlds as learning spaces. Other special guests include artist/poet/musician Nancy Lorenza Green and writer poet/founder of Mouthfeel Press Maria Miranda Maloney.

Join Smithsonian staff for guided tours of LVM SL immediately following this session.

368: The Hypergrid is Ready for You Now

Author(s): Maria Korolov

Last year, the title of my talk was "Our Hypergrid Future." Today, I will talk about the fact that the hypergrid is now the present. With better-than-ever stability, security, and easy and widespread use of Vivox voice, OpenSim is now ready for real use. Hosting providers like Kately and Dreamland Metaverse, and OpenSim distributions like the New World Studio and Sim-on-a-Stick, are making it cheaper than ever and easier than ever to get your own world up and running. Meanwhile, the number of grids connected by hypergrid teleport is now more than 70, including many educational destinations. It's not longer just for bleeding-edge pioneers -- its for anyone who wants to invite the world to their virtual spaces.

338: Using Mobile Devices for Community and Team-Building in the Classroom

Author(s): Jackie Gerstein

This interactive, experiential BYOD (Bring Your Own Device) workshop has its foundation in two guiding principles: (1) Building a sense of community in the classroom helps address the whole learner including achievement and academic success, and (2) Mobile devices are extensions of young people. As such, they should be leveraged in the classroom. Young people are connecting with one another through technology in unprecedented ways. Computers, wi-fi networks, and smart phones allow young people 24/7 access to technology and to one another. Using smart devices in educational settings as learning and community building tools can promote interpersonal communication and encourage young people to positively express their individuality and build their student-to-student, student-to-educator relationships. The activities that will be presented and experienced during this workshop use the technology that young people use - cell phones, social networking sites, laptops, blogs, and digital cameras. These activities focus upon and build diversity and cultural sensitivity, teamwork and problem solving, self-reflection and self-exploration, and communication and self-expression (adapted from Wolfe & Sparkman, 2009). Through participation in this workshop, you can expect to:

- Understand the importance of building community in the class.
- Explore the research about the use of mobile devices by young people.
- Learn through experience at least six community-building activities that you can use with your students.

Develop ideas and strategies for integrating mobile-driven team building activities into your classroom environment. This workshop is divided into three parts: 1) Exploring research on the importance of building a classroom community and how young people are using their mobile devices. 2) Learning, playing, and experiencing team-building games using mobile devices - see <http://usergeneratededucation.wordpress.com/2011/08/22/team-and-communit...> for a list and descriptions of these activities. 3) Large group brainstorming through Wallwisher and discussion - how these ideas and activities can be integrated into one's own work environment.

334: Using Virtual Worlds as a Tool for Project-Based Learning

Author(s): Sharon Bowers

Peek inside two project-based programs within NIAUniverse: daVinci Worlds and the RealWorld-InWorld NASA Engineering Design Challenge (RWIW).

Within daVinci Worlds, middle and high school students team to synthesize and organize their learning by constructing knowledge spaces in this virtual world setting. In RWIW, college engineering students virtually mentor middle and high school students to refine NASA-inspired engineering design solutions. Steps of the engineering design process are displayed and models built InWorld. For those interested, a tour of NIAUniverse will follow this presentation. To join the tour, you will need to download NIAUniverse. Temporary usernames/passwords will be shared.

Please note: NIAUniverse is built within ActiveWorlds. This program is Windows-based.

Virginia Beach City Public Schools: <http://www.vbschools.com/>

RealWorld-InWorld NASA Engineering Design Challenge: <http://nasarealworldinworld.org/>

National Institute of Aerospace: <http://www.nianet.org/>

Track: K-12

211: Humane Education Exercises in SL

Author(s): Carl Icann

Humane Education has been conducted for decades in K-12 classrooms, teacher-training workshops, and now through distance education using Moodle. Adapting the techniques to live classrooms in virtual worlds presents interesting challenges. This session will share progress in adapting this curriculum to classes conducted as Second Life public events. Workshop attendees will engage in active learning exercises, after a brief introduction to techniques for teaching principles of human/animal ethics and ecology. The target audience is RL/SL teachers Grades 4+, adult educators, researchers, and parents. The facilitator of this session is not affiliated with Institute for Humane Education (IHE), but has completed IHE's "A Better World, A Meaningful Life" course. Internet resources on the topic will be shared, and an invitation to free follow-up workshops at Rockcliffe University in SL. Useful preparation: Please view the Humane Education introduction at <http://www.youtube.com/watch?v=t5HEV96dluY> Thank You.

197: Uru in the classroom

Author(s): William Schmachtenberg

ABSTRACT: Uru, written by Cyan Worlds, Inc. is a powerful twenty-first century program that can be used to make both minigames and more complex games for the classroom. I have used it in my high school classroom in Southwest Virginia to run multicultural lessons and virtual field trips. In this study, I analyze the ability of Uru to raise test scores on a state end-of-course test in Earth Science and a biochemistry unit test in Biology. Sixty-nine students were given the Virginia Earth Science test at the beginning of the year with no instruction. They were then split into two groups one that was allowed to use Uru for remediation, and the other could only study in a small group. They were then retested after thirty minutes. The college bound students showed about the same improvement with either using Uru or just studying in a small group. But the non-college bound class improved their scores on average fourteen points with Uru as compared to four points with studying in small groups. Some of the non-college bound students improved their scores by as much as thirty-two points. The Biology students also showed an improvement by as much as thirty-six points on the retest. Uru can be a useful tool in raising students grades in the classroom. It also has the potential to allow students to collaborate or compete with one another in other classrooms, schools, or even other countries.

290: Virtual Treasure Hunting: Teen Girl's Game-Making in OpenSim

Author(s): Christine Liao

Tech Savvy Girls was a summer camp for middle school aged minority girls aimed at empowering them with computer skills and facilitating their understanding of the collaborative nature of creating technology applications in the work place. OpenSim provided an opportunity for the girls to learn to work as a team and gain a basic understanding of game-making. They learned how to create objects and how to use "Scratch for OpenSim" and "Script Me" to create scripts which enabled their avatars to interact with their creations. They worked as a team to create their own treasure hunting game, which included designing the environment (island), creating a story for the game, and building a device with scripts that showed when they found hidden treasures. Each group saved their island as an OAR file so they could share their games with friends and use their personal "OpenSim on a stick" to play the game at home. This presentation will discuss the process and challenge of teaching game-making using OpenSim.

Track: Keynote Tour

337: Massively Minecraft Tour

Author(s): JoKay Wollongong

<http://massivelyminecraft.org/>

323: Universal Design for Learning in VW

Author(s): Blu Heron

It is impossible to create a virtual classroom which is usable by everyone, in all situations. It is possible to use a Universal Design in Learning (UDL) process that results in products, environments, and experiences that are usable for the largest group of people in a VW and effects differentiated teaching and differentiated learning. This session showcases key points from a professional learning "package" that bundles VW accessibility issues, key UDL principles, resources, and workshop-style activities for engaging educators in collaborative solutions in-world. Interactive vignettes at the UDL Playground will be open 24/7 during the conference.

331: WoW in School with Legacy Guild

Author(s): Peggy Sheehy

Tour - WoW in School with Legacy Guild Peggy Sheehy 6am - 730 am SLT Departure Area on Posters This tour is a World of Warcraft Field Trip With The WoW in School Project. This 90 minute session/tour starting at 6 am SLT on Friday March 16 is for educators who are new to WoW. Participants will receive tours with experienced WoW players - and did we mention students! Sisters of Elune Realm, United States Server. Registration for the field trip is required please email abacuscapalini@gmail.com Participants will be emailed with login and server information. This tour does require you to register for a free account and download an application that can take 2 hours or longer depending on the computer. You will also need to download Ventrilo at <http://www.ventrilo.com/> For more information on the projects please go to: WoW in School wiki <http://wowinschool.pbworks.com/Edurealms> blog on World of Warcraft in schools <http://edurealms.com/>

Track: Machinima

350: A Year in the Life

Author(s): Pooky Amsterdam

Video: <http://youtu.be/GgNcTxgCMLQ>

Directed by: Russell Boyd & Pooky Amsterdam

314: Avatar with a KinoEye

Author(s): Lori Landay

Video Link: http://www.youtube.com/watch?v=FI5_K7jFMVY

This machinima created in Second Life, with a scripted eye object that shows where the avatar L1 is looking, plays with Soviet silent filmmaker Dziga Vertov's concept of "kino eye," which he enthusiastically described in his writings in the 1920s and realized in his masterpiece film, Man with a Movie Camera.

364: Crumple's Pet Skunk

Author(s): Marianne Malmstrom

Video Link: <http://www.youtube.com/watch?v=llf1zfk4nmQ&feature=youtu.be>

357: Dia de los Muertos 3D experience in the Smithsonian Latino Virtual Museum (LVM)

Author(s): Melissa Carrillo

Video Link: <http://www.lvminteractive.org/VIDEO/DOD2011PROMO.mov>

Machinima Credits:

Executive Production Director

Melissa A. Carrillo, Smithsonian Latino Center

Executive Producer and Lead Artist

Stacey Fox, Courtesy of Reynardine Productions

Storyboard & Script Development

Melissa A. Carrillo, Smithsonian Latino Center

Stacey Fox, Courtesy of Reynardine Productions

Voice talent

Lila Downs, Mexican Singer/Songwriter; Courtesy of Lila Downs Management

332: EduMachinima Fest

Author(s): Machinima Mania

Machinima 4 Educators

<http://machinima4meremortals.wordpress.com/>

375: Field Trips to Nuclear Power Plants

Author(s): Ines Ores

Video Link:

<http://www.youtube.com/watch?v=d3Y058nlzUQ&context=C36bac01ADOEgsToPDskKKiKmYnAa-j75L6PLUODHM>

316: I Love Dancing @ Le Cactus

Author(s): Lori Landay

Video Link: <http://www.youtube.com/watch?v=iZwjZxh2fEQ&hd=1>

Le Cactus is a virtual art environment created by the artist Maya Paris in the virtual world Second Life in two locations, Virtual Montmartre, and SBCC (Santa Barbara City College). Music: "I Love Dancing," Josephine Baker, Odeon, 1927.

311: IceOpal: A Virtual Interpretation of Amy Lowell's "Opal"

Author(s): Lori Landay

Video Link: <http://www.youtube.com/watch?v=trFWvxvV-JQ&hd=1>

Amy Lowell's 1919 poem made into a virtual installation in a virtual world, made into a machinima video. The music was created with rjdj's reactive music app for iPhone, which turned my recording of icicles dripping into music. You can hear the water sounds at the end of the video.

Filmed in Second Life with Kirsten's Viewer, with shadows enabled. Virtual installation and machinima by L1Aura Loire/Lori Landay.

298: Machinima: 'Around the Campfire - Moon Theme'

Author(s): Jens Olsen

Video Link: <http://youtu.be/BwQSJKGHGMO>

'Around the Campfire - Moon Theme'

Once upon a time in an EVO sessions workshop in Second Life, folks gathered to warm themselves, toast marshmallows and share their thoughts and stories as the moon rose in the sky..... Our 5 weeks MachinEVO course for language teachers in Second Life - Our Machinima group project - a Cross Global project - Denmark - Germany - Finland - United States - made in in Second Life from 11th January - 12th February 2012. Jens Nerido (SL) and his group members Vicky Hollett, Almut Brunswick, Barbara Novelli, Nany and Julia - nominated for the MachinEVO 2012 Award BEST FILM for the artistic video production 'Around the Campfire - Moon Theme'

376: Massively Minecraft How To: Minecraft Skin by Ninabanina (age 11)

Author(s): JoKay Wollongong

Video Link: <http://www.youtube.com/watch?v=PDLaTODuj6Y>

378: Massively Minecraft: Check out what we made!

Author(s): JoKay Wollongong

Video Link: <http://www.youtube.com/watch?v=1YxsUepnnRg>

257: Maya Island: a Library Exhibit and Tour

Author(s): Valerie Hill

Video Link: <http://youtu.be/jnJiFhDPCzY>

This machinima shares an example of a virtual library exhibit and a live tour to an immersive learning experience called Maya Island. Librarians from the Texas Library Association Second Life Community Group collaborated with graduates from the University of Washington's Certificate in Virtual Worlds Class of 2011 to place the exhibit at the Community Virtual Library.

355: Mi Tierra/Mi Mundo; My Land/my World

Author(s): Melissa Carrillo

Video Link: <http://lvminteractive.org/VIDEO/MITIERRA.mov>

The Smithsonian Latino Virtual Museum's (LVM) concept teaser for Mi Tierra/Mi Mundo; My Land/my World, a 3D adventure quest in LVM Second Life, focused on 21st Century approaches to cultural and environmental education. Courtesy of the Smithsonian Latino Center.

Machinima Credits:

Executive Production Director

Melissa A. Carrillo, Smithsonian Latino Center

Executive Producer and Lead Artist

Stacey Fox, Courtesy of of Reynardine Productions

Storyboard & Script Development

Melissa A. Carrillo, Smithsonian Latino Center

Stacey Fox, Courtesy of of Reynardine Productions

Olga R.Alvarado, Smithsonian Latino Center, assistant editor

Voice talent

Emily Key, Smithsonian Latino Center

356: Mi Tierra/Mi Mundo; My Land/my World, a 3D adventure quest in Lvm Eco Explorers Adventure Quest Game in Unity 3D.

Author(s): Melissa Carrillo

Video Links:

Beta English version: http://www.lvminteractive.org/VIDEO/ECO_EXPLORER_WATERSHED.mov

Beta Spanish version: http://www.lvminteractive.org/VIDEO/ECO_EXPLORER_WATERSHED_SP.mov

Executive Production Director

Melissa A. Carrillo, Smithsonian Latino Center

Executive Producer and Lead Artist

Stacey Fox, Courtesy of of Reynardine Productions

Storyboard & Script Development

Melissa A. Carrillo, Smithsonian Latino Center

Stacey Fox, Courtesy of of Reynardine Productions

Olga R.Alvarado, Smithsonian Latino Center, assistant editor

Voice talent

Stacey Fox, Courtesy of of Reynardine Productions (English version)

Olga R.Alvarado, Smithsonian Latino Center (Spanish version and translations)

363: Minecraft - Community Part 3: Games

Author(s): Marianne Malmstrom

Video Link: <http://youtu.be/7YTbYP3kfBY>

365: Nimbus Racing Tutorial

Author(s): Marianne Malmstrom

Video Link: <http://www.youtube.com/watch?v=KHHT9sF72ml&feature=youtu.be>

256: Pic du Midi a Virtual Tour

Author(s): Revel Peters

Video Link: <http://www.youtube.com/watch?v=5X8AFBcmb-o&hd=1>

This video shows the uses of 3D media to create realistic reproductions of real world locations as well as provides students with a venue to show off their work. The creation is made on opensim software on a non profit grid known as New World Grid. This shows users how one community based in Europe is using this open sourced software to create not only educational material and classrooms, but deliver artistic and creative works in a 3D social media setting. It brings together people from all walks of life all over the world to work, discover and create. In this case the teacher is a high school teacher of science based in France who has created a virtual classroom as well as a place for students to show off their work. He chose to create with the group on this grid a reproduction of an observatory setting well known in france. The reproduction is detailed, realistic and extremely accurate

377: Project M.I.S.T - Minecraft in Schools, Transforming Education! by the Project Mist Team (age 14-15).

Author(s): JoKay Wollongong

Video Link: <http://www.youtube.com/watch?v=cykWfrwFYyo>

372: Sage Stories Part 1

Author(s): LuAnn Philipps

Video Link: <http://www.youtube.com/watch?v=ksM4zy5r2sw>

373: Sage Stories Part 2

Author(s): LuAnn Philipps

Video Link: <http://www.youtube.com/watch?v=oXP1xei3HFU>

374: Sage Stories Part 3

Author(s): LuAnn Philipps

Video Link: <http://www.youtube.com/watch?v=lyngSosSlzo&feature=related>

305: Second Life Student Projects for English Composition and Literature Courses at Florida State College at Jacksonville

Author(s): Rawlslyn Francis

Video Link: <http://youtu.be/C5ID3i0YpT4>

This video reviews a sample of virtual projects created by students from my English composition and literature courses at FSCJ. Students were tasked with creating visual, interactive displays of their research papers, which contained clickable images and videos. At the end of each term, students present their virtual project to the Second Life community.

265: Show Case

Author(s): Hsiao-Cheng Han

Video Link: <http://youtu.be/3BveIWCC4EI>

Students who have never used 3D software have a fear of high-end software such as 3Ds Max or Maya. I have found the building interface of SecondLife and Open Sim are similar to 3Ds Max but much easier to learn; therefore, I have used Second Life and Open Sim to conquer their fear of 3D software. Since I was not able to afford an island in Second Life and had no resource to build my own Open Sim, I use the Sim-on-Stick for teaching. It is almost free for the students and me, and the results are very rewarding. After students had visited Second Life and learned to build in Open Sim, I taught them how to use 3Ds Max, which has a small learning curve for them. Students also learned how to make sculpty to import objects from 3Ds Max to Open Sim. This semester, students have learned how to use Second Life/Open Sim, 3Ds Max, Goldwave, Camstudio, and Movie Maker. Their final project is a short machinima to introduce their Open Sim world. I asked them to upload their videos to YouTube and have an exhibition in Second Life. They were more motivated because their work can be seen by people from around the world. To use Second Life and Open Sim teaching 3D animation course helps students build their confidence and creates stronger motivation to learn higher end 3D software.

348: Testic Ovary Tour

Author(s): Doug Threebeard

Video Link: <http://www.youtube.com/watch?v=b4XjXC2DIs8>

275: The Pillars of UWA in SL

Author(s): Brad Curnow

Video Link: http://www.youtube.com/watch?v=5FDs6AIRBAQ&feature=youtube_gdata_player

A short promotional clip highlighting the key elements that underlie the presence of the University of Western Australia in Second Life.

269: The Storyboard: Conceptualizing Your Machinima Idea as a Storybook

Author(s): Phylis Johnson

By the time you put your idea on paper, conceptualizing it through your treatment, script and imagery (illustrations, photographs), you begin to realize you have the makings of a storybook, especially when you are dealing with machinima, or real-time animation. This presentation discusses the evolution of the storyboard into a storybook, as perhaps an off shoot of preproduction or as a complement to a machinima. Location, lighting, animations, and character creation are given particular attention, as well as the online and hard copy publication of the storybook, one that has the graphic richness of the recent classic, Toy

Story. It is a great way to add value to the storyline behind your machinima idea, as well as appreciate how photography provides the foundation for in-world filming. And you might realize that the storybook is actually the appropriate medium for your message, and that will ultimately save you time and resources.

The presentation discusses the process of making the storybook, creation to publication, and draws upon the storyboard as a framework.

<http://issuu.com/soniceproductions/docs/steampunkchristmas>

349: Time Travelers - Episode 4 : The Pattern

Author(s): Pooky Amsterdam

Video: <http://www.youtube.com/watch?v=SVSrbms>

Directed by Russell Boyd & Pooky Amsterdam

309: Transformation: Virtual Art on the Brink

Author(s): Lori Landay

Video Link: <http://www.youtube.com/watch?v=6mCrjkzzDJk&hd=>

The best virtual art is a new kind of new media, using the particular properties of the virtual world to make metaphors manifest. Virtual art can be seen as experimentation with what could become augmented reality, when the equipment for creating and experiencing it are more accessible to everyone.

Transformation A mixed reality film by Lori Landay/L1Aura Loire Machinima filmed at UWA Winthrop in Second Life Artworks: Swallowed Up by the Crowd, Fuschia Nightfire Digital Glove, Misprint Thursday The Matter of Ideas, Gleman Jun Here Comes the Sun, Sledge Roffo One and Four Timeboards, L1Aura Loire

Live footage filmed by Richard Cownie, Andrew Paonessa, Lori Landay Edited by Lori Landay Music generated by Lori Landay with Otomata

351: Understanding the Holocaust Project

Author(s): Andy Wheelock

Video Link: <http://quietube2.com/v.php/http://www.youtube.com/watch?v=ea4L3iVnTh8>

362: VWBPE "Saving the Universe"• In School

Author(s): Marianne Malmstrom

Video Link: <http://www.youtube.com/watch?v=8dK-kegjlns&feature=youtu.be>

352: Waking Up Part 1

Author(s): Natalina DeVinna

Video Link: <http://www.youtube.com/watch?v=QX6a7NcmbEI&feature=youtu.be>

Track: Posters

344: "VEJ - Savor Every Byte!"

Author(s): Roxie Neiro

Check out the latest edition of the Virtual Education Journal to see stories about the exciting educational activities that are happening in Second Life and other virtual worlds. Each issue is filled with pictures and articles from educational projects, social activities, interesting places to visit, and updates on ISTE's SIGVE work in virtual environments. Learn how you can submit articles and share your favorite pictures and moments from this 2012 VWBPE Conference in the next issue of VEJ!

299: A Multidimensional Info-Sensorium Holodeck: Emerging Analytics to Measure General Organization Evolution

Author(s): Alfred Sepulveda

The info-sensorium holodeck is an immersive 360-degree, multidimensional virtual reality environment in which an organization advocate can observe, control, and readjust trigger points leading to key performance indicators (KPIs) being changed in real time. This is accomplished via multidimensional, multi-sensorial shapes (morphs) suspended holographically that help one visualize the evolution of and causal relationships between KPIs within the organization. By contrast, traditional organization analytics are comprised of 2-D graphs, charts, and tables that display certain attributes of an organization such as profit margins and other indicators of performance. This environment will be known as the orgDECK™ in reference to the holodeck nature of its operation.

315: A Musical Odyssey

Author(s): Kate Miranda

When the musical crew sailed into virtual reality and began their epic journey from the safe port of Music Island, they did not know the journey, wonders and dangers that awaited them on an ongoing voyage of five years at sea. They have weathered attacks by giant cyclops griefers. They have been mired in the Sargoso sea of lagdom, been wooed by the sirens to jump ship and pass through magic portals to alternate grids, and ahead they see that they must pass through the clashing rocks of money and public apathy in order to reach their goal. Throughout their journey they have had to use cunning and innovation to weather challenges and avoid shipwreck. Using Homer's Epic Poem "The Odyssey" as a tongue-in-cheek framework, this poster will chronicle a journey of exploration, adventure and amazement. The main structure will be a ship that bears a resemblance to a musical instrument and stations that tell the story of different epic encounters faced by our heroic musical crew. Audio-visual content of selected concerts will be available to be played by visitors as well as hand-outs on the technology of streamed concerts.

302: Academic Avatars: A Virtual Student Club at Florida State College at Jacksonville

Author(s): Rawlslyn Francis

This year, I created a new student club at my college called "Academic Avatars" with the purpose of exposing students to the educational purposes of incorporating virtual activities, fieldtrips and building projects into their college courses. This virtual club is also geared at students who are unable to participate in traditional clubs on campus due to their busy work schedule and family life. Please stop by our area and meet the first cohort of students who are excited to be called academic avatars!

280: Afghanistan Virtual Museum

Author(s): Gwen Penner

The world has been exposed, through a host of media, to the events that have played out in Afghanistan over this past decade. The carnage of so many years of war has wreaked havoc on the country and it will take many generations to erase. Even with the number of images and the countless stories that have come out, there are aspects of the country and its people we don't hear about or absorb; things such as its history, its culture, the arts and its people. As such, the museum's mandate is to bring some of these aspects of history and culture to the residents of the virtual world in order to create awareness and to help educate on the country and the plight of its people. In particular the struggle of a group of women called the "Revolutionary Association of the Women of Afghanistan" (RAWA). The group was established in 1977 and is an independent political and social organization of "Afghan women fighting for human rights and for social justice in Afghanistan". The Afghanistan Museum has been providing a place for educators and researchers since it began. This poster presentation will provide a brief but immersive overview of the museum and of the culture of Afghanistan and the mission of the Revolutionary Association of the Women of Afghanistan.

274: Baseball in the Virtual World

Author(s): Tom Connors

This game, for any number of participants, simulates a home run derby. Each participant is provided with a bat, which they can attach to their body at whatever angle and location they find most preferable. Batters approach the plate when it is their turn, and click either the left or right side of the plate to assume a batter's pose. Once the avatar is in place, a countdown indicates the expulsion of a baseball from within the plate. The ball fires straight up, and if it is not hit, falls back into the plate. The user clicks on the ball to swing their bat and, hopefully, hit the ball. The ball tracks the distance it covers. Whoever hits the farthest wins the contest.

405: Basics of Cloud Computing

Author(s): Lyle Tompkins

Cloud Computing is the new paradigm in IT services and Second Life is the best way to offer the most accurate picture of what it means. Using a poster and a link to youtube.com playing on that poster in Second Life, we plan to show the major pieces of Cloud Computing including the Portal In (client to supplier), Virtualization, Redundancy, Security, Cost and Portal Out (supplier back to client) but more importantly show how Second Life can be used to educate on many different levels. The level of teaching anyone the basics of Cloud Computing is on a par with teaching Internet use, Information Technology or any other technical tools that one has to start with the basics and work their way up from there. In Second Life this was demonstrated by rooms represented by clouds with each station (room) exhibiting one of the major pieces of Cloud Computing in an entertaining manner. For example, the intent to demonstrate virtualization is a ghostly clear poster with the description spoken when touched through the use of videos created by the designers. Redundancy is shown by twin speakers who voice the meaning and use of redundancy in Cloud Computing. Cost would be displayed by a Banker who will describe the utility style pricing of all services in the Cloud.

284: Be Epic! Online and Virtual

Author(s): Kavon Zenovka; Kate Hagerty

This poster session will provide visitors a space where they can discuss potential collaboration ideas with FRCC Online and CCCOnline. Some upcoming projects are MMORPG exploration, Machinima, ARGs and our Annual Talk Like a Pirate Day in September. FRCC Online is the online department for Front Range Community College in Colorado. CCCOnline is also part of the Colorado Community College System and helps provide online instruction to 13 member colleges. CCCOnline is also currently looking for United States based adjunct instructors for our computer science, multimedia graphic design, and computer programming classes that feel comfortable using virtual worlds and bringing students into virtual

worlds and games. Both organizations are open to collaborating with other community college, universities, and educational institutions; so if you are interested in collaborating please let us know!

289: Center4EduPunx

Author(s): Kavon Zenovka

This poster session will highlight the special projects of the Center4EduPunx for 2012. This will include involvement in the EduMachinima Fest, organization of the Virtual Worlds UnSymposium, Massively Open Online and ARG projects, Digital Human Humanities Blogging and "Dear Tech Wench" - a new advice column with issues and questions that every educational technologist knows well.
www.center4edupunx.org

273: Cognitive Dissonance, Social Constructivism, and Play

Author(s): Kate Hagerty; Melody Collier; Kavon Zenovka

This poster session invites teachers to cohort playing sessions with alliance and horde guilds in World of Warcraft. The purpose of this project is to provide interested participants with the opportunity for organized exploration of the game. The focus of the play will be to develop a cohort of teacher-players to explore battlegrounds and arenas. These forums have been chosen because they allow rapid intense play for a short duration. This allows players to engage in rapid prototyping of strategies in a fast environment.

296: Design Studio Best Practices in Virtual Worlds Using Learning Modules Packaged in a Holodeck

Author(s): Karl Ostler

Prospect: By utilizing 3D space and the interactive collaboration tools found in virtual world environments such as Second Life, concepts can be presented in a manner that will engage and immerse the learner in a successful learning experience! Concept: This is a poster to capture the development of a design studio learning module packaged in a holodeck. This will include a design/build process for a Virtual Design Studio based on sound learning principles and which presents content in an informal fashion and packaged as a portable compact learning module. Key concepts and topics of the learning module are centered on Information Accountability and Web Privacy Strategies with focus on basic Copyright issues and Patent rights as they apply to Engineering Design students.

283: Developing A Tech Playground For Administrators: Virtual Worlds, World of Warcraft and Augmented Reality

Author(s): Kavon Zenovka; LeeDale Shepherd

This poster session will provide visitors with information about how Front Range Community College and CCCOnline administrators developed blended reality as part of a technology playground that featured Virtual Worlds, Augmented Reality and commercial off the shelf games. The purpose of this playground was to provide 6 hours of training and consultation to over 100 regional K-12 and community college Career Technical Education (CTE) administrators on how these technologies could be incorporated into their curriculum and faculty training.

358: Dia de los Muertos

Author(s): Melissa Carrillo

The Smithsonian Latino Center presents a Dia de los Muertos 3D experience in the Smithsonian Latino Virtual Museum (LVM) illustrating customs and beliefs varying from ancient Mesoamerica to those currently practiced in today's Latino culture. Join us...in celebrating and exploring Latino cultural heritage

through this holiday for honoring the dead and the cycle of life and death. Learn different aspects of Día de los Muertos and how it is celebrated and practiced.

234: Epic Educational Apps

Author(s): Marie Booz

Virginia Society for Technology in Education's VSTE Island in Second Life has been hosting collaborative meetings for educators to come together to share ideas every Monday night since November 2009. Each month one Monday night meeting is dedicated to sharing and discussing educational apps for mobile technology devices - their uses and effectiveness. In this VWBPE poster display, VSTE Island facilitators will interactively display some of the epic educational apps we have discussed at our VSTE Island meetings and include tips and tricks for best practices in using mobile devices in today's classrooms.

360: Experience Smithsonian Latino Art Collections in LVM's Art Island

Author(s): Melissa Carrillo

Experience Smithsonian Latino Art Collections in LVM's Art Island: in Second Life. Discover and Explore new ways of experiencing paintings, sculptures and photographs from inherently immersive, highly social learning spaces (virtual worlds). Take a tour with us to learn more about our approaches to experiential learning and paradigm shifts in representation and interpretation of cultural heritage in the age of the social web. Highlights include collections from the Smithsonian American Art Museum (SAAM)- Patsi Valdez's Magic Room and Smithsonian Archives of American Art- Photographs of Frida Kahlo and Diego Rivera. Get a free download of Gilbert 'Magu' Lujan's lowrider and ride around our placita (re-interpretation of Magu car sculpture by LVM 3D artist Stacy Fox, courtesy of Reynardine Productions).

343: Explore the 2012 Maya Island while you have time!

Author(s): Stylianos Mystakidis

UW Maya Island (<http://tinyurl.com/uwvw11>) is the graduates' final project of 2011 University of Washington's Virtual Worlds Certificate Class utilizing 3D instructional design techniques such as digital storytelling, context- and game-based learning.

361: House Builders Extraordinaire Contest!

Author(s): Marianne Malmstrom

5th grade students collaborate in building houses based on a 4 point challenge: 1-The Basics, 2- Design & Materials, 3- Furnishing & Decore, 4- Innovation. After viewing samples of real estate videos, each student was required to make a machinima under a minute to "sell" their house. We asked Massively Minecraft in Australia to be judge our contest.

401: Hypergrid Business

Author(s): Maria Korolov

Hypergrid Business

407: Improving Female Participation in STEM Curriculum with Virtual Worlds

Author(s): Johnathan Richter; Jim Bailey

Presenting results from a three (3) year \$450K National Science Foundation (NSF) grant funded project to Lane Community College using Second Life and other online media to develop computer science and

game development curriculum through focusing on Collaboration, Creativity, and Computing. This poster will highlight the curriculum and student activities that has led to modest improvements in female enrollment in CS introductory courses as well as gains in female participation in programming courses beyond the initial CS sequence, while increasing satisfaction in courses for high school and community college participants

406: ISTE SigVE

Author(s): Scott Merrick

ISTE SigVE

342: Jibe/Unity 3D School Quick Start

Author(s): David Deeds

Unity is a revolutionary FREE games/app development tool. Jibe is an affordable multiplayer project kit from ReactionGrid. Now your students can create their own single/multiplayer 3D games/apps, including Android and Apple with the appropriate license(s)! The e-book is FREE:
<http://www.scribd.com/doc/81798024/Jibe-Unity-School-Quick-Start-Guide> If you live in China, Scribd is blocked by The Great Firewall, so get it from SlideShare: <http://www.slideshare.net/davidwdeeds/jibeunity-school-quick-start-guide>

347: Jibe: A web-based virtual world platform by ReactionGrid

Author(s): John Lester

: Jibe allows you to design and manage your own virtual world that can be easily accessed via a web browser or mobile device. For more information please see <http://bit.ly/AboutJibe>

241: Learning Genetics by Breeding Ozimals Bunnies

Author(s): Stephen Gasior

For nonmajors biology students, one of the challenges of understanding biodiversity and evolution is to have a foundation in inheritance patterns and genetics. Mendelian genetics follows very simple rules that are relatively easy to know; however, being able to analyze a pedigree with the traits and deduce the inheritance pattern is separate challenge. Many times classes use reiterations of Mendel's peas or other simple human traits. The advantage of Ozimals bunnies is that they follow a Mendelian-like inheritance pattern than can conform to known examples, but also requires analysis to know when it is non-Mendelian. Also, they have 4 separate traits that allow to analysis in one organism. These, and other Second Life specific breedables, offer an opportunity for students to "take care" of an animal for pedigree analysis. This promotes more engagement for student learning. Students were given a male and female Ozimals bunny pair and ask to build a visible pedigree for 4 traits and then analyze the inheritance pattern. By requiring engagement and creation in combination, students can learn basic Mendelian genetics. Student are required to check-in on the health and happiness of their bunnies and are able to interact with them by petting.

346: Massively Minecraft

Author(s): JoKay Wollongong

Massively Minecraft is a Guild based learning community for kids aged 4-16 who are interested in developing digital media skills, exploring their creativity and developing online social skills using the video game Minecraft. Our guild is a social-enterprise, founded in mid 2011 for parents, teachers, schools and researchers as players in an open world to learn together, using game-theory and our experience of

developing process networks in virtual worlds. Visit us to find out more about games-based-learning-communities for kids and check out some of the 'awesum' things the Massively Minecrafters are building!

317: MOOC

Author(s): Kavon Zenovka

What is a MOOC? A MOOC is a Massively Online Open Course. Want to see one in action? A Virtual Worlds, Games and Education Tours starts directly after this conference and will run from March 19 – April 15, 2012. This is a post-conference synchronous and asynchronous event that will involve more discussion, discovery and exploration of the content from the conference. This poster session is hosted by the Center4EduPunx <http://center4edupunx.org/>

295: MOSES: An Open Source Educational Research Environment

Author(s): Cynthia Calongne

MOSES is a education grid that is designed to strengthen the capabilities of open source tools and to provide a free, stable, educational environment through open source software. The people who support MOSES come from all walks of life, including researchers, educators, software designers, simulation experts, military strategists, defense contractors, artists, content creators and emerging media technologists. MOSES is sponsored by the U.S. Army's Simulation and Training Technology Center. Review the progress to date and discover how you can get involved.

259: Muve Out of Your Box

Author(s): Lori Weedo; Lauren Thurman

This poster session will promote ideas for how to move into a virtual world with the support needed from administrators, teachers, and ultimately students. What are the steps to getting started? SLEEC Island (Second Life Educators of Escambia County) will provide examples of how it all started. Instructors will be able to envision the possibilities for having their own virtual campus.

425: New Dimensions for Virtual World Educators: The Vushi System

Author(s): Chris Gibson

New Dimensions for Virtual World Educators: The Vushi System

359: NMAI Selected Content and Research Focus: Ancient Peoples/Modern Migrations

Author(s): Melissa Carrillo

NMAI Selected Content and Research Focus: Ancient Peoples/Modern Migrations Topic of indigenous Latino immigration. This project is a collaborative effort between the National Museum of the American Indian (NMAI) and the Smithsonian Latino Center's the Latino Virtual Museum (LVM) in Second Life. The virtual installation in LVM SL re-interprets the project's curatorial body of work by exploring the activities of indigenous Guatemalan immigrants who are actively engaged in maintaining their indigenous and national identities through a variety of culture and identity renewing approaches while at the same time becoming U.S. Americans. The curatorial team in collaboration with the LVM team created an immersive 3D experience that gives the online visitor a glimpse into Maya U.S.A communities in Florida through interactive videos and oral histories contextualized in a simulated U.S Guatemalan neighborhood. Come Explore Identity and language maintenance by Guatemalan-Maya in South East Florida communities in Ancient Peoples/Modern Migrations.

214: Number Recognition in a Virtual World

Author(s): Rebecca Reiniger

ItOnlyTakes1 and Dream Realizations (#2 Poster Session VWBPE 2011) are combining forces in using virtual worlds to teach and broadcast their belief that number sense in individuals can be enhanced visually. Numbers have shape and color no matter what the container size (base). This, in turn, makes expressions and equations very easy to recognize. We can then derive algebraic equations from data alone and you can 'see' it. This is a journey from pre-Kindergarten through science, technology, engineering, and mathematics (STEM). Our scripted posters will allow viewers to input data individually and recognize number patterns in an interactive environment. This ability will establish a basic number sense and is just plain fun!

312: Open Simulator Tools & Methods for Interpretive Aids in Virtual World Arts Presentation

Author(s): Tonietta Walters

This poster presentation will illustrate some of the Open Simulator tools and resources used for NoumenArt Center for Applied Aesthetics - an interdisciplinary initiative that uses art-making processes and aesthetic theory as ground for the investigation and documentation of certain altered states of consciousness within the creative process. The approach of making art as an attempt to document and delineate the 'structure' in the phenomenology of creating necessitates ensuring both reliability and efficiency in information processing. The ineffable nature of certain portions of art practice inevitably affects judgments of the phenomenal qualities of the processes and experiences involved. The work of art itself as a visual cue should engender vivid recall of the experience – eliciting perceptual (colour, line and form), contextual (placement and movement of the parts of the body) and affective (emotional quality) information associated with the experience. It is assumed that memory representations contain certain characteristics that reflect the conditions under which they were acquired (e.g. perceptual, contextual or affective information) and that judgments are made by evaluating the amount and nature of these characteristics. Documentation of the artwork (and corresponding verbal representations) within an immersive virtual environment facilitates maintenance of the initial expression without the expected deterioration of typical memory function in combination with other non-digital storage & retrieval methods.

225: Popularization and Outreach of Science in the Italian Second Life Community

Author(s): Calliope Lexington

Second Physics, founded by Talete Flanagan, is an Italian no-profit group for the popularisation and outreach of science in Second Life. Since 2009 Second Physics has been carrying out the projects: "Scienza on the Road", "Cafè della Scienza", "Scien&Art", "Second Campus" and "Doppio Cerchio", activities that have strongly contributed to the popularisation of science, physics in particular, among the Italian community in SL. Some of these projects are realized in collaboration with other SL groups engaged in the cultural aspects of the metaverses. The participation of Second Physics at VWBPE12 will be aimed at illustrating those activities and the results obtained in terms of participation and fidelization, and will be based on items built for this specific Conference. 1 – A Poster Exhibit, with objects and movies to illustrate the communicative techniques, the target we address to and the specific popularisation and/or educational aims of the single projects; - the collaborative and organizational structure; - the language choice, the organization of the time of the lectures and the relevance of the interaction with the audience; - the activity of communication and the promotion of the events, the making of our blog, the writing of articles to be published in the related magazines, the migration to other languages, the fidelization of the participants to the events; - the partnerships in SL, with the presentation of the activities of the group SL Physics Lab, founded by Otaner Merlin (English and Portuguese); - the partnerships in RL. 2 - An offer of six guided tours of our Poster Exhibit, two in Italian, two in English, two in Portuguese, in a time suitable to all the continents. As a gift to visitors to of the Second Physics stand we will distributed freely the bi-lingual books of several lectures delivered in the 2011 edition of Scienza on the Road.

313: Privacy Poetry Poster

Author(s): Jason Murray

Peer into the future to the year 2020. Virtual worlds gained substantial growth and acceptance. Users create real life profiles along with their residual self images. Information accountability in addition to privacy poses important questions to the future of the Internet and virtual worlds. How will information accountability and privacy appear in 2020? Leveraging Norman (2007), Halal (2008), and Pearce's (2009) works, the Privacy Poetry Poster will illustrate an epic expression of privacy and information accountability as it may appear in 2020. Through current influence and control of Internet and virtual worlds by existing entities, Goldsmith and Wu (2008), Vaidhyanathan (2011), and Wu (2011) offer insight on the transformation of privacy and information accountability that will occur in the future. In addition, Landy (2008) provides legal advice on the changes arising in futuristic occurrences of virtual worlds and the Internet. The Privacy Poetry Poster showcases the information accountability and privacy epic of the future within virtual worlds and the Internet.

201: Rockcliffe University Consortium

Author(s): Kevin Feenan

Rockcliffe University Consortium is an online non-profit organization dedicated to the advancement of education and science in 3D virtual environments. Our classrooms are virtual leveraging the best of both web 2.0 and 3d experiences. Free workshops and forums are provided on a regular basis as is live music, theatre, movies, a 3d art gallery, and a full academic research library.

240: Running a journal club in Second Life

Author(s): Sheila Webber; Marshall Dozier

This exhibit aims to provide insight into the practicalities and motivations concerned with running a journal club (JC) in Second Life (SL) on Infolit iSchool island. The JC has a focus on research in Information Literacy and Information Behaviour. Since September 2010 we have held regular (usually monthly) meetings. A JC typically involves a discussion leader proposing a published research paper which is subsequently critiqued at the JC meeting. JCs are particularly valued in the health sector (see Deenadayalan et al., 2008) and also used in other disciplines and professions (e.g. Young and Vilelle, 2011). Traditional journal club meetings take place face to face, but virtual journal clubs have also formed, including ones using Twitter. The authors, who run the SL JC, plan to investigate the motivations of club participants through a case study, drawing on chatlogs, snapshots, field notes, focus groups, interviews and a questionnaire. So far initial documentation has been gathered and a pilot focus group carried out. The VWBPE exhibit will include: posters depicting the process of the Infolit iSchool journal club (how papers are chosen, session management etc.); web-linked panels to the previous JC papers; pictures and machinima of the JC room; and a poster on the process and outcome of the pilot interview. Interactive elements will include a short survey and a notecard box for sharing experience. An example JC meeting will be scheduled during the exhibition, with participation at a limit to be set by the organisers.

199: Senior Project® Center at P4DL, Inc.

Author(s): Kathleen Norris

Our Poster exhibit will provide visitors with information and resources to help them understand and implement this award-winning program for high school seniors.

244: Tech Stewarding in Second Life - An Example in the Educational Technology Community

Author(s): Amber Judge

Tech stewarding is the process through which a community of practice is guided from their current state towards a more ideal state via the tailoring and implementation of a technological tool that addresses the specific and personal needs of the community. This poster will illustrate the process, results and recommendations following the tech stewarding project conducted in Second Life entitled "The Education and Technology in Virtual Worlds Event Calendar Project". Along with the poster, a copy of the developed tool will be made available for all.

400: The sky is no longer the limit!

Author(s): Roc Furse

Using Second Life as a platform for education provides great advantages over traditional methods. Educators are limited only by their imagination. Ride the "Epic Fall" and enjoy a spectacular view!

404: The SLAM system: learning languages through your avatar

Author(s): Darren Green

This project explores the potential for presentation and practice of language learning material in virtual worlds through use of game-play and social interaction to increase students' motivation.

403: Undersea Observatory for OpenSim

Author(s): Justin Reeves

Turn your students into deep sea explorers! The Undersea Observatory is a lab located at the bottom of the ocean complete with observation rooms, a classroom, and student-created exhibits about marine life. Students pilot a submarine to reach the facility, put on a deep sea diving suit, and explore the ocean depths. This sim is designed to be a discovery-based, constructionist learning experience, as students participate in scavenger hunts to document the marine wildlife, and contribute their own creations back into the sim for the benefit of future learners.

402: Universal Design in Learning (UDL)

Author(s): Blu Heron

Information is available for VW accessibility issues, key UDL principles, resources, and workshop-style activities for engaging educators in collaborative solutions in-world. Interactive vignettes at the UDL Playground will be open 24/7 during VWBPE 2012.

200: Virtual Pioneer Poster Session

Author(s): Andrew Wheelock

The Virtual Pioneers are a group of educators that are committed to exploring virtual environments for understanding history and culture. We meet twice monthly to explore virtual environments, discuss current trends, or have presentations. We would like to present to the conference our free resources and ways to connect with our group. Since the theme is Epic, we will highlight various simulations that highlight Epic time periods or events in history.

Track: Speaker Tours

345: Active Worlds: Tour of NIAUniverse

Author(s): Sharon Bowers

To join the tour, you will need to download NIAUniverse. Temporary usernames/passwords will be shared. Please note: NIAUniverse is built within ActiveWorlds. This program is Windows-based.

Track: Theoretical & Research Papers

203: Advanced Technology Education: A Case for Uses of Virtual Reality in Teaching Human Services

Author(s): Scott Anstadt; Ashley Burnette; Shannon Bradley

Due to the unique applications of virtual reality in many modern contexts, Second Life (SL) offers inimitable opportunities for research and exploration. Current research in SL has examined the influence of real world social influences in online interactions and what the effects on users may be. This suggests the importance of developing an understanding of the relationship between users' real life and their Second Life, and how the two are related. Some research has begun to reveal the effectiveness of telecommunication and computer simulation in education, especially related to social work, human services, social sciences, various forms of counseling, and the justice system. The implications for the use of virtual reality applications in several fields of human services education lend themselves to versatility and realism in the learning context and open up opportunities for more direct application of theory and practice made possible through the virtual reality medium. Key Words: Education, Virtual world, Second Life

249: Collaboration on Virtual Harmony: STEM Research on the Mars Geothermal, Nonlinear Game Design on Atlantis and Unity3D, and the Migration to MOSES

Author(s): Cynthia Calongne; Andrew Stricker

Virtual Harmony is a custom virtual environment that spans over 32 simulations to promote exploration and compelling learning experiences for education in Science, Technology, Engineering, and Mathematics (STEM) as well as the study of history, leadership, innovation and military tactics. This paper introduces the current game design activities on Virtual Harmony and in Unity3D, the collaborative activities on the Military Open Simulator Enterprise Strategy (MOSES) project and a research study that evaluated the use of model-based reasoning and somatic computing for evaluating alternatives in avatar morphology to enhance STEM learning experiences within a Mars Geothermal game simulation.

206: Collaborative Learning, Cognitive Processes, Telerobotic Communication and Japan Recovery in Virtual Spaces

Author(s): Michael Vallance; Stewart Martin

Virtual Collaborative Spaces is a joint research project by Future University Hakodate, Japan and Teesside University, UK. The research involves students located in Japan and UK collaborating in a virtual space in order to program LEGO robots to follow pre-determined circuits in the physical world. Since 2008 the communication has taken place in a virtual space and the programming has been implemented in the real world using LEGO robot 8527 and Mindstorms software. We employ a learner-centred design to our virtual space and the tools therein are developed based upon students' suggestions as they attempt to complete set tasks. Tasks of increasing complexity, measured by Interaction Effect and Task Effectiveness, are undertaken. Data is captured in the form of screen captures, video-taping, transcribing and coding communication, and post-task interviews. Our research analysis employs a motion chart to display the dynamic data associated with the cognitive processes observed from the data. Our current research is now attempting to program the physical LEGO robot to directly respond to movements of our virtual world LEGO robot. We are using an OpenSim environment supported by ReactionGrid Inc. For our connection with industry we are going to situate our virtual LEGO robot into a virtual model of the Fukushima nuclear power plant. As well as capturing data for analysis of cognitive

processes, we also aim to familiarize students and the public with the complexities of nuclear power; given that there is much confusion about the situation at present here in Japan.

218: Space Makes You Bitter: The evolution of sandbox culture in Second Life and EVE Online

Author(s): John McKnight

How did two multiuser sandboxes, created in the same year, evolve such radically different cultures as Second Life and EVE Online? Based on four years of ethnographic research in Second Life and extensive new work in EVE Online, this paper analyzes the interplay among designers, users, ideology and toolsets to examine emergent properties of cultural divergence. May be paired with a proposed tour of EVE Online, involving a meet&greet with passionate exemplars of the EVE culture.

Download: <http://vwmooc.files.wordpress.com/2012/03/eveonline-orientation-for-vwbpe.pdf>

207: The Impact of Integrating a Virtual World into a Federally Mandated Digital Citizenship and Cyber Safety Unit on Student Achievement, Higher Order Thinking Skills, and Test Motivation

Author(s): Amy Fox-Billig

The purpose of this quantitative action research study was to determine what, if any, impact integrating a virtual world into a federally mandated ninth grade cyber safety and digital citizenship unit had on student achievement, higher order thinking skills, and test motivation. The subjects included 102 ninth graders from a small, racially diverse suburban school district in the northeast United States, randomly placed into either the treatment or control groups. Outcomes were measured using academic content test scores provided with the curriculum, The Cornell Test for Critical Thinking, and a student opinion survey for test motivation developed by researchers at James Madison University. The findings from the study revealed there was no statistically significant difference in the means between the two groups of students on any of the measurement tools, indicating that integration of a virtual world into the curriculum was equally as effective as teaching the curriculum using traditional pedagogies and is a viable alternative. Possible explanations for this outcome are given as well as suggestions for future research.

VWBPE 2012 PAPER SUBMISSIONS

The Use of the Twenty-First Century Program *Uru* by Cyan Worlds, Inc. to Raise Test Scores in the Classroom: Report 1: College-Bound Earth Science and Special Education Biology Test Cases.

By Dr. William F. Schmachtenberg
Science Department, Franklin County High School,
700 Tanyard Road, Rocky Mount, VA 24151

Introduction

Computer games have long been considered a useful tool in improving classroom instruction. Renaud and Wagoner (2011) give a good summary of the use of computer games in the classroom from the early 1980s with titles such as Oregon Trail to modern day games such as Quest to Learn. Prensky (2005) argues that there are trivial or minigames that are easy to create and take less than an hour for students to complete. They motivate students and help quiz them on content. He also argues that there are complex games that are multiplayer, collaborative, challenging, and competitive. The complex game can be a historical simulator such as Age of Empires or games involving complex puzzles such as Myst and Riven. In 2005, Tim Rylands (See www.timrylands.com for more info) won the Becta ICT in Practice Award for his work the game Myst in an elementary school in the United Kingdom. Even though, Prensky argues that complex games should be multiplayer, surprisingly he does not include the online game Uru.

I have used Uru in my classroom for years as it contains all of the elements necessary to reinforce twenty-first century skill. Wilson(2009) defines twenty-first century skills as involving teamwork, problem solving, communication. Uru allows you to form teams with a contact or “buddy” list, it has complex puzzles some of which can only be solved in a 3D environment with teamwork, and there is highly filtered chat for online communication. Moul (Myst online, Uru Live) servers also allow voice chat if the avatars are in close proximity. For teachers who wish to have solutions to the problems in Uru there are numerous walkthroughs on the internet such as <http://www.fisicx.com/uru/walkthrough.htm>.

There are many reasons why Uru should be used in schools. Uru was released in 2003 and runs on older computers. However, on older machines, it may be necessary to install an inexpensive ATI or Nvidia card to run the graphics. However, in my opinion such an upgrade is worth it for the high quality graphics in Uru. The computers in the lab are a year old and have integrated Intel video cards in them, and run Uru with no problem. Uru has no adult content such as nudity, violence, profanity, or sexual behavior. Any game must be aligned with current school standards. When Uru first came out, the demo program that Cyan Worlds released had eight of the Virginia science standards already in the program such as rocks, volcanoes, plate tectonics, and caves. It is possible to add content from other curricula because Uru is very well documented on the internet with tutorials written by Andy Legate at: http://dusty.homeunix.net/wiki/Creating_Ages and at www.guildofwriters.org, and is well supported by the fan community.

Uru can be used to create minigames as well as more complex games. Marianne Hellberg, an elementary school teacher in Sweden, and I have been collaborating for the past two years. Together we have designed many programs called “ages” in Uru. Using Uru and Skype, we have done multicultural lessons in which our students get to meet each other. We have also done virtual field trips in Virginia and Sweden with the Dragon’s tooth and Kinnekulle ages. Dragon’s tooth is based on an actual mountain in Virginia and Kinnekulle is based on a quarry in Sweden. Our students can do virtual fossil collection trips and analyze data. Schmachtenberg (2008) published a formula for calculating the distance between plates in the past using fossil data. Those data were incorporated into an in-game book in the Wind River age in Uru. Students can use those data to solve a puzzle in Uru and reconstruct the distance between Germany and the United States for the Late Cretaceous. There is a similar puzzle in the latest version of

Dragon's tooth age. My current research interest is in seeing if Uru can raise grades and scores on standardized tests.

Franklin County High School is the school at which I have taught for the last twenty-four years. The school has 2300 students, with a diverse student body including special education, college bound students, and governor school students. Uru is widely supported by the administration, central office, and tech services. The Uru software I used is located on the UAM server in Canada, and client software for Uru is located in two computer labs on 50 computers at the high school. Since Uru is famous for its mazes, and my students and I have designed several. At each intersection, there is a question with each answer pointing to a different corridor in the maze. Correct answers quickly take the student through the maze, whereas incorrect answers take the students to deadends. The Department of Education has given us permission to include actual release test questions in Biology, Earth Science, Algebra I and II, and History and so the questions in Uru are tightly aligned with the Virginia state standards. At this time there are nine teachers and hundreds of students who are willing to take part in a study to see if Uru can raise test scores. There are also students who help design the mazes and enter question into Uru. The questions are formatted into 512x512 png files using Gimp software and Paint, and then UV mapped onto posters in the intersections of the corridors in the Uru mazes. Students use the free program Blender, but I also have a license for 3ds max version 7 and the Cyan plugin to create educational content in Uru.

Scenario 1: College Bound Earth Science Classes

During the school year of 2011 to 2012, The five weakest students in my college bound class were given a test on energy. They were then put into an Uru maze with the same questions, and then retested. The average scores increased from 69 F to an 86 B. Keith Pennington, the Director of Secondary Education for Franklin County Public Schools encouraged me to increase the size of the study and use a control group to see how much Uru can increase test scores. During the summer of 2011, I entered 50 release test questions from the 2004 end-of-course Earth Science test. All of my freshmen then took the test at the beginning of the year with no traditional instruction. Half of each freshmen class was taken to the lab and allowed to use Uru with the same questions in the maze for 30 minutes. From the other half of the class, two of the highest performing students were selected, designated as student teachers, and given an answer key. They were given 30 minutes to review with the other students in the group on their own. All freshmen were then given the release test again with the following results:

The Period 2 class consisted of 23 students. As the graph below shows the Uru group increased their score on the release test by 9 percentage points as opposed to an increase of only 3 for those that were allowed to study in groups lead by a student teacher using traditional means (trad group). Uru clearly helped these student increase their test scores on a state test in science.

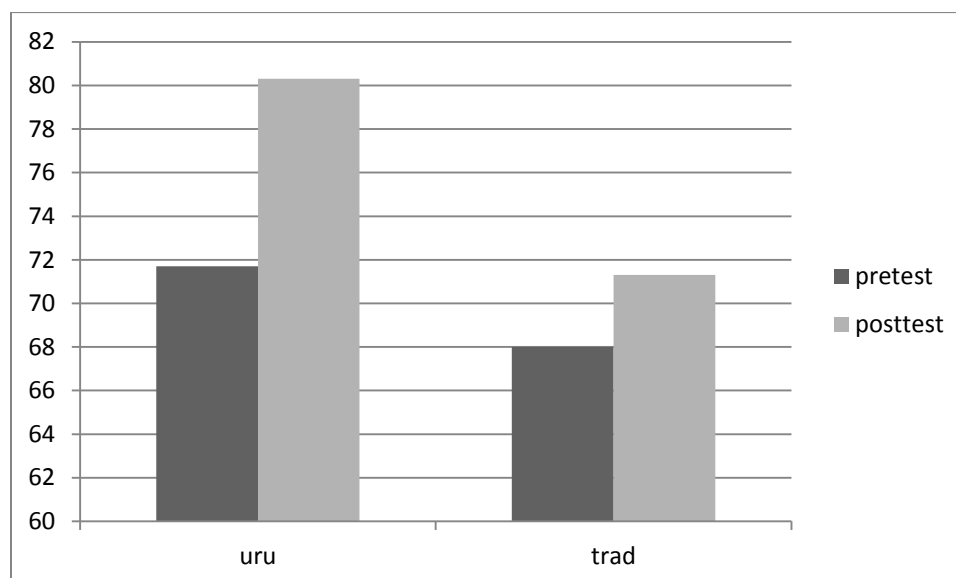
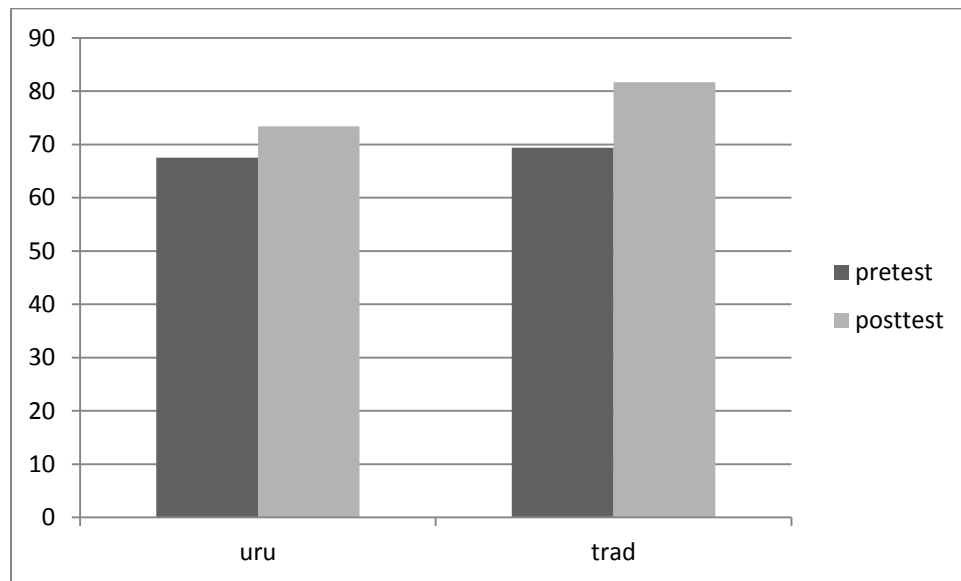


Figure 1. Bar graph of test scores for students in my second period
Test on the 2004 release test in Earth Science.

There was a different result for the Period 3 Earth Science students. The trad group of students that had just studied the answer key improved their average on the post-test by 12 percentage points whereas the Uru group increased their scores by an average of 6 percentage points as shown on the graph below. Twenty-six students are in the third period Earth Science class.



Bar graph showing improvement of scores for the third period class.

The fourth period class contained 20 students. The Uru group showed the greatest increase of all the classes by improving their scores by an average of 14 percentage points as compared to the trad group that only increased by four percentage points (See bar graph below). In addition, one of the students in the uru group increased his score by 32 percentage points. All of the students in the Uru group achieved a passing score on this state test, whereas only 7 in the trad group passed after studying.

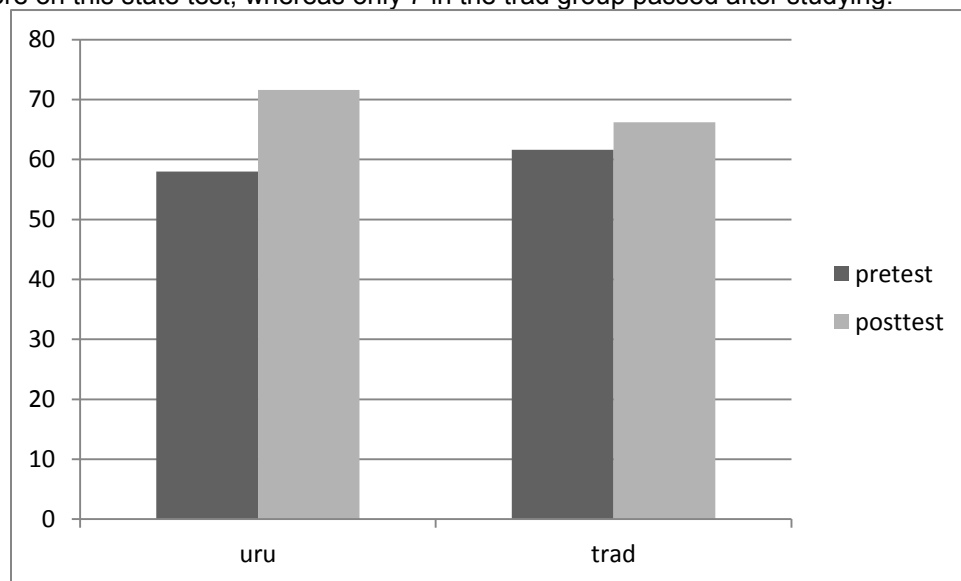


Figure 3. Graph of student scores in the fourth period class.

After the post-tests, students were given a survey about Uru. Ninety-six percent of the students in the second and third period classes would rather use Uru for test review than small group work. Eighty percent of students in the fourth period said they preferred using Uru for test review. Some of the students commented that they liked the online competitions in reviewing the questions. Some found that if they hit a dead end in a maze they realized they had picked the wrong answer. I think it also helped for review that there were only two to three choices in the maze, whereas the paper tests had four answers.

Scenario 2: Special Education Biology Classes

After the initial study with the Earth Science classes, Dorian Albano and Stacie Thurman, two Biology teachers asked if their classes consisting of predominantly special education inclusion students could participate in an attempt to raise test scores. The teachers had just given a test in biochemistry after teaching them the information, and the majority of the students failed. The initial test contained 46 questions. The Biology teachers made a new test on the same material consisting of 25 questions that were put into an Uru maze. The post-test also consisted of those 25 questions.

The first period class of Biology students showed the most increase between the pre- and post- tests increasing their scores by 10 points. There were 17 students in the class, and 12 improved their scores, one by as much as 31 points. The third period has 16 students in it. The overall grade average dropped by one point, however six students showed an increase with one student increasing the score by 36 points. After the post-test, Stacie Thurman felt the students were more interested in just racing through the maze without keeping the correct answers in their head. The fourth class of students had 18 students in it. They too showed a drop of one point in the class average overall, but 7 of the 18 students showed an increase in their test scores with one student increasing by 22 points. The last class was the most negative to the software. One student was found not actively participating in Uru. One student felt that newer games that he played at home were much better than Uru, and he did not actively use the software.

Conclusion

Uru is a popular game among students at my school and can be an effective tool to raise test scores in the classroom. It, like other programs available to teachers, does not help all students. As Wilson(2009) notes, well-motivated students as in my third period Earth Science class do well with or without games, whereas students with a negative attitude are not likely to be helped by educational games such as some of the students in the fourth period biology class. The real potential value of Uru is that it allows students to collaborate online to solve problems or engage in competitions with students in other classrooms, schools, or even other countries. John Vehmeier, the Network Engineer for our school system, has told me that we have not had any security or bandwidth issues with using Uru since we have started using it, and he welcomes other schools to join us.

Ten teachers in our school, including history and science teachers, have expressed an interest in using Uru in their classes so far. Virginia will also be changing its standards next year to be much more rigorous, and I am currently developing Uru puzzles to help meet the needs of these new standards. I plan to release additional reports as more teachers use Uru. If you have questions about the research that is being done at Franklin County High School with Uru or if you are a teacher and would like a free trial Uru account, please email me at: wschmachtenberg@hotmail.com. All the work that is being done with Uru, is conducted with a FCAL (Fan created age license) issued by Cyan World, Inc. This work is also being done in collaboration with Idoodlesoftware, Inc. which has the legal right to distribute Cyan's software to schools. For more information, about using Uru in your school, contact Robert Sowah at www.idoodlesoftware.com.

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Advanced Technology Education: A Case for Uses of Virtual Reality in Teaching Human Services

Dr. Scott Anstadt
Assistant Professor
Florida Gulf Coast University

Ashley Burnette
Florida Gulf Coast University

Shannon Bradley
Florida Gulf Coast University

Abstract

Due to the unique applications of virtual reality in many modern contexts, Second Life (SL) offers inimitable opportunities for research and exploration. Current research in SL has examined the influence of real world social influences in online interactions and what the effects on users may be. This suggests the importance of developing an understanding of the relationship between users' real life and their Second Life, and how the two are related. Some research has begun to reveal the effectiveness of telecommunication and computer simulation in education, especially related to social work, human services, social sciences, various forms of counseling, and the justice system. The implications for the use of virtual reality applications in several fields of human services education lend themselves to versatility and realism in the learning context and open up opportunities for more direct application of theory and practice made possible through the virtual reality medium.

Key Words: Education, Virtual world, Second Life

Introduction

Humans as social beings have been inventing ways to improve communication for hundreds of years; from letters to the telephone, from pagers to the cell phone, from email to video conference, and in the last ten years communication technology has taken a giant leap from the internet to computer simulation and virtual reality. The online virtual worlds of Massively Multi-User Role Play Games (MMO-RPG's) are a new wave of interaction and offer to the discerning user a complete immersion in the social experience that transcends distance, language, and often even the cultural mores of any given society. Users can plug in anywhere and immediately begin interacting, playing, creating and chatting with other users without regard to their geographic location or even their physical appearance. Time has no meaning in these virtual worlds, and the imagination is the limit as players learn the unique language and culture of this online universe. MMO-RPG's, or just RPG's as they are known by veteran players, can range from high-resolution action packed gaming, like World of Warcraft, to intricately stylized virtual landscapes where users can gather for social networking, such as Free Realm and Second Life (Wood, 2009).

Recently educators have begun seeking to enhance learning through these multi-dimensional simulations which integrate several levels of sensory experience into the classroom environment. At present, the virtual realm Second Life (SL) is one RPG being exploited for educational and other applications (Nesson & Nesson, 2008; Rockinson-Szapkiw & Walker, 2009; Vernon, et al., 2009). The virtual world also offers a potential solution to barriers to education, including distance learning limitations, subject comprehension and practice, and supervision. However, the vast expanse of the "metaverse" (internet universe of virtual reality) is still in its infancy compared to traditional approaches to education, and further research is needed to determine the variations between the virtual and traditional classroom experience and educational techniques used therein, as well as students' expectations of participation in virtual world-

based education. This could expand educators' understanding of how to structure the curriculum of a virtual classroom to target effective learning, and attract and retain students in virtual realms like Second Life. One question that remains unanswered asks what the relationship is between users' approach to learning in their virtual lives versus their approach to learning in their real lives. For instance, while there are some parallels between the two approaches, social norms evident in virtual education diverge from those norms and mores inherent in the traditional classroom. Researchers in the field of virtual communications have questioned just how strong the influence of social mores, norms and laws are in internet-based virtual realities like Second Life, and what role accepted institutions such as education play in online interaction and learning (Boelstorff, 2008; Eastwick & Gardner, 2009; Parti, 2008). These constructs may also vary depending on the type of technology application used. Understanding, or at least uncovering, evidence of how these deviations affect education in virtual worlds will determine the potential for using SL as an increasingly effective educational tool.

Second Life (SL) was created by Linden Labs in 2003 as an online 3D virtual world where people can create "Avatars" to interact within the environment and with other avatars (or "avs" as they are frequently known) for social contact, education, romance, industry, and hundreds of other reasons. Second Life is unique in that residents can create and change the virtual landscape by building houses or structures, buying land and adapting their environment to suit their individual needs and desires (McIntosh, 2008). Individuals create avs as virtual representations of their real physical self, and though sometimes these are not accurate representations of their true appearance, the avs serve to navigate the virtual simulators ("SIMS") in place of their human creators. Unlike in real life (RL), SL avatars can transcend the physical boundaries of mere mortals and take the form of humans, animals, computers, mythical creatures, or hybrids of any of these, known as "furries" (Bell, 2010).

Perhaps because there are no real social limits imposed upon the users of SL, it has become a hub of interaction for nearly 15 million users worldwide (Gottschalk, 2010). Of those users, there are hundreds of groups who participate in anything from gender-bending avatars, artist guilds, and university students to vampire cults and warring factions of mystical elves. In the presence of the ever-expanding world of virtual reality and computer mediated interaction, it seems as though there is a place for everyone. Education communities especially have begun taking their place within SL and several universities, including Oxbridge, San Jose State, University of Hawaii, and Bradley University to name just a few, have established their presence. However, it is important to remember that, as with all forms of technological advancement, there is a considerable learning curve for users. In the years since its inception, SL has seen numerous upgrades which have made it easier to use, but new users must still navigate sometimes unfamiliar, and impossibly vast, territory. Many SL groups include tutorials for new users on their SIMS and SL itself has an "Island" dedicated to an orientation of the virtual world (cite). This is one consideration that professionals, including educators and students of human services, who are looking to make an entrance into this new medium, must be aware of.

Existing research about virtual educational practices identifies using multimedia Web 2.0 technologies to provide synchronous and asynchronous virtual education through the use of Course Management Systems (CMS) such as Blackboard and Angel Learning, Podcasting, Wikis and Webcasts, Collaborative Conferencing Systems (CCS) including Adobe Acrobat Connect, and Multi-User Virtual Environments (MUEs) like Second Life (Rockinson-Szapkiw & Walker, 2009). Various techniques for using SL in human services education, especially with regards to the Social Work EPAS, have also been explored and continue to be supported as viable and effective approaches to learning (Vernon, et. al, 2009). Therefore, it will become increasingly more important that educators understand what affects students' expectations of virtual reality-based education and how they experience learning comprehension, satisfaction, and benefits. Expanding the base of knowledge on how users experience SL, and what relationships exist between real-life expectations of SL experiences, could bring educational resources to a vast population of current and potential students.

A further review of the literature leads to exploration of correlations between the real lives of users and their lives "inworld" (being actively signed in to Second Life), which might suggest the presence of significant real-life influences on the way individuals experience virtual world environments, social groups and activities. Other questions suggest the associations between what initially brings users to SL, what

they do once they are there, and how or why this changes over time. Additionally, a look at the unique structure of virtual reality experience, and how to interpret differences between virtual education and traditional education, should be anticipated in the future. With this information, research in education can further expand on relevant knowledge about virtual worlds. From there educators can begin to explore and predict what role education has in the virtual realm, and whether it could be effectively executed. For example, several universities who have a presence in SL have begun to implement human services education which emphasizes experiential learning for generalist social workers, counselors, and licensed professionals. Students have access to a virtual environment which mimics a scenario that they are likely to encounter in real-world human services delivery, such as a child protection or hospice social work home visit, and role-play an appropriate interaction (Vernon, et. al, 2009). In this way, educators can observe student competencies in a way that is not as feasible or affordable in traditional education (the two-way mirror scenario) and students can develop their knowledge of and approach to social service delivery in a safe environment for both student and future clients.

Other groups that meet in SL, and even those individuals who have not yet discovered this online resource, could benefit from related venues, including educational support systems. With Second Life, there is unlimited potential to access a huge network of educational resources, just by logging on to a computer. Using online virtual communication, educators can contact a larger population of individuals and more diverse groups which may have been out reach a decade earlier. And because online meetings can take place at anytime from anywhere, there is a better opportunity for educators to bring necessary materials, novel experiences, and more comprehensive learning opportunities to their students. The most exciting aspect about this futuristic form of education is, with Second Life, everybody is a potential student. This medium has the potential to change the face of education for teachers, professors, and administrators, whether in the physical or the virtual classroom, which could enhance how universities advertise to future students, retain distance learners, and attract attention through highly effective and ground-breaking advancement in education—an often lucrative motivation.

Technology and Human Services Education

The potential for telecommunication as a method for human services delivery, including medical, mental health, and social work practice and intervention, has been a topic of research since before many of the modern RPG's were launched to the masses. McCarty and Clancy (2002) discuss the potential for "telehealth" technology in social work, asserting that care in mental health was the first telecommunication application used in social work. Internet-based teleconference and videoconference have been established methods of effective communication and treatment for patients of psychiatrists, mental health professionals, and social workers. Uses of online counseling in social work and other human services effectively solve service delivery barriers of distance and time, and function as a way of recording client-worker interactions electronically, and enhancing personal empowerment of the client (because the physical interaction has been removed, leaving only the verbal, and not face-to-face, communication). However, some disadvantages require advanced problem-solving, including confidentiality, informed consent, and liability issues, as well as the lack of non-verbal communication which many practitioners believe to be an integral part of the client-worker relationship (McCarty & Clancy, 2002). The availability of virtual application in human services makes it possible for students to learn the benefits, and explore how to outweigh the barriers, of redesigning a health delivery system, which could eventually lead to students' advanced understanding of efficient real world interventions. Virtual education for these students means learning how to reduce the agency costs for drive time, continuing education, and supervision.

At the university level, the focus on enhanced educational practices for undergraduate and graduate students in human services, such as social work and mental health counseling, encourages the use of Web 2.0 technology, including Second Life, to enhance students' ability to learn skills through voice- and chat-based communication, role play, and graphic environment simulation (Rockinson-Szapkiw & Walker, 2009). These tools allow students to access information through a variety of sense experiences, and enrich the potential for new materials to be learned, practiced, and mastered. Past attempts at using older text-based e-learning technologies for education in human services has been difficult, as educators rely heavily on the interactive, interpersonal modalities for teaching students (Rockinson-Szapkiw & Walker, 2009). Using SL as a platform for the classroom means that class is held synchronously for students to

experience the sense of being inside a university classroom in the presence of other students and teacher with visual and auditory effects. Teachers can deliver lectures, answer questions, and build student interactive role-plays into their class. By using voice and chat tools, and designing the graphic environment to simulate specific sense experiences, teachers can provide support and feedback to their students while enhancing students' practice skills (Rockinson-Szapkiw & Walker, 2009).

However, educators are counseled to be realistic about the number of technologies integrated into the classroom. Virtual education platforms used within the course may require smaller class sizes, more technical support, additional time allotted for planning a course syllabus, collaboration with other educators and resources, and flexibility with limitations of technology and students' learning curve (Rockinson-Szapkiw & Walker, 2009). For example, this approach will likely require educators to build in time to train students in virtual platforms. While several informal teaching platforms are available through university Sims like Caledon-Oxbridge, based out of England, and Linden Labs, based out of California, it may become increasingly necessary for educators to offer courses designed to promote virtual mobility and competency. If human service programs are to utilize courses that take place on the virtual platform some responsibility on the part of educators must encompass built-in training modules for students taking the course, or even a unique course dedicated to virtual skill-building.

The process of understanding additional applications and limitations for using virtual worlds such as Second Life in education for human services, specifically social work and mental health counseling, is necessary, as educators anticipate the growth of virtual education which seems to loom on the rapidly advancing technological horizon. Vernon, et al. (2009) assert the opportunities for multi-faceted teaching strategies which virtual realms offer and discuss some of the limitations which could detract from their efficacy. Structuring learning modules for course objectives into the virtual education curriculum can allow educators to enhance and measure students' competence for the subject matter in a multi-dimensional and more comprehensive manner than classroom education affords. For instance, in social work, student ability is measured through competencies known as the Educational Policy and Accreditation Standards (EPAS), which guide social work education and practice. Social Work education can be directly applied in unique and engaging ways to help students master the competencies of social work practice. Social Work EPAS policies, such as identifying and according oneself as a professional social worker, understanding and engaging diversity in practice, researching and exemplifying research-based practice, and responding to contexts that shape practice, can all be targeted using the virtual platform (Vernon, et al., 2009).

With students participating as flexible, interchangeable Avatars, they are able to explore surroundings, meet individuals and groups, and participate in activities, all while retaining the unique experience of appearing different to others and engaging with them in a new way. Students then build upon their learning experience by bringing their new understanding of themselves back to the virtual class for discussion. Students can access special populations such as minority groups and individuals with disabilities, and they can participate in Sim activities to expand knowledge of mental illness and client perception. Students are afforded the opportunity to grasp concepts through learning techniques not available in the face-to-face classroom.

Though SL adaptations allow for exponential improvement in learning and experiencing for human services students, educators are encouraged to examine and address limitations inherent in virtual approaches. First, the difficulty of attaining and retaining the high-speed internet access necessary to engage with the online world is something that educators must be sensitive to, as students can often become frustrated with, or excluded from, online interactions. Other challenges users face include mastering navigation through Sims, communication with other Avatars and groups, and technologies within SL. The predominant social components of SL can also sometimes act as barriers to reciprocal engagement with the platform, for instance "griefing" and harassment of students' avatars by other precocious or avaricious Avatars, can often detract from the students' experience and attendance in course assignments (Vernon, et al., 2009). Ability of students to locate meeting places and access resources in SL is also a limitation that educators must consider and it is helpful to problem-shoot and offer training courses for students before instituting virtual courses.

Though some of the drawbacks to initiating virtual education into human services courses may seem to outweigh the potential payoff, several university programs have successfully piloted virtual education courses and even developed elaborate organizations within SL to enhance and expand the delivery of educational services. A social work professor from a state university in the southeastern US has implemented a unique Sim modeled after the actual physical university campus, which includes a social services building in which social work students make use of several rooms dedicated to simulating real-life therapeutic client interactions (C. T., personal communication, 24 August 2011). The rooms, which range from a hospital room, a client home environment, and a children's playroom, are equipped with a two-way mirror through which student practice interventions can be observed, graded, and feedback provided by the professor. Students taking Social Work Practice courses at the university are required to participate in this virtual medium as part of their course objectives and several of these students have continued their involvement within Second Life after the course has ended (C. Tandy, personal communication, 24 August 2011). At present, research continues to determine whether online virtual reality realms are an effective way of implementing widespread education practices like the ones employed by Valdosta State University.

Previous research on the impact of computer simulation and virtual reality consider other types of technology-based programs that have been proven effective in educational settings. Smokowski & Hartung (2003) analyzed research on computer simulation games and virtual reality interaction in school social work programs for adolescents and determined that there was a significant improvement in social, behavioral, and problem-solving skills among the participants. Computer simulation and virtual reality-based interventions, used as a supplement to interpersonal interaction in small groups of adolescents, was an effective tool for school social workers to help the students reach their goals, despite certain barriers, such as access to this technology. Implementing virtual education and social services in schools as a viable application of this technology will require additional research on correlations with age, population, and skill-set (Smokowski & Hartung, 2003). Students of Education at the university level may also benefit from this knowledge, as they will enter the field at a perfect time to implement these ground-breaking techniques.

If virtual reality communication interfaces can be implemented and have a significant effect on the outcome of interventions in settings such as school social work, the potential for applications of other educational settings using online metaverses like SL could be great. The challenge in determining the potential effectiveness of this new generation of education is in understanding what social and cultural factors impact the way education is constructed and implemented in SL. For education to be successful on the virtual platform, the similarities and differences in students' learning styles and opportunities to learn using the SL media must be compared to real life learning styles and established patterns. Student participation in the virtual learning environment can be predicted and enhanced along with a greater knowledge of the necessary construction, or deconstruction, of social norms guiding classroom behavior and acceptance.

Nesson and Nesson (2008) encourage the use of Web 2.0 technology as an educational platform and caution educators not to minimize the differences between physical reality and virtual reality, but to use those differences to their advantage. In many ways the social norms of the traditional classroom and of the virtual classroom mirror each other. Students are acclimated to being present in a physical room, understand how to behave, when to sit and talk, and how to interact. Second Life allows for the same visual stimuli which replicate this normalized experience and organize the virtual classroom (Nesson & Nesson, 2008). This social norm therefore translates quite appropriately into the virtual. However, other social norms do not as easily make this transition and can result in bulky and dysfunctional Sims and educational models. Educational approaches in SL need to take into account which social norms teachers intend to trigger, and which to avoid. Nesson and Nesson (2008) give the example of virtual restaurants, the purpose of which is to create a neutral physical space where idle conversation and interpersonal communication is the primary function, in comparison to shopping centers, which have had to necessarily redesign the visual space with pictures of clothes rather than the clothing racks that have no functional purpose in the virtual world. In this example, restaurants translate across the technological divide, but clothing racks are an outdated, cumbersome real-world construct that must be abandoned for newer, lighter social norm construction in the virtual.

It is important for educators to constantly focus on the function of a virtual space or educational technique. Approaches to education which encourage students to use the tools and applications of Second Life, such as holding regular courses in SL for students, and utilizing both the forms of traditional communication as well as newer forms present in SL, can make the difference between an effective online classroom and one that frustrates students and teachers alike. Facets of the virtual realm Second Life, including the ability to fluidly change the appearance of one's Avatar and to communicate at the same time with several levels of communication, can become tools that educators use to create new learning experiences. However, some social norms, such as "speaking out of turn" and following the thread of only one conversation in class, rather than several threads at a time which often happens with text chat, must be un-learned if students are to become comfortable with virtual classroom interactions (Nesson & Nesson, 2008). Again, educators are encouraged to pay special attention to the needs of their students; how much training they will need to become competent and mobile within SL, the encouragement necessary to work through the initial learning process, and focusing on which social norms to trigger and which are better left to the traditional classroom. Understanding how these factors affect students' acceptance of this technology makes the difference between an ineffective tool and one that enhances and exemplifies learning in the human services.

Students can easily become discouraged and distracted in the online media. Learning to communicate with several people at the same time, as well as learning how to navigate and control their Avatar, can interfere with the learning process. Several universities have created learning courses for students to learn the basics of navigating their Avatar, while others offer free courses on changing Avatar appearance and communicating with other Avatars. It can also be challenging learning to adjust viewer settings, change voice controls and recover from glitches or "lag" (delay caused by bottlenecked broadband). These factors can deter students from accessing the virtual classroom and participating in educational activities taking place in and around SL. Studies on user acceptance of technology identify ways to increase how willing users are to engage in the virtual realm, including Voice-Over Internet Protocol technology, which allows users to hold conversations in voice synchronously with their other communications in Second Life (Fetscherin & Lattemann, 2008).

Once educators assist their students through the process of acclimating and adjusting to the virtual platform a new world of learning can begin. Imagine being able to send students out on an experiential exercise to study the architecture of the Eiffel Tower or the culture of Paris. In a traditional classroom, social norms dictate that students might look up pictures of the structure or perhaps see a video clip. In the virtual classroom, learning is not restricted in this way, and once students learn to locate locations and teleport in SL, they can actually travel to a Sim with a replica of the Eiffel Tower. Students can go up the elevator, stand underneath the structure, or even fly above it for a bird's eye view. Students can then take their experience back to the rest of the class for discussion, or even teleport the entire class to the Sim to see the Eiffel Tower for themselves. For this type of multi-dimensional learning, educators would have to fly their students to Paris, and expensive and improbably venture. Then, once students master being able to edit their Avatar, they can change their appearance, their ethnicity, or even their species, to experience how others perceive and react to them and how their interactions with others might change. Learning is not limited to the assignment, but can extend as far as student self-exploration and competence with a variety of technological mediums for communication and practice. Students using SL for supervision purposes can communicate with supervisors from anywhere with an equally effective interaction as students use Avatar, text, voice, and Sim to augment the process.

Real Life and Virtual World Influences

Much of the body of research emerging on virtual education encourages educators to get excited about the potential of using Second Life to enhance their courses. The real-life social influences in virtual worlds and the characteristics of the virtual realm culture are a dynamic component of this form of education. Studies on the emerging world of RPGs and computer-mediated communication have centered on how real life (RL) social influences play a role in SL interactions, behaviors, and even the unique culture, language and etiquette rules present inworld. Eastwick and Gardner (2009) identify the presence of real

world social norms within the virtual world by testing compliance techniques in conjunction with the hypothesis that racial prejudices would affect the behavior of the avatar-participants (presumed to be their real-life human creators) and data support this hypothesis. The presence of real world social influences, as supported by Nesson and Nesson (2008), can diversify and enhance the learning environment when activated appropriately in the virtual classroom.

With the likelihood that real social influences are present within the virtual world of SL, researchers can begin to explore how RL influences the creation of the SL experience and how this may be related to the real lives of SL users. Here it is important to remember that users can create an objective world within SL to match their subjective experience (McIntosh, 2008). However, there is some evidence that other social influences are absent within the virtual walls of Second Life and RPGs like it, which could have an impact on the implementation and effectiveness of education executed inworld. Parti (2008) explores how the relative freedom of expression and creation inworld can both enhance and degrade real-world social mores because, while virtual reality is a replica of reality, it is highly guided by imagination and illusion, and this lack of regulation could promote evolution of community mentality and moral attitude changes, which carried implications for the real-world legal system. Bell (2009) reminds us that there is a complete lack of government jurisdiction over virtual worlds as they, like the internet, are not a part of any country on Earth and, therefore, do not fall under the typical auspices of the law.

This information carries serious implications for education practice in RPGs such as Second Life as educators are often introducing their students to the virtual realm. The role of the educator in SL will need to be diverse and flexible, with educators acting as teachers as well as counselors and advocates for their students, and adapting guidelines for ethical practice with students and human services clients. For example, constructing social service role-plays in which the students can learn to recognize barriers to services could be used as projected simulations for real life challenges. When students experience the scenarios in a virtual environment they can develop competence and become more comfortable with real life situations. Educators can build into role plays various social, psychological, ethical and legal barriers to enhance student knowledge of factors contributing to their realm of practice, including but not limited to the lack of service delivery and information available to clients in real-world human services.

Another application of practice and experiential scenarios that can be constructed fairly easily in Second Life is exploring regional and in-group cultures which often have a presence inworld. Students in the physical classroom can study the complexity of minority experiences, however they often have no way of experiencing the thoughts and emotions of a person from a different culture or ethnicity first-hand. Education in human services seeks to illuminate the needs of the client in the social, cultural, and physical environment through expanding students' knowledge of individual, family, community, and cultural variations and considerations. Experiential activities constructed in virtual education could build upon the existence of community and regional groups within SL, and how members of those particular groups conduct themselves and define their social mores (Isabella, 2007). Additionally, the social context of the virtual world itself is a contributing factor, as the construction of society in Second Life is really its own entity and unique from that of the real-world cultures of any given society.

SL offers users the opportunity to select or construct avatars which represent these in-group or out-group individuals and role-play what this individual may experience in several social situations. It has been shown that users often establish a complex relationship with both the physical characteristics and behaviors of the avatars they adopt (Belisle & Bodur, 2010; Parti 2008). It is likely that there both is a blurring of and separation between the real lives of the user and their life on SL, and while users can have many avatars that look nothing like them, they communicate and experience in essentially the same way with all of their avatars (Gottschalk, 2010). Students using the virtual platform are afforded a unique opportunity to identify and explore their own inner reactions to scenarios based specifically on the appearance and behavior of their avatar, which could enhance their practice in the field. Examples of this include replicating the potential experience of an individual with a disability or someone from a different culture, helping the student to empathize with their real-life client. This application of human services education would be impossible to replicate in a traditional classroom where students are physically limited. Thus the possibility to expand learning practices reaches as far as students with disabilities and physical

limitations that may hinder their ability to experience traditional education as effectively as typical students, and may in fact, them an opportunity for an even playing field in which to develop competency.

Future research will be needed to investigate the efficacy of educational techniques such as those mentioned throughout exploration of virtual education practices. Based on his research, Gottschalk (2010) suggests gathering data focused on additional aspects of Second Life such as the progression of the “newborn” avatar and the changes experienced over the course of development inworld over time, as well as the vast potential for educating students inworld. It has been suggested that factors such as gender, age, race, residence, and physical appearance do not matter in Second Life as much as they matter in real life and instead it is important to gather information on “how [users] enact their identity, what their motivations are for participating in Second Life, what they typically do there, what they discover about themselves, a

Currently, most data collection methods of research conducted on virtual reality worlds employ the use of listservs that invite users to access a database or website outside of the context of Second Life in order to administer surveys or collect other quantitative data. The inherent limitation of this methodology is that user must exit the virtual realm. However, by collecting data from participants while they are still inworld, the integrity of the unique cultural experience of SL is simultaneously maintained while the data is being gathered, enabling the possibility that the answers participants provide will be more accurate and representative of their experience inworld. This methodology was introduced by Bell, et al. (2009) using the Virtual Assisted Self Interview administered via a tool called the Virtual Data Collection Interface (VDCI). VDCI was established as an effective tool for gathering representative information from SL users inworld (Bell, et al., 2009).

Discussion

Current research has developed a substantial base of understanding about many aspects of online virtual world use, including the cultural differences between Second Life and real life as well as the use of this technology for purposes such as marketing, anthropological research, and educational uses in online interactions (Bell et al., 2009; Eastwick & Gardner, 2009; McCarty & Clancy, 2002; Smokowski & Hartung, 2003). However, there is a gap in the current research regarding what motivates users to join in the online melee and how the real world and the online world interact with each other. This is mainly in regards to interpersonal communication and how individuals function (Gottschalk, 2010). Current research methods used inworld are improving the quality of the data collected and future advances in data collection can provide a more accurate representation of information. In order to advance and bridge barriers to education practice through the utilization of modern technology, there must first be an understanding of the nature of online worlds such as Second Life and their potential as a tool for education in the future.

Implications for Education in Human Services

The advent of Web 2.0 technology creates an opportunity for education in human services to access distance learning students and utilize advanced approaches to learning which enhance student comprehension, application of practice skills, and supervision. Applications of the virtual world Second Life can be used to target specific learning goals, such as the social work educational policies guiding education and practice (EPAS). Utilizing the tools present in SL, such as the Avatar, the voice- and chat-tool, and the complex and detailed virtual environments, students can experience learning activities in new ways, and are afforded the opportunity to learn not only about other cultures, groups, and practice skills, but also about themselves through self-exploration activities designed to build upon their experiences within their Avatar to enhance their understanding and practice of human services and social work.

Universities have begun to utilize the virtual platform to create practice scenarios for their students in rooms which use the “two-way mirror” for students to engage in role-plays while teachers observe and offer comments and criticisms. Educators who have experienced success with this approach to education

have focused on teaching their students how to use Second Life with competence, and have made teaching Sims, courses, and resources available to their students at the onset of the course. Additional considerations to transverse limitations of this technology include being realistic about the number of synchronous technologies used in the course, additional time allotted to develop and plan the course, smaller class sizes, offer technology support to students, and paying attention to the amount of time and effort needed to learn the platform for student and teacher. Educators are also encouraged to consider the social norms that play a role in the traditional education setting.

Students' experience of Second Life is impacted by their expectations of learning the technology, and expectations of learning the course material. Students are also influenced by the social norms that they have become accustomed to over years of traditional classroom education. Therefore, some norms can enhance the virtual classroom, while others can detract from it. Educators must be understanding of the challenge of adopting new norms for virtual education and abandoning old norms which students and teachers feel comfortable with, but which can interfere with the virtual learning process. It is important to understand what relationships exist between real and virtual social norms and mores, what brings students into the virtual realm and especially, what keeps them there. The structure of the course on the virtual platform is therefore very important because a good design can overcome students' reserves about using the technology and ensure that they take full advantage of it during the course.

Implications for distance learning, teaching individuals with disabilities, enhancing cultural understanding and practice skills among human services students, and advancing approaches to education are all components of virtual education using Second Life and other virtual realms. Universities can reach a broader base of students with more cost effective approaches. For example, non-traditional students who would previously had to commute to campus can now access courses from home, which is a selling point for many students working full time or those with families. Offering courses which aid students in acquiring skills in technological competency helps universities keep abreast of the quickly growing need for employees savvy in computer and virtual-based programs. These implications mean universities can reduce some of the costs incurred by traditional courses held at a physical location while attracting more revenue from students interested in comprehensive and effective distance learning practices offered by the university. The benefits of adapting to this new approach to education well outweigh the special considerations needed to make it successful.

Implications for Research

Some limitations exist in data collection in online virtual worlds, including concerns about maintaining participant confidentiality in a venue where computer hacking is somewhat prevalent (Bell et al., 2009; McCarty & Clancy, 2002). Also, research must remain ethical and therefore cognizant of the unique context of online virtual reality use. Additional considerations should be made toward users with developmental and physical disabilities.

Further limitations persist due to current technological advancements and constraints. Computer-based research can only extend as far as modern technology allows it to, and there is a lack of established efficacy of online data collection within Second Life itself. This is evident in interactions with both SL users as well as the educational communities in SL, especially in regards to the unique cultural aspects present inworld. Should inworld data collection be successful, this opens the doors for further and more pertinent research which is capable of maintaining the integrity of the unique socio-cultural atmosphere of Second Life.

Additional considerations must also be made for the future of research protocols. The policies and ethical requirements of most Internal Review Boards currently do not take into account the quickly advancing technology available for research, including online virtual worlds. Given the unique technical potential of SL, this puts the responsibility on the researcher to take pains to be as ethical as possible when conducting research. Avatars may not be humans, but the person controlling, and more importantly experiencing, the avatar most certainly is, and therefore is susceptible to all of the vulnerabilities of more

typical research subjects. The future of research in many fields, including education, business, and social work to name a few, also means a new future for IRB research protocols.

Integrating comparative data collection which compares other synchronous media used for teaching could examine whether the added realism provided by virtual environments promotes learning more efficiently. For example, Adobe Acrobat Connect utilizes direct communication in voice and webcam and in contrast, Second Life's interactive three-dimensional world allows users to virtually explore their surroundings. Understanding the impact of this advanced form of synchronous communication has on learning comprehension maximizes the progress educators can make toward future techniques and approaches.

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Collaborative Learning, Cognitive Processes, Telerobotic Communication and Japan Recovery in Virtual Spaces

Dr. Michael Vallance

Department of Media Architecture, Future University Hakodate, Hokkaido, Japan.

Email: mvallance@mac.com

Stewart Martin

Faculty of Education, University of Hull, Hull, UK

Email: stewart.martin@hull.ac.uk

Abstract

Virtual Collaborative Spaces is a joint research project by Future University Hakodate, Japan and Teesside University, UK. The research involves students located in Japan and UK collaborating in a virtual space in order to program LEGO robots to follow pre-determined circuits in the physical world. Since 2008 the communication has taken place in a virtual space and the programming has been implemented in the real world using LEGO robot 8527 and Mindstorms software. We employ a learner-centred design to our virtual space and the tools therein are developed based upon students' suggestions as they attempt to complete set tasks. Tasks of increasing complexity, measured by Interaction Effect and Task Effectiveness, are undertaken. Data is captured in the form of screen captures, video-taping, transcribing and coding communication, and post-task interviews. Our research analysis employs a motion chart to display the dynamic data associated with the cognitive processes observed from the data. Our current research is now attempting to program the physical LEGO robot to directly respond to movements of our virtual world LEGO robot. We are using an OpenSim environment supported by ReactionGrid Inc. For our connection with industry, we are going to situate our virtual LEGO robot into a virtual model of the Fukushima nuclear power plant. As well as capturing data for analysis of cognitive processes, we also aim to familiarize students and the public with the complexities of nuclear power; given that there is much confusion about the situation at present here in Japan. The paper will summarise the research, highlight the metrics used for robot tasks and students' cognition, explain a unique method for collecting data, and share ideas on the next iteration which will be a virtual nuclear power plant.

Introduction

The focus of this paper is on augmentation. Augment is a transitive verb which is defined as meaning to make greater, as in size, quantity, strength, and to enlarge. Engelbart uses this term to emphasize the role of technology in a human context; technology is to be designed to increase human capabilities, to extend them in imagined and unimagined ways, to change the basic character of communities, and to make these more effective. The components of an augmented system are the bundle of all things that can be added to what a human is genetically endowed with, the purpose of which is to augment these basic human capabilities in order to maximize the capabilities that a human organization can apply to the problems and goals of human society. Augmentation systems have always existed; they have often been developed unconsciously. Throughout history, augmentation systems have emerged as a result of continuing socio-cultural capability (Ambron & Hooper, 1988).

To enable an augmented education scenario, research in the 'informed use' (Towndrow & Vallance, 2004) of technology for educational purposes highlights the need to go beyond the replication of traditional, didactic practices to an appropriation of digital communication (Warschauer, 1999) facilitated by a constructivist pedagogy (Jonassen & Land, 2000) to support purposeful tasks (Martin & Vallance, 2008). The subsequent convergence of instructivism, constructionism, and social and collaborative learning towards a cohesive 'Conversational Framework' (Laurillard, 2002) will then provide opportunities for learners to take "a more active role in learning and for tutors to support learning activities in multimodal

ways” (deFreitas & Griffiths, 2008, p.17). Learning is thus considered to be a “process whereby knowledge is created through the transformation of experience” (Kolb, 1984, p.41). deFreitas and Neumann (2009) suggest that the appeal, immersivity, and immediacy of virtual worlds can support this ‘experiential learning’ but education requires a re-consideration of how, what, when, and where we learn. deFreitas and Neumann (2009) use Dewey’s (1934) concept of inquiry (pre-reflection, reflection, and post-reflection) to posit that learners’ virtual experiences, their use of multiple media, the transactions and activities between peers, and the facilitation of learner control between them will lead to ‘transactional learning’ which “aims to support deeper reflection upon the practices of learning and teaching” (deFreitas and Neumann, 2009; 346) which arguably leads to “wider opportunities for experiential learning” (ibid). As deFreitas (2008) asserts, “In order to achieve this next step two related aspects are required: the first is developing better metrics for evaluating virtual world learning experiences, and the second is developing better techniques for creating virtual learning experiences (e.g. frameworks, approaches and models)” (p.11). Therefore, there needs to be a move from the commonly seen replication of existing practice towards the exploitation of the unique pedagogical affordances offered by emerging technologies (Cuban, 1992). In other words, virtual worlds must create a synthetic experience that “support learning by augmenting, replacing, creating or managing a learner’s actual experience with the world” (Cannon-Bowers & Bowers, 2008; p.318). Therefore, synthetic learning environments such as virtual worlds need to combine the key elements of learning theories and technologies.

Research Method

In order to determine the effectiveness of a learner centered design process and associated learning, an instrument to measure success (or otherwise) is required. For over forty years Bloom has provided a valid and reliable taxonomy that has allowed educators to visualize teaching objectives and perceived learning together with the associated notation, categorization and assessment of aims (Bloom, 1956; Anderson, Krathwohl, Airasian, Cruickshank, Mayer, Pintrich, Rath, & Wittrock, 2001). In Bloom’s taxonomy, a range of learning objectives are presented as cognitive functions that enable cognitive learning, that is, “... recall or recognition of knowledge and the development of intellectual abilities and skills” (Bloom, 1956, p.7). The six categories associated with the cognitive processes identified in Anderson et al’s revised taxonomy are remember, understand, apply, analyze, evaluate and create. (Anderson et al, 2001). Supporting the cognitive processes are four general types of knowledge that include factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge (ibid). A strength of this neo-Bloomian taxonomy is that it provides a visualization of a relationship between both cognitive processes and knowledge; see Table 1. Bloom’s revised taxonomy grid. It allows researchers and practitioners to sort out complexities and identify gaps where none may have been previously acknowledged. Bloom’s taxonomy has been widely adopted and extensively cited as a useful way of framing what happens in a potential learning situation.

Cognitive Process	Knowledge			
	Factual - knowledge of discrete, isolated, content elements	Conceptual - knowledge of more complex, organised forms such as classifications, generalizations, theories, models and structures	Procedural - knowledge of how to do something	Meta-cognitive - knowledge about cognition in general as well as awareness of and knowledge about one’s own cognition
Remember - retrieve relevant information from long-term memory				
Understand - construct meaning from instructional				

messages, including oral, written, and graphic communication				
Apply - carry out or use a procedure in a given situation				
Analyze - break material into constituent parts and determine how parts relate to one another and to an overall structure or purpose				
Evaluate - make judgments based on criteria and standards				
Create - put elements together to form a coherent or functional whole, reorganize elements into a new structure				

Table 1. Bloom's revised taxonomy grid.

The research project was conceived to facilitate an exploration of this by studying the communicative exchanges between, and within, teams during problem solving tasks. Closed and highly defined tasks seemed most likely to provide the necessary comparability and empirical data to determine the success of task completion. To satisfy this criteria, the programming of a robot to navigate mazes of varying complexity was adopted.

In order to quantify each task complexity, the programming of the LEGO robot required a determination of an action and a vector. Adopting Barker and Anson's criteria the first important variable of task difficulty in this context was defined as the minimum number of discrete maneuvers required to successfully navigate a given maze. For example, a maze requiring five distinct maneuvers such as a forward move, a left turn, a forward move, a right turn and then a final forward move, was defined as a maze of complexity level five. Successfully navigating this maze would be no different in level of intrinsic difficulty to navigating a maze requiring a right turn, a forward move, a right turn, a forward move and then a left turn. Mazes with differing levels of intrinsic difficulty could therefore be provided for participants to facilitate true comparisons of like with like and to act as the problem specification dependent variable (Vallance, Martin, Wiz & van Schaik, 2010).

The metrics proposed for assessing the experiment adopted Olsen and Goodrich's (2003) criteria of Task Effectiveness (TE), Interaction Effort (IE), frequency of course navigation, and time requirement for successful course completion. Communication between groups was carried out using synchronous interactive virtual technologies and all communication was digitally captured, transcribed and analyzed using the approach described in Vallance et al. (ibid). The quantitative data set (i.e. Task Effectiveness (TE) - the number of commands successfully programmed into the robot, and Interaction Effort (IE) - the amount of time required to interact with the robot) were merged with personalized 'meaning' of data collected via a qualitative data set; i.e. the follow up interviews and digital capture of participants on task. Combining both quantitative and qualitative data sets reduces bias (Brown, 1992).

Implementation

The robot selected for the programming tasks was LEGO robot 8527 supported by the LEGO Mindstorms NXT software version 1.1. LEGO robot 8527 was adopted due to its simplicity and potential for sensors to be added as the learner centered design and research task framework developed (Vallance, Martin, Wiz, & van Schaik, 2009). The design of a virtual learning space by participating students enabled individual avatars to place and move blocks on a virtual floor. These blocks were graphical representations of the NXT Mindstorms software blocks required to build the program required to navigate the LEGO robot. On the sides (named Options Walls by the students) of the second level of the virtual structure were images of the NXT configuration panels. These were displayed so that students could point and focus on specific configurations that needed to be inputted in order to program specifically detailed operations of the robots. In summary, the use of NXT program blocks as manipulative, interactive images was included on the horizontal floor of the learning space while NXT block variables were represented as vertical images. During the implementation the avatars would meet on the second level and together reconstruct their NXT program. The avatars used both voice and text to communicate, made reference to the Options Wall by pointing and zooming in to specific configuration panels, constructed new NXT objects (using the 'Shift and drag' computer operation), and moved the NXT objects to construct the program required to upload to the LEGO robot.

Once this virtual learning space had been built, sixteen (16) tasks were implemented: the initial seven (7) were utilized for practice; data was collected from the remaining nine (9). Each iteratively more difficult task aimed to challenge students to communicate a construction process leading to a successful outcome; that is, program a LEGO robot to follow a specified circuit of movements and turns. Communication between participants (in this case, N=8) was supported by the virtual world chat facility and the behavior of participants' avatars in the environment. Each team had to design the maze of an identical robot on the floor of their laboratory using adhesive tape. Next, one team's task was to act as 'learners' and create a robot program (using the MindStorms software) to follow the maze that the other (teaching) team had designed. The learning team used the information provided in an attempt to solve the robot programming problem. The teaching team used their robot to run the program on the taped maze to establish its success, and were encouraged to offer feedback via the Second Life environment to the learning team when the robot executed an incorrect maneuver and in answer to questions from the learning team (Vallance & Martin, 2011).



Figure 1. Avatars constructing a program in virtual world

Over 60 hours of video of participants communicating in the real world was recorded. This data was transcribed and analyzed using Transana and TAMS Analyzer software. Screen captures of all actions in the virtual world were also recorded and aligned to the real world video data recordings. The coding for the analysis was, as mentioned previously, the cognitive processes and knowledge dimension of Bloom's taxonomy.

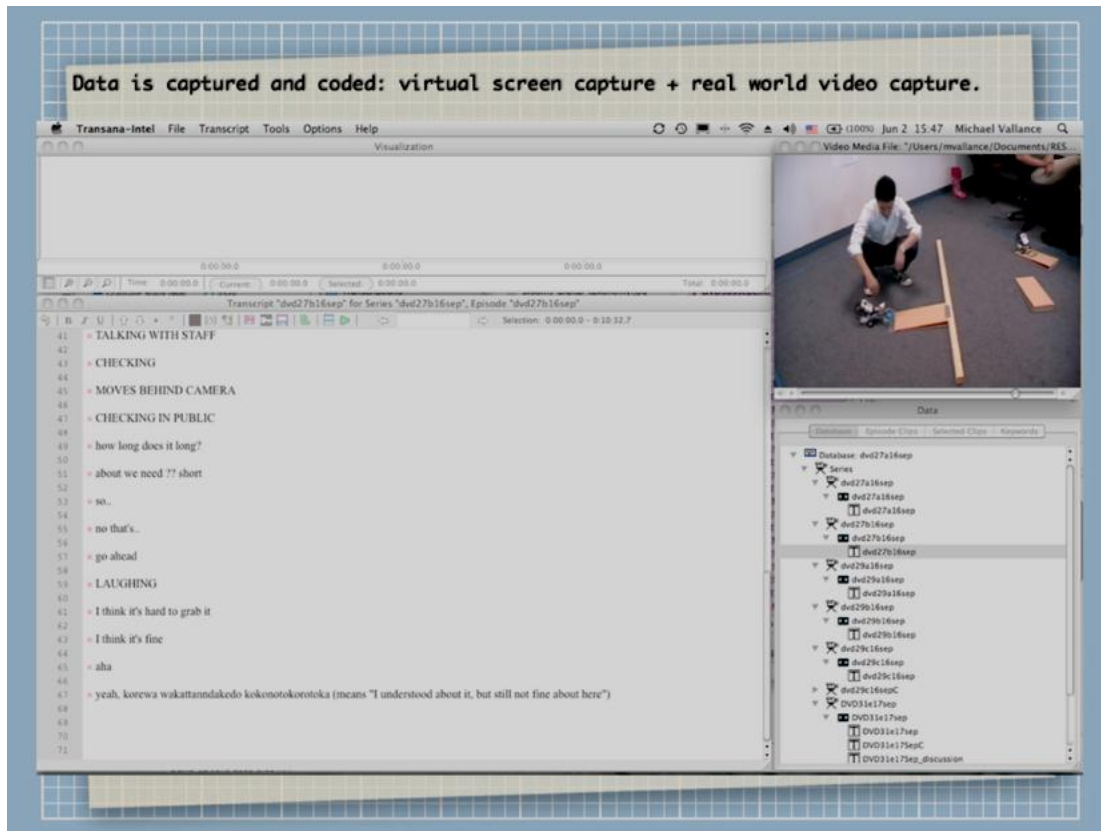


Figure 2. Data is digitally captured in real world

Initial indications from our data suggest that the nature and defined difficulty of learning tasks can be used to create metrics for designing and evaluating learning scenarios in immersive virtual environments that can be articulated within Bloom's revised taxonomy. This is discussed in the next section.

Results

Higher Education assessment schemes presume an ordered relationship between the indications of increasing intellectual competence and the actual acquisition of incrementally higher-order cognition by individuals. There is widespread use by many educators of assessment schemes based on an ordered hierarchy of cognitive activity, where the judgments about the learning progress of students is commonly expressed using either percentage marks or ranked alphanumeric grades. Such schemes possess high face-validity because they appear to represent common-sense descriptions of learning progression. Given this assumption there is thus a direct inference that cognitive processes develop linearly from low-order thinking (such as 'remember') to high order thinking (such as 'create'). If this is to be believed, tasks of progressively increasing complexity should facilitate learning along a progressively increasing path, as illustrated in Figure 3. However, the data in this research did not map a smooth developmental sequence or process of learning (see Figure 4).

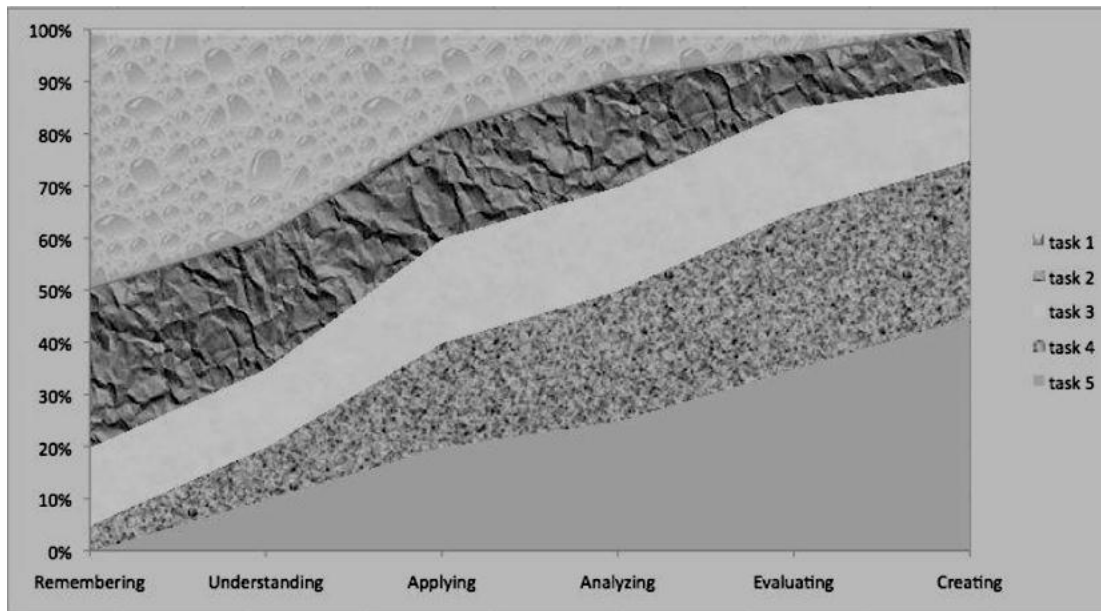


Figure 3. Activity as percentage of each task – expected outcomes

Given the steadily rising level of task difficulty and students' increasing mastery of the more challenging tasks as evidenced by their ability to complete them with fewer errors and in less time, Bloom's taxonomy would suggest that some developmental pattern should be expected to emerge as the procedural knowledge required to complete them came to be more effectively applied and as student accomplishment increased. However, it was surprising to see no consistent trend or development in the frequency with which elements appeared over time in the sessions. The relative frequency with which particular kinds of cognition appeared in the data (e.g. 'applying procedural knowledge') was not patterned as tasks progressed and difficulty increased. Moreover, the relative frequency with which the different elements of cognition appeared in the data (e.g. 'applying conceptual knowledge') did not present itself as a linear or rising percentage of what might have been expected in a developmental sequence but more often was discontinuous. Whilst these results were in line with our expectations and given the nature of the set tasks, it was surprising to see no consistent trend or development in the frequency with which elements appeared over time in the sessions, expressed as a percentage of the total session activity.

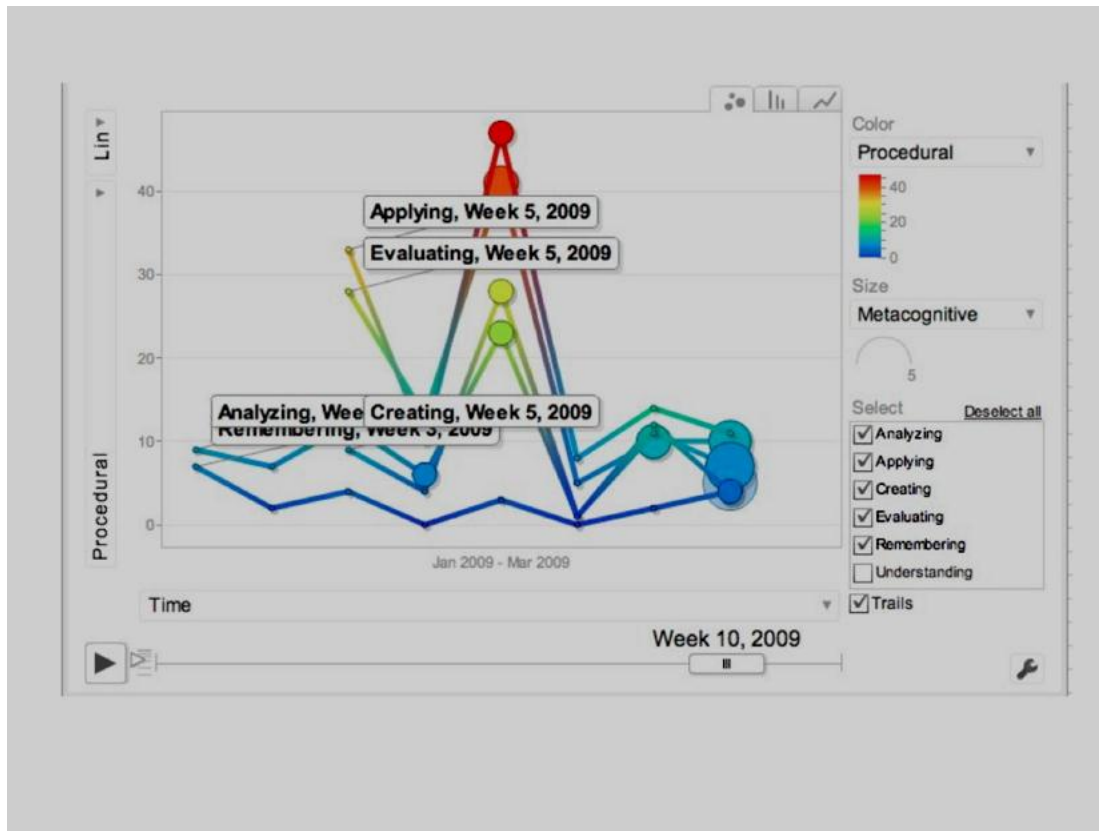


Figure 4. Activities displayed as a Motion Chart - actual outcomes

A major limitation of the research to date is acknowledged though. Although these outcomes are derived from tasks conducted within a virtual environment, the associated learning and communicative interaction between subjects was conducted synchronously in the real world. It is from the real world manifestations of cognitive activity that data have been extracted and the coding and analysis conducted. However, it is reasonable to assume that more participants are required. An increased number of data points might reveal a more cohesive pattern. Our data shows that learning is not as structured or uniform as Bloom's revised taxonomy suggests so more students and more data may illustrate otherwise. In addition, the use of Bloom's revised taxonomy may be considered a limitation in an analysis of learning. However, the rationale for continuing with its use is that at some point the outcomes from this longitudinal research experiment need to be applied in the schools where tasks and associated activities are frequently designed and assessed according to the Bloom's taxonomy.

To summarise, the research aims to enable a design of tasks and activities in virtual worlds (a virtual worlds activity metrics framework) that will meet specific learning (or assessment) criteria based upon the experiments we have conducted. To some extent our aim has been partially achieved but we recognise that further, detailed research is required.

Discussion

The learner centered design approach and associated iterative technical developments in this research has illustrated innovation in action. For instance, during the research, the participants made the decision to transfer the project from the Second Life virtual world to a dedicated open source virtual space. The main reasons were not to do with the limitations of task design or their implementation, but more pragmatic. Second Life leasing was deemed expensive; the virtual world would occasionally be unavailable due to updates by Linden Labs; there was concern by administrators of the research funding about privacy and the worry about undesirable individuals somehow accessing our space, and there was a feeling of a lack of ownership over the designs and recorded data. The solution was to reflect upon the

previous experiences by researchers and participants and opt for a more flexible alternative. Open Simulator (commonly referred to as OpenSim, an open source multi-platform, multi-user 3D application server) was chosen and Reaction Grid selected as the service for locating the virtual space. Reaction Grid's service and server space are much cheaper than Second Life. The support has been excellent as enthusiastic virtual world developers respond quickly and offer advice. Hippo software for the Macintosh computers has been installed in order to access the new virtual world. The privacy issue has been resolved which, in turn, reassures administrators that the student participants are 'safe' in the OpenSim virtual world. This new stage of the learner centered design enabled a number of innovative tools to be created and customized by the participants.

One of the most unique tools designed and programmed by the participants in the OpenSim virtual world (named Future University on the OpenSim Grid) is the ability to move a graphical representation of the LEGO robot object and leave a trail of the circuit as evidence. This is in contrast to the previous virtual space where only NXT program blocks were manipulated. The 'virtual robot' allows participants to enhance the collaboration in the design and solution of maze tasks which need to be later programmed to the Mindstorms NXT software and the physical robot in the real world.



Figure 5. Robot moving in virtual world

An innovative method for collecting and collating data has been implemented in the form of a graphical iPad; named Blooms Pad and FlowPad. In the virtual world this allows specific instances of Bloom's taxonomic elements (and also Flow) to be selected by the participants at pre-determined periodic time intervals. This data is then directly transferred to a database that records and time-stamps each instance of selected cognitive process. The data can then be graphed immediately after each task in order to analyze current task effectiveness and participant learning, and then develop the next task; resulting in an iterative development in level of difficulty. Of course, the initial challenge is for participants to become familiar with the lexis associated with each of the Bloom's taxonomic elements and would thus need appropriate training. However, the next task can then be designed given the results from the participants as opposed to an interpretation by researchers. This will result in further iterative development in level of

task complexity. The challenge though is to create new tasks that will further the data for subsequent analysis using Bloom's taxonomy. By adding to the existing data it is anticipated an evidence-based framework can be developed that will inform practitioners how to best implement tasks that require specific curriculum learning aims in virtual spaces.

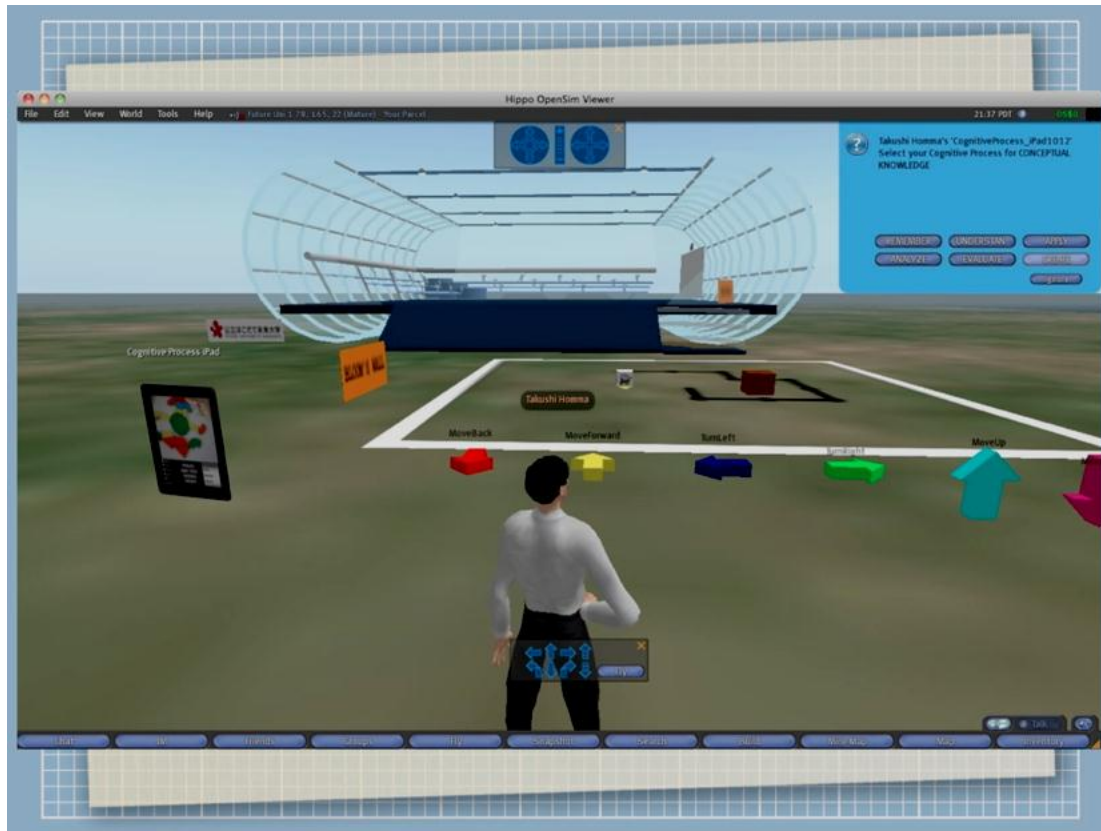


Figure 6. Blooms Pad to collect data

Future Japan Recovery

The next iteration of the research will be to synchronize the virtual robot with a real world robot using LabView software, DAQ virtual telemetry kit hardware, and network communication protocols. Moreover, the context for developing the augmented communication will be a virtual nuclear power facility. For this connection with industry we are going to situate our virtual LEGO robot into a virtual model of the Fukushima nuclear power plant. As the context for the research will be located in a virtual nuclear power plant, our research will support the 'Japan Recovery' initiative. As well as capturing data for analysis of cognitive processes, we also aim to familiarize students and the public with the complexities of nuclear power; given that there is much confusion about the situation at present here in Japan. We are currently designing and building a virtual nuclear facility in our OpenSim space.

Future tasks will challenge students to maneuver the virtual LEGO robot around a virtual nuclear plant in order to solve problems. The iteratively increasing complexity of these tasks will be designed to engage students in using their cognitive processes and knowledge. Data will then be captured for researchers to map cognitive development and knowledge acquisition in order to correlate with the specific programming task. Data of flow will also be simultaneously captured. First the students will be given a robot and circuit task to solve. In order to capture the data direct from the students while working towards a solution, a virtual iPad (named FlowPad) will appear in the virtual world at intervals of 3 minutes. Students will respond to the iPad questions and the tagged data will be transferred to a MySQL database on the researcher's server. The iPad data items will use Csikszentmihalyi and Nakamura's (2010) psychometric evaluation of flow (concentration, perceived control, mergence of action and awareness, transformation of

time, transcendence of self and autotelic experience), and Anderson et al (2001) cognitive descriptors (remember – understand – apply – analyse – evaluate - create). In addition, a two dimensional movement of the virtual LEGO robot within the virtual world will be synchronized to a real world LEGO robot. As the virtual robot is moved, so will the real world robot. This action will be achieved by programming a DAQ virtual telemetry kit using LabVIEW software and NXT module. This, we believe, will be unique.

By using the virtual nuclear plant this research can be additionally used to familiarize the general public with safe and dangerous nuclear operations. The context of the virtual nuclear power plant and programming the LEGO robot can also be used with children. For instance, children's cognitive development is considered to be from concrete to abstract (Piaget 1955). The LEGO tasks can additionally record the children working in the virtual space. The children can program the robots and have the additional benefit of being familiarized with nuclear operations. It is anticipated that such simulations with citizens controlling the virtual robot will create an awareness and understanding of the complexities of nuclear operations and accident recovery. At a more advanced level the virtual space can be used for training of nuclear personnel.

Moreover, future research will be an international collaboration between researchers at Future University Hakodate, Japan, Teesside University UK and a Singapore university. All data will be analysed using the three dimensional Motion Charts.



Figure 7. Virtual Fukushima nuclear reactor buildings

Conclusion

This paper has summarised the theoretical and pragmatic progress of research in the learner centered design and iterative development of metrics for evidencing the processes of learning (witnessed as measurements of Bloom's six cognitive processes and four knowledge dimensions) within virtual worlds. Metrics for learning have been recorded, analyzed and interpreted from tasks that involved problem solving, communication and collaboration in a virtual space. The context for the iteratively designed and quantifiably measured tasks has been the programming of LEGO Mindstorms robots to follow predefined mazes. The paper has also summarised the innovative utilization of virtual technologies and a unique method for collecting and collating the research data. It is proposed that the revealed dynamics between

the neo-Bloomian taxonomic elements and the developed metrics will provide insights into the nature of effective pedagogy supported by learner centered design in virtual learning and teaching environments. By adding to the existing data, contextualised within a uniquely designed virtual nuclear facility, it is anticipated an evidence-based framework can be developed that will inform practitioners on how to best design and implement tasks that require specific curriculum learning aims in virtual spaces.

Useful links

Images of Virtual World 2011 conference presentation is available online at

http://web.me.com/mvallance/PM12/PM12/Entries/2011/8/25_Virtual_world_conference_preview.html

Demonstration of tasks is available online at

http://web.me.com/mvallance/PM12/PM12/Entries/2011/2/28_LEGO_task_demo_2011.html

Research website with links to software and notes is available online at

<http://web.me.com/mvallance/PM12/PM12/PM12.html>

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The Impact of Integrating a Virtual World into a Federally Mandated Digital Citizenship and Cyber Safety Unit on Student Achievement, Higher Order Thinking Skills, and Test Motivation

Dr. Amy Fox-Billig
Valhalla High School (CHS)
New York, New York

Research Objective

Introduction

Technology is rapidly becoming a dominant aspect of our society (Harvey-Woodall, 2009). Future occupations will require collaboration across international and cultural boundaries and new ways of integrating knowledge (Haste, 2009). Learning technological skills is therefore necessary for students' occupational prospects (Lebens, Graff, & Mayer, 2009).

To meet this need, new technologies and access to the Internet have been changing secondary education. As access to the World Wide Web becomes ubiquitous in schools, educators continually look to find appropriate ways to use this technology as a learning tool (Bradshaw, Bishop, Gens, Miller, & Rogers, 2002). As a result, new ways of thinking and learning have emerged which cannot be easily addressed with teacher-centered pedagogies (Sims, 2009). These new ways of learning require more student-centered models of teaching, such as constructionist, constructivist, and cooperative learning.

Advances in e-learning have been enabled by new platforms having the potential to "revolutionize synchronous and semi-synchronous information delivery" (Jennings & Collins, 2007). Among these are learning management systems, such as Blackboard® and Moodle™, and Multi-User Virtual Environments (MUVEs), which are three-dimensional (3-D) virtual worlds such as Active Worlds®, Open Sim virtual worlds, and Second Life®. Many online classrooms use e-mail, discussion boards, or listservs to communicate. The lack of immediate feedback using these forms of communication, however, can be limiting to the students' and faculty's responses since the conversations do not flow naturally. Chat rooms can be used where more immediacy is needed in a discussion and is limiting only to students who are less proficient at typing.

A MUVE is a computer technology that allows users to experience visual, aural, and tactile stimuli generated in real time (Sanchez, 2009). It is an interactive environment that promotes experiential learning. For example, instead of merely reading about Ancient Egypt and regurgitating the information on a test, students can learn about Ancient Egypt, build a replication of it, and present and explain what they have learned. Virtual online worlds provide users with a more personal level of interaction than chat rooms because the students can see each other's avatars, or digital persona (Childress & Braswell, 2006) and can interact using either text-based instant messaging, or Voice over IP (VoIP).

Currently, there are at least 197 colleges and universities, 44 not-for-profit educational organizations, 10 libraries, 7 for-profit educational organizations, and 5 museums in Second Life ("SimTeach," 2011) and additional schools and organizations in various other MUVEs. Elementary and secondary schools are increasingly migrating to other virtual worlds, such as the Reaction Grid® and Jokaydia®, which allow younger age groups. In addition to the myriad of educational resources, the use of MUVEs can help implement the first two standards of the International Society of Technology in Education's (ISTE) National Educational Technology Standards for Students (NET•S).

These standards are:

1. Creativity and Innovation
1. Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:
 - a. apply existing knowledge to generate new ideas, products, or processes,
 - b. create original works as a means of personal or group expression,
 - c. use models and simulations to explore complex systems and issues,
 - d. identify trends and forecast possibilities.
2. Communication and Collaboration
3. Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:
 - a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media,
 - b. communicate information and ideas effectively to multiple audiences using a variety of media and formats,
 - c. develop cultural understanding and global awareness by engaging with learners of other cultures,
 - d. contribute to project teams to produce original works or solve problems. (ISTE, 2007)

The focus of this dissertation is on the use of virtual worlds, specifically the Open Sim virtual world, Grand Central Grid. The purpose is to examine the use of the Grand Central Grid in secondary education to assess its impact on student achievement, higher order thinking skills, and test motivation.

Background to the Problem

Educators often talk about actively engaging their students in learning through books, images, movies, and other information resources. However a new generation of technology tools provides the opportunity to psychologically immerse young people in multi-user virtual environments (MUVE) [sic]. Three-dimensional worlds such as Teen Second Life provide a creative playground where learners create objects, test ideas, and collaborate with others. (Lamb & Johnson, 2009)

Created from the OpenSim software, Second Life® (SL) and Grand Central Grid (GCG), are platforms developed and managed by Linden Research, Inc. (Linden Lab) and Amy Fox Billig and B. Greg Colburn, respectively. At first glance, SL or Grand Central Grid looks like other Massively Multiplayer Online Role Playing Games (MMORPGs), such as EverQuest® and World of Warcraft®. However, there are significant differences. Unlike the predesigned environments and rules of play in an MMORPG, Second Life® and Grand Central Grid are user-created environments. They provide a three-dimensional space where users can communicate, collaborate, and design their world. It is up to each individual who enters these virtual worlds to design meaningful social and learning experiences (Lamb & Johnson, 2009; Marsh, 2011).

Grand Central Grid is a relatively young Parental Guidance (PG) rated grid, established in 2010. It was created specifically for education and can provide virtually more than just real world experiences. Like its multi-rating counterpart, Second Life®, it can provide educators with an environment where experiences can take place that are not possible or feasible in the classroom, such as working with a team to create a cell that can be walked in for a biology class, or by recreating a place and period of time, like the Alamo, for a history class, or by building Dante's Inferno for a literature class. The virtual world provides educators with an environment that invites the design of social cooperative learning experiences that can be carried out easily and efficiently with maximum returns on learning (Childress & Braswell, 2006). And, if any type of content can be created, then it would follow that all educational material can be designed, developed, and experienced in Second Life® (Cheal, 2007) or another virtual world such as Grand Central Grid.

One of the ongoing goals of education is to have students move beyond the lower levels of Bloom's Taxonomy, as defined by Bloom (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956) and revised in 2001 (Anderson & Krathwohl, 2001). Students need to move from the two lower levels of the taxonomy of remembering and understanding, to the levels defined as higher order thinking skills: applying, analyzing, evaluating, and creating.

The new terms are defined as:

- Remembering: Retrieving, recognizing, and recalling relevant knowledge from long-term memory.
- Understanding: Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.
- Applying: Carrying out or using a procedure through executing, or implementing.
- Analyzing: Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.
- Evaluating: Making judgments based on criteria and standards through checking and critiquing.
- Creating: Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing. (Anderson & Krathwohl, 2001)

Bradshaw, Bishop, Gens, Miller, & Rogers (2002) cite Ennis's statement that students also need critical thinking skills, which he defines as reflective and reasonable thinking focused on what to believe or do (Ennis, 1985). Beyer also states that problem solving is another cognitive skill needed. Problem solving, as defined by Beyer, is a thinking strategy that involves identifying a problem, representing the problem, and determining an appropriate solution, which is then carried out and evaluated (Beyer, 1988). Although none of these skills has the same exact definition, there is enough significant overlap to say that the ability to think critically requires higher order thinking skills. Higher order thinking skills can be demonstrated through critical thinking and problem solving, and the ability to solve problems requires the use of both critical thinking skills and higher order thinking skills.

In order to develop each of the above skills, educators must provide learning environments that are student-centered, authentic, problem-based, and collaborative (Bradshaw, et al., 2002). Three progressive pedagogies meet this definition: Piaget's Constructivism, Papert's Constructionism, and Bandura's Social Learning Theory. They additionally have the common theme that knowledge construction requires social immersion. As it pertains to online learning, knowledge construction requires interactive social immersion where the students create a virtual community involving cognition, peers, and teachers (Ng & Nicholas, 2007).

The constructivist learning theory maintains that students construct their own knowledge by building on pre-existing knowledge while actively engaged in the learning process. The teacher is the facilitator of the learning, not the disseminator of information. For example, as a facilitator, a teacher sets up a science experiment with all the materials for the lab, including basic instructions on conducting the experiment. Students conduct the experiment and then come together to discuss the results and what they have learned. As a disseminator, that same teacher lectures on the experimental design and results that occur, without student interaction.

Papert extends the constructivist theory by including the essential idea that students must take what they have learned, or internalized, and construct something external, which may or may not be shared (Papert, 1991). An example of this could be the creation of a wiki after a unit on the topic studied. Students would be externalizing what they have learned, thus reinforcing the material learned. Bandura's social learning theory is a combination of behavioral and cognitive learning. One's environment influences his/her behavior. Cognition can be situated, social, and distributed (Bandura, 1977). Situated cognition states that the social and physical contexts in which knowledge is presented is an integral part of learning (Brown, Collins, & Duguid, 1989). Social cognition asserts that how people think and develop ideas are a product of their interactions and negotiations with their communities of practice or their personal learning network (Putnam & Borko, 2000; Wenger, 1998). Distributed cognition occurs when cognitive properties are distributed across all individuals involved in a learning situation (Lave, 1993; Salmon, 1993).

Proponents of progressive pedagogies assert that these types of learning environments are more likely to foster higher order thinking skills, critical thinking skills, and problem-solving skills (Blaik-Hourani, 2011; Bonk & Reynolds, 1996; Bradshaw, et al., 2002; Hackbarth, 1996; Qiyun, Huay Lit, & Jianhua, 2009). “The use of technology in the classroom was supposed to promote more student-centered instruction and result in a shift from traditional instruction (often called “transmission”) to more constructivist-compatible instruction” (Matzen & Edmunds, 2007).

Virtual world learning environments, such as the Grand Central Grid, fit within the framework of constructionist, constructivist, and social learning theories by providing users with a medium for student-centered, collaborative, and immersive learning experiences. Simulations, role-playing, creating educational materials, and safely testing dangerous situations are all possible in virtual worlds. All higher order thinking skills from Bloom’s taxonomy can be achieved (Cheal, 2007). Lim (2009) defines a framework for designing curricula inworld. Each of the six modes of learning defined supports these learning theories. He recommends that each lesson incorporate at least one of the following experiences, although he acknowledges that no one lesson can incorporate all.

They are the following:

- learning by exploring - learning by exploring means the learning results from explorations of installations, communities, and landscapes within the virtual world.
- learning by collaborating - learning by collaborating results when students work in teams, either on problem-solving tasks or in other forms of structured inquiry.
- learning by being - learning by being is the learning that results from explorations of self and of identity.
- learning by building - learning by building occurs from tasks that require the learners to build and/or script objects.
- learning by championing - learning by championing refers to the vast variety of initiatives by various communities in virtual world learning environments to adopt, champion, and evangelize causes from Real Life.
- learning by expressing - learning by expressing focuses more on the representation of inworld activity to an audience that might not be inworld. (Lim, 2009)

Statement of the Problem

There is a plethora of research defining successful integration of technology in education. Successful technology integration has been shown to improve students’ academic performance when the teachers, school community, and building and district administrators all buy into the technology as an instructional tool (Honey, Culp, & Karrigg, 1999; Martindale, Pearson, Curda, & Pilcher, 2005) and is pedagogically sound (Martin, Strother, Beglau, Bates, Reitzes, & Culp, 2010).

Traditional methods of teaching no longer capture the interest of children growing up in this computer age (Harvey-Woodall, 2009). Students demonstrate higher motivation and engagement when using technology, which results in increased achievement (Harvey-Woodall, 2009). The successful implementation of educational technology with low socioeconomic students can significantly improve motivation, engagement, and achievement (Mouza, 2008; Page, 2002). The benefits of motivation, engagement, and achievement for students with learning disabilities have been demonstrated time and again by maintaining focus and attention and an interactive learning experience (Coleman-Martin, Heller, Cihak, & Irvine, 2005; Heinmann, Nelson, Thus, & Gillberg, 1995; Williams, Wright, Callighan, & Coughlan, 2002).

Successful technology integration can also develop higher order thinking skills when students are taught the process of problem solving and then use technology to develop solutions (Coley, Cradler, & Engle, 1997; Pogrow, 1996). It has also been shown that home access to computers substantially increases writing skills, gives students a better understanding and broader view of math, and greater problem solving and critical thinking skills (Rockman & Sloan, 1995; Wittwer & Senkbeil, 2008).

Many anecdotal examples exist of successful uses of virtual world learning environment integration in a variety of academic areas at the secondary and post-secondary levels. Christian Wagner (2008) documents his use of Second Life® in his Virtual Organizations and Global Teamwork course, an information systems course to prepare students for virtual work environments. He gave a four-week assignment requiring five-person teams to build a virtual organization and/or business inside a virtual world (inworld). Student feedback showed that the assignment was slightly demanding. Students valued the learning experience and thought the assignment should be repeated in future years. His students on the whole, however, did not think the assignment adequately gave them the opportunity to practice business ideas, and they did not receive enough feedback for it to be helpful (Wagner, 2008).

Esteves, Fonesca, Morgado, & Martins (2009) have been investigating the effectiveness of using Second Life® to teach beginning programming. Object-oriented programming is difficult for beginning students to learn. In their investigation, the use of the Linden Scripting Language (LSL) is chosen as the beginning language in an attempt to make learning object-oriented design and programming easier, because Second Life® provides a “powerful visual impact that allows people to freely program behaviours into objects” (Esteves, Fonseca, Morgado, & Martins, 2009). Different programming projects were given to students to work on using Second Life®. Through their observations on the learning process and students’ motivation, they concluded that using Second Life® as a platform for teaching and learning a programming language could benefit novice students. However, it is necessary to be mindful of the type of project presented, as it must meet the students’ interests (Esteves et al., 2009). Other uses for Second Life® at the college and university level are shown in the following table, reproduced with permission from IGI Global.

Organization	Application	Source
1. Replicating Reality – Utilizing Alternative Space for Existing Activities		
Appalachian State University and Clemson University	3-D virtual world created to improve online learning for master's degree students.	"ASU Partners", 2008
Ball State University – Middletown Island	Intellagirl conducts freshman English-composition class.	Foster, 2007b
Duke University's Fuqua School of Business	Partnering with ProtonMedia to create 3-D spaces for education or "telepresence portal."	"Bringing Virtual Worlds," 2008
INSEAD - France and Singapore	School/library is open-air building with auditorium seating 36. Clickable computer screens provide access to other web pages and library offers hot tea. Research lab provides notecards to describe research and request consent. Public space/beach provides clickable kiosks to obtain more information about INSEAD, space for reflecting and conversing, bar with drinks available, and listening to radio.	Jennings & Collins, 2007
Princeton University	Created island that includes lecture hall, art museum, and performance location.	Graves, 2008
2. Developing Novel Space – Conducting Activities Unique to Virtual World		
Immersive Education project - Boston College, Harvard University, Amherst College, Columbia University, Massachusetts Institute of Technology, Sweden's Royal Institute of Technology, Japan's University of Aizu, the Israeli Association of Grid Technologies, National Aeronautics and Space Administration (NASA), Sun Microsystems, the City of Boston, and the New Media Consortium	Created tours inside Egyptian tomb, created interactive lessons (Croquet and Project Wonderland), developed park and replica of Boston's subway system to tour city's neighborhoods, developed Restaurant Game to help waiters/waitresses acquire skills/training through simulations of restaurant experiences.	Foster, 2007a
Indiana University	Created a Virtual Solar System project for astronomy undergraduate course.	Barab et al., 2000
Lehigh Carbon Community College and adjunct at DeSales University (professor at both)	Professor created Literature Alive – provides guided tours of famous literary locations (e.g., Dante's Inferno).	Foster, 2007b
Vassar College – Vassar Island	Re-creation of Sistine Chapel – visitors can fly to ceiling or view tapestries designed for the walls.	Foster, 2007b

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Table 1. continued

3. Replicating Reality and Developing Novel Space		
Boise State University	EDTech island utilized for teaching educational games and providing students testing area (building own objects), includes information center, and condominium.	Goral, 2008
Bowling Green State, Ohio	Use virtual campus for teaching, research, office hours (space pods situated into mountain sides), exhibiting art and music, and presentations by guest speakers. In process of creating a writing center ran by graduate students.	Goral, 2008
Bradley University	Students have conducted analyses of avatar fans of musicians that conduct performances in Second Life, as well as other topics such as online hackers.	Foster, 2007b
Georgia Institute of Technology	Augmented Reality lab created software to associate actual physical spaces with virtual – creating ability to combine video feeds from the real world with Second Life avatars.	Goral, 2008
Johnson & Wales University	Created a Virtual Morocco in conjunction with Ministry of Tourism of Morocco. Includes monuments and opportunities to learn about Moroccan culture. Students created and developed plans and prototypes, and worked with individuals from other countries on project. Virtual BLAST (Balloon-borne Large-Aperture Sub-millimeter Telescope) brought attention to scientific ballooning projects by flying over the Second Life main grid and stopping to visit various educational and scientific locations. Entrepreneurship students create business plans and develop prototypes in Second Life.	Mason , 2007
Massachusetts Institute of Technology	75% of island dedicated to student projects, remainder replicates physical campus (including outdoor theater area). Avatars can address a crowd with a megaphone and determine average viewpoint by avatars moving to right or left of line on platform. Sponsored contest for students to design dormitories.	Foster, 2007b
Montclair State University	Use mountain sides for displaying syllabus and spheres for deadlines, Literature Alive spots include Willow Springs and encountering evil in Young Goodman Brown, and provide sun bathing area as well as covered deck near lake.	Foster, 2007b

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Table 1. continued

Ohio University or Ohio University Without Boundaries	Entry way provides historical information and historic replicas of campus (along with Standards and Privacy Statement). Locations include Welcome Center (video display of learning initiatives), Art and Music Center, Classroom and Meeting Center (with seating capacity of 25), Learning Center (displaying e-learning activities), Student Center (coffee shop, stage which includes microphone, pool tables, kiosk publicizing real-world entertainment activities, student video lounge, vending machines, and reading space), Featured Games (simulation of fast food restaurant – avatar selects food to learn nutritional value), Stocker Center and Sandbox (building objects by permission). Collaborated with The Princeton Review for SAT preparation.	Jennings & Collins, 2007; Goral, 2008
Simon Fraser University	Professor produced films for posting on YouTube and created cartoons for first-year calculus students.	Conway, 2007

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Until its closure in January 2011, middle and secondary level schools, organizations, and school districts had been using Second Life[®] to reach their students in ways never before possible. Global Kids, Inc., a New York City-based non-profit, is one such organization. Global Kids (GK) is committed to educating and inspiring urban teens to become successful students as well as community and global leaders ("About Global Kids," 2011). Within Teen Second Life[®], Global Kids had established an island, which hosted interactive, experiential programs for teens from around the world ("Global Kids' Online Leadership Program," 2011). Some of their uses for Teen Second Life[®] were as a learning environment for after school programming, leadership programs for Teen Second Life[®] residents, partnering with other institutions to provide audio and video streaming for events, and as a professional service to other organizations learning about the possibilities of Second Life[®].

Peggy Sheehy, a middle school Library Media Specialist, is an advocate for the effective integration of technology in education. As such, she was one of the pioneers of public school education in Teen Second Life[®]. Over the last five years, she has brought hundreds of students into Teen Second Life[®], by helping teachers find meaningful uses of the technology to support the curriculum. At a regional conference in 2007, Sheehy stated the following benefits resulting from working in Teen Second Life[®] that she and her teachers have observed: increased student engagement, students raising their own bars, self-differentiating technology, more productive reflections and debriefings, increased participation and risk taking by special needs students, and strong development of social skills (Sheehy, 2007). Since the closure of Teen Second Life[®], many of these schools and organizations have moved to other MUVes such as The Reaction Grid[®], Jokaydia[®] and Active Worlds[®].

Although much anecdotal documentation of success exists using MUVes in education, there is very little supporting empirical data. One study at Loyalist College in Canada used Second Life[®] to train students to work for the Canadian Border Services Agency (CBSA) (Hudson & Degast-Kennedy, 2009). They provided a simulation environment with some students as active learners participating in the simulation, some students as passive learners observing the simulation, and a last group of students as the volunteer traveler participants. Although pre-simulation interviews of the students revealed some level of skepticism about the potential effectiveness of Second Life[®] as a learning environment, in the end, most felt the simulation provided them with a level of experience they would not otherwise have received. Students are assessed in their training by a standard rubric for interview skills, which is administered in a live action role-play. The evaluation process and content are consistent with the evaluation process within the CBSA. The results showed a 28% increase in scores for students who participated in the simulation,

compared to prior classes where Second Life[®] was not used. No other differences were noted between the groups of learners (Hudson & Degast-Kennedy, 2009). Some additional benefits they did not anticipate included an increase in the number of teachable moments stemming from the open-ended nature of role-play, and the speed with which students committed to memory the interview process.

Having little other hard data at the post-secondary level and even less at the secondary level, this researcher investigated whether the integration of the virtual world learning environment (VWLE), Grand Central Grid, into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship, has an impact on student achievement, higher order thinking skills, and student motivation. This study focused on the following research questions:

1. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on student achievement?
2. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on higher order thinking skills?
3. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on test motivation?

Definitions

e-learning - for the purposes of this dissertation, e-learning will refer to all learning environments where technology, specifically computer technology, is involved and the delivery method is primarily network or Web based.

virtual world - a three-dimensional, persistent graphical space where users create an avatar, or digital persona, which allows them to interact and communicate with other users, create content, and conduct business in a persistent real-time environment.

virtual world learning environment – any three-dimensional virtual world space designed for educational use.

Significance of the Study

The No Child Left Behind Act of 2001 (Public Law 107-110) ("No Child Left Behind Act of 2002," 2002) amends Title I to reflect the need for all students to receive a high-quality education and meet or exceed minimum proficiency on state academic achievement standards and assessments. Additionally, the Children's Internet Protection Act (CIPA), enacted December 21, 2000, requires libraries and schools to comply with certain Internet filtering and policy requirements. The Protecting Children in the 21st Century Act, enacted October 10, 2008, adds an additional Internet Safety Policy requirement covering the education of minors about appropriate online behavior ("Internet safety policies and CIPA: An e-rate primer for schools and libraries," n.d.) In other words, for school districts to receive federal funding for technology, they must provide students with instruction on Internet safety and digital citizenship.

This study adds to the body of knowledge about the effectiveness of a new instructional technology, virtual worlds, specifically Grand Central Grid, when integrated to support federally mandated requirements. It provides research data establishing the impact of this particular technology on academic achievement, as determined by assessments driven by state curriculum standards, as well as on higher order thinking skills, as determined by the Cornell Critical Thinking Test, and on student motivation to do well on the unit test, as determined by self-reporting.

The study is based on the following assumptions: 1) technology can support the learning process by providing multiple modes of communication, both synchronously and asynchronously; 2) the current integration of virtual world learning environments into state curricula is showing anecdotal success at the middle and secondary school level; and 3) Grand Central Grid provides an environment conducive to student-centered pedagogies.

With the increase in demand for students to be productive members of the workforce by having 21st Century literacy skills, educators must find ways to make the learning process as effective to this end as possible. Developing life-long learning skills in our students requires us to find motivating and engaging tools to deliver the state-mandated curricula in such a way as to increase the probability that students will want to continue learning. Additionally, in difficult economic times, school districts must be careful how they spend their dollars. Money earmarked for curriculum and technology needs to go to resources with effective student outcomes. This study is timely in its attempt to determine the effectiveness of one of the newest technologies to be integrated into schools at a point when both academic and fiscal accountability are high.

Related Literature

Introduction

To investigate the impact of using virtual worlds in education, specifically three-dimensional virtual worlds such as Second Life[®], the Reaction Grid[®], or Grand Central Grid, on both student achievement and higher order thinking skills, we need to first investigate the various learning theories supporting educational technology as an effective learning tool. We also need to take a broader look at the effects that instructional technology, in general, and the Internet and other Web-based learning environments, specifically, have on these two critical components of learning. Finally, we need to make the connection between the learning theories and the virtual learning environments. Research in these areas are replete with findings indicating successful integration of these technologies can, in fact, have a positive impact on student achievement and higher order thinking skills, given the right conditions.

Learning Theories

Although there are many learning theories that can be used to effectively implement educational technology, three that this researcher will look at for the purposes of this research are Piaget's Constructivism, Papert's Constructionism, and Bandura's Social Learning Theory. The overarching theme across these learning theories, as it pertains to online learning, is that knowledge construction in an online learning environment requires interactive social immersion where the students create a virtual community involving cognition, peers, and teachers (Ng & Nicholas, 2007).

Constructivist learning theory holds that students construct their own knowledge by building on pre-existing knowledge while actively engaged in the learning process. Common terminology for this is that the teacher role is as a facilitator in the learning process, as opposed to the disseminator of information. Constructivism also supports a current trend in education to more personalize the learning experience with differentiated instruction (De Freitas & Yapp, 2005; West-Burnham, 2005) and improve autonomous learning (Field, 2007). This learning takes place at the operational level (physical manipulations) and/or at the cognitive level (processing information) (Piaget, 1955, as cited in (Nicholas & Ng, 2009). Vigotsky's social constructivism adds to this theory by introducing a scaffolding of social interactions into the learning process. Students help each other construct knowledge by negotiating meanings of new material and reflecting critically on the new knowledge. Through negotiation and reflection, students help each other reach a common knowledge base, regardless of the amount of prior knowledge with which each individual student began.

Seymour Papert extends the constructivist theory by including as essential the idea that knowledge construction is most effective when students are constructing something external, which may or may not be shared. In his constructionist theory, knowledge is internalized by incorporating it with pre-existing knowledge. This new knowledge is then externalized by the creation of something, which can then be shared with others (Beisser, 2005; Papert, 1991). For example, students might learn about dinosaurs by reading books, watching videos, and visiting museums. They might then use what they have learned to create a Jeopardy[®] style game which can be used as a learning tool for others or to reinforce ideas for those involved in the activity. Such products allow teachers to assess understanding of a concept or topic rather than merely acquisition of information.

Bandura's social learning theory is a combination of behavioral and cognitive learning. Behavioral learning suggests that one's environment influences how they behave and learn. Human behavior is learned by observing others' behavior. That behavior is then translated into one's own actions in similar situations. It is the twist of the common saying, "Do as I do, not as I say," because it is really the adults' behaviors from which children learn, not from what they are told to do. Social learning theorists state that learning can also take place without necessarily changing behaviors as not all knowledge requires a corresponding behavior. Learning is a combination of cognitive, behavioral, and environmental influences (Bandura, 1977; Kim & Baylor, 2006). Bandura's four requirements to learn and model behavior are: attention, various environmental and personal factors influence one's attention; retention, remembering what one paid attention to; reproduction, reproducing the behavior; and motivation, a significant reason to want to reproduce the behavior (Bandura, 1977).

Cognition is viewed in three distinct ways: cognition as situated, cognition as social, and cognition as distributed. Situated cognition asserts that the social and physical contexts in which knowledge is presented are an integral part of learning (Brown, et al., 1989; Darvin, 2006). The environment and social interactions in which students learn becomes part of the knowledge they gain. Social cognition states that how people think and develop ideas are a product of their interactions and negotiations with their communities of practice or personal learning network (Eshach, 2010; Putnam & Borko, 2000; Wenger, 1998). Sharing ideas with others in one's learning circle, to come to a common understanding of a concept are key to learning the concept. Distributed cognition maintains that cognitive properties are distributed across all individuals involved in a learning situation (Gomez, Schieble, Curwood, & Hassett, 2010; Lave, 1993; Salmon, 1993). Different pieces of knowledge come from various people within one's personal learning network.

Instructional Technology: Impact on Achievement and Higher Order Thinking Skills

In order for instructional technology to be integrated successfully, it needs to be pedagogically sound. The mere presence of the hardware in schools does not guarantee successful integration and achievement. It is the process of designing effective instruction that incorporates computer and other media technology appropriately that has the greatest impact (Martin et al., 2010). The CEO Forum on Education and Technology conducted a five-year exploration of the impact of educational technology on achievement in order to assist educational decision makers in how instructional technology can best enhance academic performance. Based on its findings, the Forum (2001) determined that four building blocks are essential to effectively use technology to increase student achievement, blocks which include 21st Century skills.

The four building blocks are as follows:

1. alignment of the use of technology with standards, educational objectives, curriculum, and assessment
2. assessment to ensure all the skills defined as important for students are measured, including the development of 21st century skills
3. accountability based on measurement of progress against educational objectives across the entire system and strategies for continued improvement to ensure success
4. equitable access to technology and analysis of the effectiveness of various technologies on student achievement. (The CEO Forum technology and readiness report: Key building blocks for student achievement in the 21st century., 2001)

Extensive research has shown that technology is most effective in improving student performance when the application directly supports the curriculum objectives being assessed. Kingsley and Boone (2006) investigated the impact of integrating a multimedia-based American history software program on student achievement. The subjects were 184 seventh grade students in public middle schools in a large urban school district in the southwestern United States. Ninety three students were in the experimental group which integrated the software into lecture and textbook based instruction, and 91 students did not use the software. Pretest and posttest unit scores were compared using a two-tailed t-test with unequal variance. The study found that the group that integrated the software increased their mean test scores an average

of 12.2% and students in the control group increased their mean test scores an average of 6.1%, a statistically significant difference (Kingsley & Boone, 2008). In Virginia, Boster et al. (2002, 2004) conducted a randomized study using digital video clips specifically selected to align with standards in third- and eighth-grade social studies and science. Pretest and posttest assessments, specially developed to examine students' knowledge of those standards, showed increased student achievement compared with students not shown the video clips (F.J. Boster, Meyer, Roberto, & Inge, 2002; F.J. Boster et al., 2004).

Reading comprehension in textbooks can be challenging for students. Fry and Gosky (2007) studied the use of an electronic pop-up dictionary on student comprehension. One hundred twenty nine middle school students were broken down into three groups. One group read a hard copy of the text, another read an online copy of the text, and the last group read an online copy of the text with a pop-up dictionary for every word in the text. All students were given the same two-part tests after each of four readings to measure understanding of the main idea and reading comprehension. The test results from the pop-up dictionary reading method showed statistically significant differences over the other two reading methods. The results suggest pop-up dictionaries are an effective method for improving reading comprehension in texts (Fry & Gosky, 2007).

Technology integration improves students' academic performance when it is implemented in environments where teachers, the school community, and school building and district administrators support the use of technology. It is important to have district-wide buy-in to the use of technology as an instructional tool to improve student achievement. One of the elements of a recent evaluation of Microsoft's peer coaching and technology integration program, piloted in Florida during 2005, was to determine the positive and challenging aspects of implementing the program. School culture and administrative support were found to be the most important elements of successful technology integration for districts participating in the peer coaching program (Barron, Dawson, & Yendol-Hoppey, 2009).

Other studies have looked at specific educational software's effects on specific tests. Florida requires students to take the Florida Comprehensive Assessment Test (FCAT) to measure student achievement on grade-specific standards and benchmarks. FCAT Explorer, developed by Infinity Software, Inc., was provided by the Florida Department of Education to their public schools to be used as practice for the state assessment. Twenty-four schools were used in the study, half of them in the treatment group and the other half in the control group. Students in grade levels four for reading, and five, eight, and ten for mathematics participated in the study. The treatment group used FCAT Explorer and the control group did not. Data were collected for the school years ending in 2001 and 2002. For fourth-grade reading and fifth-grade mathematics, regardless of school year, there was a statistically significant difference between students using Explorer and those who did not. At the high school level, however, grades eight and ten showed no statistically significant differences in scores of users and non-users (Martindale et al., 2005).

The use of educational technology with low socioeconomic students can have a significant effect on motivation, engagement, and achievement. Page (2002) compared the gains of elementary students in technology-enriched classrooms with those taught in classrooms without technology. He found that the students in the classrooms with technology scored significantly higher on mathematics achievement assessments and experienced increased student self-esteem (Page, 2002). Taking advantage of a laptop program initiative in a low-income minority school, Mouza (2008) investigated the implementation and outcomes of laptop use in classrooms on students' attitude towards computers and its impact on the learning process. She found that there were no significant differences in attitude toward computers between students in classrooms with the laptops compared to those without laptops. However, she did find significant differences between the groups in motivation, engagement, and achievement in mathematics and writing (Mouza, 2008).

The benefits of motivation, engagement, and achievement using technology can be used effectively to increase academic achievement in students with learning disabilities, including children with autism (Coleman-Martin et al., 2005; Stroud, 2009). Referencing prior research, Campbell and Melching (2009) note that observational and incidental learning is an efficient means for teaching content to small groups of students with learning disabilities. The problem of maintaining students' attention in groups can

interfere with learning non-target information. Using interactive technology is one way of maintaining that attention (Williams et al., 2002). Using the interactivity of SMART Board (interactive white board) technology, Campbell and Melching (2009) showed that small group instruction using an interactive medium was able to keep students' attention, and that kindergarten students with learning disabilities could learn the names of letters and letter sounds (Campbell & Melching, 2009).

As the world becomes more communications centered and our world economy and businesses become increasingly intertwined, the playing field between nations and economies has been leveled. Today's students require new abilities to be successful in the knowledge-based economy. Knowing how to locate information, quickly weigh and evaluate information for bias and accuracy, and synthesize and apply that information to solve problems are essential skills. Higher order thinking skills are required to meet the demands of a world economy.

One way in which technology can enable the development of higher order thinking skills is through the use of information communication technology (ICT). McMahon (2009) conducted a case study on the relationships between use of ICT, time on the technology, and the age of the technology on higher order thinking skills. The subjects were 150 ninth-grade students in a metropolitan independent girls school, where all students in all subjects throughout the school year used notebooks. Results of the study show there is a significant statistical difference in critical thinking skills of students who use information communication technology for more than five years, compared to those who use it for less than five years (McMahon, 2009).

Higher order thinking skills can be defined as the cognitive skills that allow students to perform at the higher levels of Bloom's Taxonomy: analysis, synthesis, and evaluation (Hopson, Simms, & Knezek, 2001). Hopson et al. (2001) sought to determine whether "students in a technology enriched classroom demonstrate better use of higher-order thinking skills than students in a traditional classroom" (p. 110). Students enrolled in a suburban North Central Texas school district participated. The students in the treatment group were randomly selected from the district's technology-enriched classroom magnet program. Students in the control group were selected at random from comparable elementary schools in the district without a technology-enriched environment. Using the Ross Test of Higher Cognitive Processes to measure the effectiveness of the instructional technology on higher-order thinking skills, the researchers found that the scores were generally higher for analysis and synthesis, and significantly higher for evaluation. The short duration of the study and the inability of the researchers to control for home use of the computer were suggested to have minimized the statistical differences of these findings. The results of this study suggest that technology is the tool that allows students to move beyond mere acquisition of knowledge to application of that knowledge and development of higher order thinking skills.

The Internet in Education: Virtual Education's Impact on Achievement and Higher Order Thinking Skills

Integration of computers and technology in the classroom has clearly had a positive impact on achievement and higher order thinking skills. The effects are the greatest when the technology is used judiciously, when teachers are properly trained, when the technology supports the curriculum, and when there is district-wide buy-in for the technology. When schools bring the Internet into the buildings, a whole new level of learning, thinking, and engagement develops. The World Wide Web, and especially the Web 2.0 technologies such as social networking, blogs, and wikis, provide users with a higher level of communication than was previously possible. This environment affects all aspects of our lives, including education. It influences how students think and learn and how they gather and analyze information. Access to the Internet, its content, and communication tools allow students to learn anywhere, anytime.

Learning in the virtual environment of the Web can be synchronous or asynchronous. One of the earliest studies on the impact of computers and the Internet on academic achievement used the data from the Programme for International Student Assessment (PISA) for 2000. The researchers analyzed the data from 31 countries in math (96,785 students) and reading (174,227 students). Although the tests were given for mathematics and reading, the authors report used the results from mathematics tests because they are more closely tied with successful future job performance, and because they are more universal

across the countries. The results indicated that having access to a computer at home or in school had no significant effect on student achievement on these tests. A positive effect exists on student achievement in these areas for access to the Internet at home and in school (Bielefeldt, 2005).

The effectiveness of distance education consistently shows no significant difference from face-to-face education (Thirunarayanan & Perez-Prado, 2002). In a study to determine the effectiveness of web-based distance education on academic achievement, Thirunarayanan and Perez-Prado (2002) worked with students enrolled in two sections of a course on teaching English to speakers of other languages (ESOL).

The pre-service teachers in the study were required to take this class for their Elementary Education Program with ESOL endorsement. The delivery tool for the online class was WebCT, a software tool designed for online learning. The researchers found that students in the online section of the course scored significantly lower than students in the traditional classroom course on the pretest. A posttest analysis determined that there was no significant difference in achievement. Numerically, the students in the control group scored 13.19 points higher on the posttest than on the pretest, whereas the online group scored 15.21 points higher, suggesting higher achievement by the online group.

In a more recent study conducted by The National Bureau of Economic Research, Figlio, Rush, and Yin (2010) looked at the impact of delivery method for a large Principles of Microeconomics class taught at a large, selective, doctorate-granting university. Approximately 1,600 to 2,600 students per semester register for this course. However, the lecture hall seats only 190 students. Typically 50-60 students attend each live lecture. The lecture is videotaped and subsequently posted online for all students. The professor was able to obtain 327 students to participate in the study by giving a small incentive of a half grade increase. They were assigned (not randomly) to either the live-lecture section or the online section. Live lecture volunteers had their accounts modified to restrict access to the recorded lecture but had full access to all other resources. Background information on the students revealed no significant differences between the two groups in a variety of areas including SAT scores, whether mothers graduated from college, and GPA. The study showed that students perform better in the live setting. However, the raw differences were uneven and statistically insignificant. The strongest findings in the study favor live instruction for the relatively low-achieving students, male students, and Hispanic students.

Another study comparing student achievement and satisfaction in an online environment versus a more traditional face-to-face environment for a statistics course had similar results. Thirty-eight undergraduate nursing students at a large midwestern university were selected for the study. Seventeen students took the web-based statistics course, while 21 took the face-to-face statistics course. Independent samples t-tests were used to determine whether significant differences existed between the online group and the face-to-face group in terms of statistics knowledge and student satisfaction. No significant differences were found between the two groups on entry level statistics skills and on statistics knowledge (Summers, Waigandt, & Whittaker, 2005).

Burkhardt, Kinnir, and Cournoyer (2008) compared the results of a comprehensive exam taken by undergraduates in both face-to-face and online sections of a course in information literacy. They concluded that the students who took the online comprehensive final exam performed at least as well as the students in the face-to-face sections. However, they noted that the small number of students in the online classes (a total of 23 students in two sections) could exaggerate the percent of students who got a question correct or incorrect (Burkhardt et al., 2008).

Online, or distance, learning can be synchronous or asynchronous. Asynchronous communication provides students with the opportunity to reflect on ideas before responding to questions and comments posed by teachers and other students. This allows for more thorough responses, better critical thinking, and a greater contribution of information. Synchronous communication allows for brainstorming and immediate feedback (Maushak & Ou, 2007). While there was much prior research conducted to support asynchronous learning (Weinreich & Tompkins, 2006), Maushak and Ou studied the effects of synchronous communication on collaboration. They collected data from Instant Message (IM) transcripts of students required to meet online at least once synchronously to complete a project. The general categories they looked at were mutually constructing knowledge, mutually negotiating, mutually supporting, group facilitating, and group processing. Maushak and Ou found that 44% of the online synchronous communication was mutually constructing knowledge that supported the Vygotsky model of

collaborative learning. Sixteen percent of the communications were mutually supporting, 15% group processing, 14% group facilitating, and 12% mutually negotiating, an essential feature of collaborative learning. Thus, both synchronous and asynchronous learning are needed for successfully implementing Web-based learning environments.

This research supports earlier findings on the benefits of various types of communication in online learning. A study investigated the benefits of asynchronous representational knowledge mapping between dyads versus text-based threaded discussions on problem-solving skills and knowledge construction. The researchers found that students engaging in asynchronous knowledge mapping were more likely to create more hypotheses earlier in the experimental session and elaborated on them more than users of threaded discussions (Suthers, Vatrappu, Medina, Joseph, & Dwyer, 2008).

In a study of the effects of computer-mediated communication, Garrison, Anderson, and Archer (2001) proposed four stages in the development of critical thinking: 1) trigger (state the problem), 2) exploration (search for relevant information), 3) integration (construction of possible solutions to the problem), and 4) resolution (critical analysis of the solutions). After transcripts of the online discussions between students were coded, the researchers found that 8% were triggers, 42% were exploration, 13% integration, and 4% resolution. They suggested that the low numbers for integration and resolution could possibly be due to the need for more time for reflection on the problem as well as the reluctance of students to give incomplete or inadequate contributions to the discussion (Garrison et al., 2001).

Meyer (2003) looked at the time component of these discussions to determine whether the increased time frame for threaded discussions had a positive impact on higher order thinking skills. Face-to-face discussions have the energy and immediacy that many students and teachers like. Threaded discussions in which one speaker at a time makes a contribution or a comment on a previous post allow time for thoughtful responses and the inclusion of outside information. She models her data collection on Garrison's stages of critical thinking and adds social as an additional category. In the analysis of her findings, Meyer states that there is evidence that higher level thinking occurs but not as much as desired. She attributes these mixed results to a small sample size and lack of statistical testing (Meyer, 2003).

Access to the World Wide Web in schools, in common with sound pedagogy, can improve not only academic achievement, but higher order thinking skills as well. To be most effective, teachers need to provide learning environments that are learner-centered, authentic, problem-based and collaborative (Bradshaw et al., 2002; Neo & Neo, 2009). In 2002, Picciano investigated the relationship between online interactions and achievement. He divided the interactions into three categories: low, moderate, and high. Although the final exam showed no significant difference in achievement among students in these three categories, there was a significant difference on the written assignment. This suggests that any amount of online communication is effective for achievement and that high levels of online communication improve higher order thinking skills (Picciano, 2002).

The ability of technology to develop higher order thinking skills is not limited to high achieving students. Zohar and Dori (2003) studied whether teaching methodologies encouraging higher order thinking skills improved these skills in low-achieving students compared to high-achieving students. They found that scores from both groups increased after the four experimental programs, and in one of the four the net gain of low achievers was significantly higher than that of the high achievers. These results show that students of all abilities can benefit from pedagogy that encourages higher order thinking skills (Zohar & Dori, 2003).

Virtual Reality: Impact on Achievement and Higher Order Thinking Skills

Virtual reality (VR) is an artificial reality that projects the user into a 3-D space generated by a computer to create an illusion of a real or imagined space. One type of virtual reality system uses stereoscopic goggles and data gloves that provide the 3-D imagery and a tracking device for head, body and hand movement. Flight simulators, for training airplane pilots and astronauts, were the first form of this technology that provided a very realistic and very expensive simulation. More recently, medical and nursing schools have been using virtual reality for effective training in everything from patient care to

surgical procedures. In the first double-blind research study, Seymour et al. (2002) sought to demonstrate that VR training transfers skills to the operating room (OR) environment in response to the increased complications from laparoscopic gall bladder surgery. Sixteen residents were given baseline psychomotor ability tests and randomly assigned to either traditional training or VR training for gall bladder surgery.

After the training, the residents were required to perform the surgery with an attending surgeon who had no knowledge of the training given. The findings were amazing. VR-trained residents performed the surgery 29% faster than non-VR trained residents. Furthermore, the accuracy and the success of the surgery were significantly different for the two groups. Non-VR-trained residents were nine times more likely to fail to make progress and five times more likely to injure the gall bladder. The researchers concluded that the success of this experiment should "set the stage for more sophisticated uses of VR in assessment, error reduction, and certification of surgeons" (Seymour et al., 2002).

Virtual reality has other variants. Spatially immersive displays are multi-sided rooms that you walk into, and an immersive theater or immersive wall uses a large screen that completely fills your peripheral vision. Another type of virtual reality is desktop VR which uses a computer to play games and view environments in which you move around, although they lack the 3-D reality of true VR systems. Massively multiplayer online role playing games (MMORPGs) such as World of Warcraft[®], Everquest[®], and Call of Duty[®] are examples of desktop virtual realities as are massively multiplayer virtual worlds such as Second Life[®] or The Reaction Grid[®].

Second Life[®] (SL), The Reaction Grid[®], Grand Central Grid, and similar environments are virtual worlds created entirely by their users, also known as residents. The experience one has in these environments is entirely individual and grows out of the purpose and need one has for being there. Education in virtual worlds has become a growing trend in higher education, at the secondary level, as well as for training purposes in business. As a result of the experiences of educators, many qualitative case studies have been written about their individual courses and experiences. In fact, there are so many best practice suggestions, that this past March Second Life[®] held its third and largest Virtual Worlds: Best Practices Conference. It was held entirely inworld, that is in SL.

Interactive virtual learning environments provide all the essential ingredients to support constructivist, constructionist, and social learning theory. These environments can be as simple as using Web 2.0 technology to communicate or as complicated as text based or 3-D virtual worlds. In her 1997 dissertation, Bruckman asserts that cyberspace is a place where users are creators of knowledge, not recipients of information. Her study centered on the text-based virtual world, MOOSE Crossing, which was designed to be a constructionist learning environment for children ages eight to thirteen. This environment was created to teach programming in the MOOSE programming language. She collected data from observations of children's activities and learning experiences in this virtual world. Bruckman found that this virtual environment provided an intellectually engaging community supportive of learning through designing and constructing virtual world content (Bruckman, 1997).

One action research study of particular interest to this researcher is on the use of Second Life[®] for problem-based learning in computer science programming (Esteves et al., 2009). Motivated by loss of interest in the computer science field and the perceived difficulty of the material by students, researchers sought to determine whether SL presents conditions suitable for creating a platform that could be used for teaching and learning a programming language. To do so, they looked at the experiences of both students and teachers. The authors concluded that it is, in fact, a viable medium for teaching a programming language, but teachers must create projects that are of interest to the students. Subsequent qualitative and quantitative research planned by the researchers aims to determine if SL really does improve students' comprehension of basic programming skills (higher order thinking skills) and whether the visual environment improves students' performance (achievement) and comprehension.

In another study, Vogel et al. (2006) compared the effects on academic achievement of using virtual reality with and without gaming. The authors looked to see if the success of simulation software, or traditional computer-aided instruction (CAI) on achievement could be generalized to non-simulation-based games. The findings showed that there was significant improvement in the group using CAI with simulation and no significant improvement in the group using non-simulation-based games. The

conclusion showed that for gaming technology to be most beneficial it should have a simulation component (Vogel, Greenwood-Ericksen, Cannon-Bowers, & Bowers, 2006).

A very large mixed methods study of 2000 students investigated the impact of integrating a virtual world learning environment on building and assessing higher order inquiry skills in science using a virtual town, called River City, built in the 3-D virtual world Active Worlds[®]. The students came from eight schools and 61 classrooms in major urban areas of the Northeast and Midwest, and from a suburban district in Mid-Atlantic US with high populations of ESL and free-and-reduced-lunch pupils during the 2004-2005 school year. Students in the study used avatars to interact with “other students, digital artifacts and computer based agents acting as mentors and colleagues in a virtual community of practice set during the time period when bacteria were just being discovered” (Ketelhut, Nelson, Clarke, & Dede, 2010). Three computer-based variants of River City were randomly assigned to the students in each classroom, while the paper-based control treatment was randomly assigned to whole classes. Each teacher taught both the computer-based classes and the control groups. The results show few differences between the River City group and the control group with two exceptions. Students with poor grades in science did best when taught scientific inquiry with the mentoring and modeling version of River City. Girls tended to do worse than boys, except for those in the community of practice version of River city. Finally, when looking at the performance assessment that mimics lab reports, the researchers found that students in the guided social constructivist version of River City showed a stronger understanding of the scientific inquiry than did all other students.

Online Role-Play

Role-play is a recognized face-to-face teaching method for developing skills, knowledge, and attitudes (Bell, 2001) and has long been used in schools for teaching in two areas. The first area is for students to have an experience for understanding and changing attitudes and behavior. The second area is for students to develop interpersonal and communications skills. Bell points out that it is now possible to combine the powerful learning experience of role-play with the advantages of an online environment (Bell, 2001).

A case study of an asynchronous, anonymous, online role-play, conducted as part of a teaching course for academic staff, suggests that the use of online role-play “may be an effective teaching method for developing understanding and exploring complex issues, and for experiencing and understanding differing views” (Bell, 2001). The study also found that the asynchronous online environment might reduce the development of empathy through engagement in the role, but had the advantage of making role-play an “emotionally safer and lower risk activity than face-to-face role-play” (p. 258).

Wishart, Oades, and Morris (2007) conducted a study on implementing online role-play to teach Internet safety awareness using Net-Detectives, an online role-play activity designed for nine- to twelve-year olds, but used with Year Five or Year Six (10th and 11th grade) students. The qualitative study included questionnaires and interviews with teachers. Seventy-five percent of the teachers reported that the online role-play had a significant impact on the students’ awareness of Internet safety issues while the other 25% stated it had some impact. When asked about the impact of the online role-play, responses included successfully supporting children’s discovery learning, encouraging physical involvement and engagement, and online-role-play was considered to be cross-curricular. Because it was a different environment from their normal learning environments, the students viewed it as a special treat, and were more motivated to work during playtime (Wishart, Oades, & Morris, 2007).

Case studies and anecdotal findings are interesting and motivating to other educators looking to immerse themselves in a virtual learning environment. However, there is little, if any, quantitative or qualitative research showing the effectiveness of using a virtual world as a teaching medium on academic achievement or higher order thinking skills.

Methods

Introduction

The purpose of this study was to determine the impact of using a virtual world on student achievement, higher order thinking skills, and motivation. An action research study was used to address each of the research questions. In this chapter, the researcher provides a rationale for the research design and describes the research setting, participant selection, duration of the study, curricula, approaches for data collection and analysis, human subjects' considerations, and personal stance as a researcher. In addition, this study describes the assessment tools used to measure academic, higher order thinking skills and student motivation.

By conducting this research the researcher will answer the following questions and test the associated hypothesis:

1. What impact does the integration of a Virtual World Learning Environment (VWLE) into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on student achievement?

H_0 = There is no statistically significant difference between the achievement of the treatment group from the control group.

H_1 = There is a statistically significant difference between the achievement of the treatment group from the control group.

2. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on higher order thinking skills?

H_0 = There is no statistically significant difference between the critical thinking skills of the treatment group from the control group.

H_1 = There is a statistically significant difference between the critical thinking skills of the treatment group from the control group.

3. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on test motivation?

H_0 = There is no statistically significant difference between the test motivation of the treatment group from the control group.

H_1 = There is a statistically significant difference between the test motivation of the treatment group from the control group.

Rationale for Research Design

Action research is defined as any inquiry by an educational stakeholder such as classroom teacher, principal, or guidance counselor, for the purpose of gathering information about how their school operates, how effectively they teach, and how well the students learn (Mills, 2011). This is a quantitative action research study using scores from achievement tests, tests of higher order thinking skills, demographic information provided by the school district and by the students themselves, and test motivation self-survey. It is considered action research because the study took place in the researcher's own ninth grade computer application courses during the 2010 – 2011 school year with the purpose of identifying how well the students learn the content using different instructional media.

The unit was broken down into two sub units: a) Intellectual property and Digital Citizenship: Intellectual property/creative content, creative commons, copyright laws, legal and illegal downloading, fair use, consequences of illegal use of creative content, creative content and social digital citizenship in schools, and digital citizenship on the Internet. b) Cyber safety: Cyber bullying, revealing too much information

online, cyber predators, tracking, social networking safety and security, and e-mail/IM/chat room safety. Students in the fall semester were taught the curriculum integrating the virtual world. Students in the spring semester were taught the same curriculum without integrating the virtual world. Data collection took place before and after each of these groups of students' exposure to the unit.

Determining whether there is an increase in student achievement involves measuring a knowledge base before and after the lesson. Scores on the pretests and posttests were determined by a percentage of correct answers with multiple-choice questions. Scores from each set of assessments were then compared to see if there was any improvement individually and as a group. Questions used for the pretests and posttests were provided with the curriculum material used.

Higher order thinking skills can be evaluated by using tests designed to measure the ability to read and think critically about the passages read and answer questions beyond what is explicitly given as fact. Answering the questions requires reasoning about the facts, drawing conclusions, and responding logically to interpretive questions about the facts. The Cornell Critical Thinking Test Level X tests induction, deduction, credibility, and identification of assumptions in each section of the test. The test is comprised of four sections measuring these skills. Two of these sections were given prior to the unit and the remaining two sections were given after the unit. The results of these scores were compared to determine if there was more of a statistically significant increase in higher order thinking skills for the control group compared to the treatment group. Because of the imbalanced quantity of questions between the pretests and posttests, scores from the posttests were scaled to match the pretests.

To measure motivation, a Student Opinion Scale measuring examinee motivation developed by Donna L. Sundre and Deborah L. Moore from the Center for Assessment and Research Studies at James Madison University, Harrisonburg, Virginia was used at the end of the academic achievement posttest (Thelk, Sundre, Horst, & Finney, 2009). This test was developed to measure students' motivation to do well on exams. It is a ten-question Likert scale questionnaire.

Setting

This study took place in the high school of a small suburban school district in downstate New York. The district serves approximately 1,500 students grades K-12. The high school houses grades nine to twelve, with a combined enrollment of approximately 410 students. The average size of the technology classes is 17 students. District-wide, 8% of students are eligible for free or reduced lunch and 3% have limited English proficiency. The racial/ethnic make-up of the district is predominantly White/Caucasian (64%), followed by Hispanic or Latino (16%), Asian / Native Hawaiian / Other Pacific Islander (9%), and Black or African American (9%), based on the most recent available statistics for the 2009-2010 school year. (The New York State District Report Card, Valhalla Union Free School District, 2010).

At the high school, 8% of students are eligible for free or reduced lunch and 1% have limited English proficiency. The racial/ethnic make-up of the school is predominantly White/Caucasian (67%), followed by Hispanic or Latino (15%), Black or African American (11%), and Asian / Native Hawaiian / Other Pacific Islander (7%). Sixty-eight percent of teachers at the high school hold a Master's Degree plus 30 hours or a doctorate (The New York State District Report Card, Valhalla Union Free School District, 2010).

The school district receives E-Rate funding and is compliant with the mandates set forth by the Universal Service Administrative Company and the Federal Communications Commission to receive this funding. The Schools and Libraries Program of the Universal Service Fund, commonly known as E-Rate, is administered by the Universal Service Administrative Company (USAC) under the direction of the Federal Communications Commission (FCC), and provides discounts to assist most schools and libraries in the United States to obtain affordable telecommunications and Internet access. It is one of four support programs funded through a Universal Service fee charged to companies that provide interstate and/or international telecommunications services. ("Universal Service Administrative Company," 2010). E-Rate funding regulations dictate that schools abide by Title II, Protecting Children in the 21st Century Act. This amends the Communications Act of 1934, by adding the requirement that schools provide instruction on Internet Safety and Digital Citizenship to its students ("Protecting Children in the 21st Century Act," 2007).

For this study, the students in the experimental group were taught the standard curriculum, with key components taught inside the virtual world Grand Central Grid. This grid was owned, operated, and maintained by the researcher. It was developed from the Open Sim open source software. This software allows anyone with a server and some basic programming knowledge to create his/her own virtual world. The rationale behind using a private grid as opposed to a public grid such as Teen Second Life[®] or The Reaction Grid[®] is multifaceted. First, the operating expense per region is lower as there is no profit margin to cover. Secondly, Linden Labs closed the Teen Grid during the fall of 2010. Finally, it is significantly easier to maintain control over safety parameters for students, especially minors. The grid administrator can control features such as avatar registration, default avatar appearances, grid rating (PG), region admittance, and group memberships. Students in the control group were taught the standard curriculum without integrating of the virtual world.

Participant Selection

All ninth-grade students are required to take a fundamental computer applications course. During the first half of the school year, half of the ninth grade is enrolled in Computer Applications 9, every day for 20 weeks. The remaining half of the ninth graders takes the course every day for 20 weeks during the second semester. Students are randomly assigned to either the fall or spring semesters. During the 2009-2010 school year, a formal curriculum was developed and integrated into the course to teach Internet safety and digital citizenship. Therefore, all the ninth graders during that year received this instruction. There are currently six sections of Computer Applications 9. For this study, the researcher used all six sections of Computer Applications 9 classes, in which none of the students had received prior instruction in Internet Safety.

Delivery of Instruction

Both treatment and control groups were taught the same curriculum. The primary differences in instruction are in the content delivery methods and the level of interaction with the content. The traditional delivery methods include reading, researching, presentations, videos, Facebook security day, group discussions, group written assignments, and the creation of a videotaped public service announcement on any one aspect of the unit taught.

Content delivery in the virtual world was through the use of inworld instructional media and interaction with the content as it is being delivered. The delivery methods included reading, researching, presentations, videos, Facebook security day, inworld group discussions, inworld group written assignments, inworld constructions, inworld role-play, and the creation of an inworld screencast public service announcement on any one aspect of the unit taught. Students created projects demonstrating their understanding of various principles of digital citizenship and all group discussions and work was done within group pods. Pods are simply a group of sitting-cushions in a circle that are lifted into the air and each group is out of text reach of other groups.

One project in the digital citizenship portion of the unit involving the use of the discussion pods and content construction was creating representations of the four fair use factors. Groups of students had to construct objects or scenarios in the virtual world that depicted one of the four factors. The groups first met in their pods to brainstorm ideas for the factor they were assigned. All conversations were text based since members of the groups were dispersed in the physical classroom. One group, illustrating the factor regarding the content's impact on the market, chose to build an iPhone[®] and a PearPhone with a bar chart showing the rising sales of the PearPhone compared with the iPhone[®]. Another group, illustrating the factor regarding educational use, created a classroom with a copyrighted poem to read and a computer screen shot of a blog posting that poem as if it were the blogger's original poem. After the project, the groups went back to their pods to discuss questions regarding the four factors and to submit the answers to the teacher on an inworld notecard. The researcher was able to monitor each group's text chats and refocus and redirect the conversation as needed.

Another activity in the virtual world was about profile security. Each avatar has a profile that other users can access. After a class discussion on safe practices, students completed their profiles. The next day each student's profile was displayed on the white board. The rest of the class was able to review each profile and make suggestions for further safety improvements. This activity was followed by Facebook Day, an activity in which both groups participated. On Facebook Day the students were shown all of the safety features available and locked down their accounts so they are only visible to friends and so third party applications cannot access their personal information.

Role-play in the virtual world was used to have students learn and practice how to react and behave in various online situations. The students played a role-playing game in which each student was given a secret identity including a first name, gender, hair color, eye color, and height. They partnered with another student inworld and each was to try to elicit this identity information from the other in instant messaging chat. Their goal was to find creative ways of answering without giving away the information. Their text conversations were logged and evaluated. The final project of the unit was to create public service announcement videos inworld using screen-capture software Jing. These videos, called machinimas, were then brought into iMovie for final editing. Students in the control group engaged in the same activity, but did their filming in the classroom and school.

Some students may have prior experiences using virtual worlds or other social networking communication while others may have limited computer resources and exposure to online communications. Still others might have family members, including parents, who also use various social networks or virtual worlds. In addition, prior achievement may have an impact on how students react to either the control group or the experimental group. Each of these intervening variables can affect students' experiences with using a virtual world as part of their course of study. Therefore, appropriate demographic information was collected and incorporated into the data analysis. The data collected showed that the diversity did not impact any one group more significantly than the other. This is likely because students are required to take the class and scheduling students into each group is completely random.

Procedures

The researcher developed lessons for each section of the Internet Safety and Digital Citizenship curriculum prior to the study. At the start of the course, all students in the computer applications courses received one student information letter and permission slip to participate in the study form and one parent/guardian information letter and permission slip to participate in the study form. Students were instructed to read these forms with their parent/guardian and bring back the signed student and parental permission slips. Permission to participate in the study was required for both the treatment and control groups.

Before the unit of study, information about each of the student participants was collected. Confidential data were obtained through the district's student information system on gender, date of birth, age, ethnicity, special education classification, if any, student ID number, parent/guardian name, and home address to ensure a) students' Individual Education Plans (IEPs) were followed during testing, if applicable, and b) for parent contact information, if needed. Additional personal student demographic information was collected in a survey that identified a) students' comfort level using technology, b) the use of social networking, c) prior experience using various software tools, d) computer access at home, e) how computer is used, and f) frequency of use. The researcher administered the pretest from Cornell Critical Thinking Test. On the following day the researcher administered the academic content area pretest. The six-week unit was then taught. At the end of the unit, the academic and critical thinking posttests and the test motivation survey were given.

Duration of Study

Data collection for the study lasted approximately six weeks during each semester of the 2010-2011 school year. Schools in the northeastern part of the United States typically begin the week after Labor Day. Early September is a time for students to get used to their new schedules, routines, new classmates, and in our case, the technology they will use. The study began at the end of October during a

lull between the rush of a new school year and the rush of the holiday season. The data collection portions of this study were completed by April 2011.

Data Collection Approaches

Student Information Systems

Confidential demographic data from the student information system were collected, including the student ID, gender, and, if applicable, Individual Education Plan (IEP) modifications. This data were used to verify that the experimental and control groups both contain similar demographics and to ensure that any mandated IEP modifications were adhered to during the study.

Surveys/Questionnaires

Students were given a survey from The Panhandle Educational Consortium Student Technology Survey to collect data on their use of technology. This survey is aligned with the National Educational Technology Standards for Students (NETS-S) developed by the International Society for Technology in Education (ISTE).

Another survey, the Student Opinion Scale measuring examinee test motivation developed by Donna L. Sundre and Deborah L. Moore from the Center for Assessment and Research Studies at James Madison University, Harrisonburg, Virginia, was used at the end of the academic achievement posttest. This test was developed to measure students' motivation to do well on exams. It is a ten-question Likert scale questionnaire.

Pretests and Posttests

Achievement Tests

Bloom's Digital Taxonomy delineates six categories of learning: remembering, understanding, applying, analyzing, evaluating, and creating. While the first three are hierarchical, the first two do not require critical thinking. They test for basic facts and understanding.

Student achievement, for the purposes of this study, will refer to the first two stages of Bloom's Taxonomy on cognitive learning: a) remembering, which entails recognizing, listing, describing, identifying, retrieving, naming, locating and finding, and b) understanding, which involves interpreting, summarizing, inferring, paraphrasing, classifying, comparing, explaining, and exemplifying. In addition to academic testing assessments to determine if students achieve these stages, they can also be demonstrated through the use of technology. Remembering can be demonstrated through bullet pointing, highlighting, bookmarking, social networking, social bookmarking, favoriting/local bookmarking, and searching. Understanding can be demonstrated through advanced searchers, Boolean searches, blog journaling, categorizing, tagging, commenting, annotating, and subscribing.

Higher Order Thinking Tests

Higher order thinking skills involve the top four levels of Bloom's Taxonomy: a) applying: implementing, carrying out, using, executing (demonstrated through technology by running, loading, playing, operating, hacking, uploading, sharing, and editing); b) analyzing: comparing, organizing, deconstructing, attributing, outlining, finding, structuring, integrating (demonstrated through technology by mashing, linking, validating, reverse engineering, cracking, and media clipping); c) evaluating: checking, hypothesizing, critiquing, experimenting, judging, testing, detecting, monitoring (demonstrated through technology by blog commenting, reviewing, posting, moderating, collaborating, networking, refactoring, and testing); and d) creating: designing, constructing, planning, producing, inventing, devising, making (demonstrated through technology by programming, filming, animating, blogging, video blogging, mixing, remixing, wiki-ing, publishing, video casting, podcasting, directing, and broadcasting). The last three are not hierarchical. However, all four of these require the higher order thinking skills characterizing critical thought (Bissell & Lemons, 2006). In other words, critical thinking requires higher order thinking skills as defined by the upper four levels of Bloom's Taxonomy. The evaluation of higher order thinking skills requires tests that

measure critical thinking. The Cornell Critical Thinking Test X is designed for fourth through fourteenth grade students measuring the critical thinking skills of induction, deduction, observation, credibility, and assumptions. It is a 74-question test designed for one 50-minute period or the test may be split up into more than one session.

Data Analysis

For each of three research questions defined above, there is a dependent variable. For research question one, the dependent variable is student achievement, their knowledge of digital citizenship and Internet safety as determined by the pre and post content tests. For research question two, the dependent variable is higher order thinking skills as determined by the Cornell Critical Thinking Test. For research question three, the dependent variable is test motivation as determined by the Student Opinion Survey. Each of these dependent variables is separate but related in that they will give an overall picture of the impact of using a VWLE in the classroom.

The main independent variable in this study, which applies to each of the research questions, is the section of the unit being taught. Other independent variables may come into play such as age, gender, and comfort with technology prior to receiving instruction. The researcher will look at and control for these confounding variables.

Both the control group and experimental took pretests and posttests for academic achievement and for higher order thinking skills. Posttest scores were then compared using two-tailed t-tests between the two groups to test the null hypothesis for each of the three research questions. For the first research, question subject matter achievement posttest score was the dependent variable, group as the independent variable, and subject matter achievement pretest score as the co-variant. For the second research question, critical thinking posttest scores were the dependent variable, group as the independent variable, and subject matter achievement pretest score as the co-variant.

Test motivation was being measured using a self-survey taken at the end of the content posttest. A two-tailed t-test analysis was used to compare the motivation of the two student groups. All data collected were recorded in Excel and analyzed using Statistical Package for the Social Sciences (SPSS).

Human Subjects Considerations

The participants include the researcher/teacher who is a high school technology teacher working with students in grades nine to twelve. All of the students included in the study are in the ninth grade. Students are of mixed gender, ethnicity, and all of sound mind and body. There is no substantial or probable risk to any person involved in this study. Consent was sought through the school district, parents of the students, and the students themselves. Parents were informed of the general purpose and timeline of the study at Back to School Night in September 2010 as well as through written information. Students were informed of the general purpose and timeline of the study during the school day and were provided with written information. Both parents and students were asked to sign consent forms. Any student who did not provide two signed consent forms simply remained in the class and was the recipient of the same instruction but was not given any of the pretests, posttests, or surveys. Copies of all written information provided and associated consent forms are included as appendices.

There are two ways that confidentiality was maintained in this study. Participating students were assigned confidential ID numbers. These ID numbers helped track students' pretest and posttest scores as well as the survey results. The list of students and the corresponding ID numbers were kept in a locked cabinet. The teacher/researcher who was a part of this study is self-identified and will be public from the onset so there are no pending issues of confidentiality.

Researcher's Qualifications

This researcher is uniquely qualified to conduct this study. She is a certified seventh-to-twelfth grade mathematics teacher with eighteen years of experience in the classroom and has been teaching computer science and computer applications for 14 of those 18 years. She is an active member in the International

Society for Technology in Education (ISTE), Computer Science Teachers' Association (CTSA), and is a member of her school district's Technology Task Force, where she helps develop district-wide technology policies and grade level curriculum. She has also presented her curriculum on Digital Citizenship and Cyber safety at two regional conferences: LHRIC Tech Expo 2010 and LHRIC Tech Expo 2011. This researcher is also a member of Upsilon Pi Epsilon, the International Honor Society for the Computing and Information Disciplines as well as a former member of the Board of Advisors for Red Apple Digital, Inc., a technology company that designs Web-based educational tools. Additionally, this researcher has been integrated into the educational community in Second Life[®], a well-known virtual world, and has been teaching inworld for ISTE since March 2010. Her current enrollment in the Doctorate program at this University has provided her with the foundational knowledge in research methods to conduct this study in a manner that is safe, ethical, and will serve to add to the wealth of knowledge in the education field. This researcher has also completed the National Institutes of Health training course entitled Protecting Human Research Participants.

Data Analysis and Results

Introduction

The purpose of this study is to investigate whether or not the integration of the virtual world learning environment (VWLE), Grand Central Grid, into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship, has a positive impact on student achievement, higher order thinking skills, and test motivation. Several instruments were used to measure the impact of integrating a VWLE on these three factors on both the control and treatment groups. Pre and post unit tests were administered to the students to measure changes in academic achievement. The Cornell Critical Thinking Test was given in two parts as pretests and posttests to measure changes in higher order thinking skills. At the end of the post unit test, the Student Opinion Survey developed by researchers at James Madison University was administered to measure the students' motivation to do well on the post unit test. The results of this survey were compared between the control and the treatment groups. All assessments and surveys have been previously established and needed no further validation tests.

Descriptive Characteristics of Participants

This study took place in a small suburban school district in New York State. The participants were all ninth-grade students who were required to take the Computer Applications 9 course in which the Digital Citizenship and Cyber Safety curriculum was taught. This one-semester course runs concurrently with a Freshman Seminar course that is also required. Students are randomly placed in either the Freshman Seminar course or the Computer Applications 9 course first semester and then they switch the second semester. There were a total of 102 participants, 51 girls and 51 boys. The control group contained 25 girls and 26 boys; the treatment group contained 26 girls and 25 boys. Students in both the treatment group and the control group were administered the Panhandle Area Educational Consortium Student Technology Survey to establish that both groups had similar backgrounds both demographically and with respect to technology use.

Research Questions and Associated Hypotheses

This study set out to answer the following research questions and test the associated hypotheses:

1. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on student achievement?

H_0 = There is no statistically significant difference between the achievement of the treatment group from the control group.

H_1 = There is a statistically significant difference between the achievement of the treatment group from the control group.

2. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on higher order thinking skills?

H_0 = There is no statistically significant difference between the critical thinking skills of the treatment group from the control group.

H_1 = There is a statistically significant difference between the critical thinking skills of the treatment group from the control group.

3. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on test motivation?

H_0 = There is no statistically significant difference between the motivation of the treatment group from the control group.

H_1 = There is a statistically significant difference between the motivation of the treatment group from the control group.

Analysis of Data

This section will present an analysis of the data for each research question and present findings to either accept or reject the null hypothesis for each.

1. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on student achievement?

To test this hypothesis, an independent samples t-Test was used to assess the equality of the variances and equalities of the means between the treatment and control groups. The means for the academic achievement posttest for the treatment group was 76.51 for the treatment group and 79.47 for the control group on a scale of 0-100 as shown in Table 1.

Table 1: Academic Posttest Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Academic Post	Treatment	51	76.51	9.388	1.316
	Control	51	79.47	7.880	1.103

Levene's Test for Equality of the variances had an F-score of .869 with a significance of .353, indicating there is no statistically significant difference between the groups' variances as shown in Table 2.

Table 2: Academic Posttest Levene's Test for Equality of the Variances

	F	Sig.
Academic Post	.869	.353

Likewise, the t-Test for the equality of the means had a t-value of -1.724 and a significance (two-tailed) of .088, revealing no statistically significant difference between the groups' means as shown in Table 3.

Table 3: Academic Posttest Independent Samples T-Test

t-test for Equality of Means							
	t	df	Sig. (two-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
						Lower	Upper
Cornell_Post							
Equal var. assumed	-1.724	100	.088	-2.961	1.717	-6.368	.477
Equal var. not assumed	-1.724	97.04	.088	-2.961	1.717	-6.369	.448

The result supports the acceptance of the null hypothesis. The treatment intervention is an equally effective means of delivering the unit content taught.

2. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on higher order thinking skills?

To test this hypothesis, an independent samples t-Test was used again to assess the equality of the variances and equalities of the means between the treatment and control groups. The means for the Cornell Critical Thinking posttest for the treatment group was 24.922 for the treatment group and 26.431 for the control group on a scale of 0-50 as shown in Table 4.

Table 4: Cornell Posttest Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Cornell Post	Treatment	51	24.922	11.9144	1.6684
	Control	51	26.431	9.9262	1.3900

Levene's Test for Equality of the variances had an F-score of .597 with a significance of .442, indicating there is no statistically significant difference between the groups' variances as shown in Table 5.

Table 5: Cornell Posttest Levene's Test for Equality of the Variances

	F	Sig.
Cornell_Post	.597	.442

Likewise, the t-Test for the equality of the means had a t-value of -.695 and a significance (two-tailed) of .488, revealing no statistically significant difference between the groups' means as shown in Table 6.

Table 6: Cornell Posttest Independent Samples T-Test

t-test for Equality of Means							
	t	df	Sig. (two-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
						Lower	Upper

Cornell_Post								
Equal var. assumed	-.695	100	.488	-1.5098	2.1715	-5.8180	2.7984	
Equal var. not assumed	-.695	96.8	.489	-1.5098	2.1715	-5.8197	2.8001	

The result supports the acceptance of the null hypothesis. The treatment was equally as effective at developing critical thinking skills as the control group.

3. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on student motivation?

To test this hypothesis, an independent samples t-Test was used to assess the equality of the variances and equalities of the means between the treatment and control groups. The means for the motivation survey for the treatment group was 10.16 for the treatment group and 9.85 for the control group on a scale of -20 to 20 as shown in Table 7.

Table 7: Motivation Survey Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Motivation Survey	Treatment	51	10.16	5.278	.739
	Control	51	9.86	6.299	.882

Levene's Test for Equality of the variances had an F-score of .591 with a significance of .444, indicating there is no statistically significant difference between the groups' variances as shown in Table 8.

Table 8: Motivation Survey Levene's Test for Equality of the Variances

	F	Sig.
Motivation Survey	.591	.444

Likewise, the t-Test for the equality of the means had a t-value of .256 and a significance (two-tailed) of .799, revealing no statistically significant difference between the groups' means as shown in Table 9.

Table 9: Motivation Survey Independent Samples T-Test

t-test for Equality of Means							
	t	df	Sig. (two-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
						Lower	Upper
Motivation Survey							
Equal var. assumed	.256	100	.799	-1.5098	.294	-1.989	2.577
Equal var. not assumed	.256	97.02	.799	-1.5098	.294	-1.990	2.578

The result supports the acceptance of the null hypothesis. The two groups were equally motivated to do well on the academic achievement posttest.

Correlation Analyses

The variables were then correlated to determine if there are any bivariate relationships among them as shown in Table 10.

Table 10: Correlations Among Dependent Variables and Gender^a

		Motivation	Academic Post	Cornell Post	Gender
Motivation	Pearson Correlation	1	.331**	.191	-.182
	Sig. (2-tailed)		.001	.055	.067
	Sum of Squares and Cross-products	3378.990	1694.010	1218.324	-53.500
	Covariance	33.445	16.772	12.063	-.530
Academic Post	Pearson Correlation	.331**	1	.607**	-.195*
	Sig. (2-tailed)	.001		.000	.050
	Sum of Squares and Cross-products	1694.010	7744.990	5875.676	-86.500
	Covariance	16.772	76.683	58.175	-.856
Cornell Post	Pearson Correlation	.191	.607**	1	-.125
	Sig. (2-tailed)	.055	.000		.210
	Sum of Squares and Cross-products	1218.324	5875.676	12082.324	-69.500
	Covariance	12.063	58.175	119.627	-.688
Gender	Pearson Correlation	-.182	-.195*	-.125	1
	Sig. (2-tailed)	.067	.050	.210	
	Sum of Squares and Cross-products	-53.500	-86.500	-69.500	25.500
	Covariance	-.530	-.856	-.688	.252

^an = 102

* p < .05, **p < .01

The analysis showed a correlation between motivation and the academic posttest with $r = .331$, Sig. (one-tailed) = .000. However, since there was no statistically significant difference in the means of the motivation between the two groups, it is not possible to establish the VWLE as a factor in motivating the students to do well on the unit test. Scores on the Cornell Critical Thinking posttest were also highly correlated with scores on the academic posttest with $r = .607$, Sig (one-tailed) = .000, indicating that students with higher critical thinking skills performed better on the academic test than those with lower critical thinking skills. Again, however, since there was no statistically significant difference in the means of the Cornell Critical Thinking posttest scores between the two groups and no statistically significant difference between the means of the academic posttest of the two groups, it is not possible to establish the VWLE as a factor in this correlational relationship.

Summary of Data

This study investigated whether or not the integration of the virtual world learning environment (VWLE), Grand Central Grid, into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship has a positive impact on student achievement, higher order thinking skills, and student motivation. This study was conducted in a small suburban New York high school involving 102 ninth-grade students, 51 in each of the treatment and control groups, with 50% of the students of each gender in each group. Students were randomly assigned to either the control or treatment groups. Pretests and posttests on academic content knowledge and critical thinking skills were administered and a self-motivation survey was given as measurement tools to answer the research questions. Levene's tests and independent samples t-Tests were used to assess the equality of the variances and equalities of the means between the treatment and control groups. A correlational analysis was conducted to find any relationships among the variables. For the three research questions, the data supported the acceptance of the null hypothesis. The data showed that the virtual world learning

environment was as effective as the traditional classroom with respect to student achievement, higher order thinking skills, and motivation. The correlational analyses showed relationships between motivation and academic achievement on the posttest and between the critical thinking posttest and academic achievement posttest. The means for each of these tests did not show any statistically significant difference between the two groups; therefore, it is not possible to attribute the correlation to the different learning environments.

Students' Work Inworld

One inworld activity the students in the treatment group engaged in was a role-playing game. Students paired up and were given fictional character roles. The purpose of the game was to give the students practice interacting safely with online strangers. The object of the game was two-fold. With their partner as stranger, the students had to simultaneously try to elicit the stranger's character identity while at the same time creatively avoiding answering those same questions from their partner. An example of this is from one pair of students, whose characters are Stephanie and Amanda22.

A portion of their chat log is:

```
Amanda22: hi how are you
Stephanie: good, how are you?
Amanda22: good what are you doing
Stephanie: nothing much
Amanda22: that's good what is your name
Stephanie: Stephanie, what is yours?
Amanda22: Amanda how old are you
Stephanie: uhm old enough I guess
Amanda22: why can't you tell me your exact age im just wondering
Stephanie: I'd rather not
Amanda: anyways are you from earth or mars
Stephanie: I'm pretty sure I'm from earth
Amanda22: o okay have we ever met
Stephanie: Doubt it
Amanda22: What heritage are you
Stephanie: Well I live in America
Amanda22: me too what do you like to do in your free time
Stephanie: Just hang with some friends, how about you?
Amanda22: the same and I like to meet other ppl I don't know
Stephanie: Oh that's cool
Amanda22: yup so hows are your parents? do you have any sibblings?
Stephanie: they're good and yeah
Amanda 22: what are their names
Stephanie: I'd rather not share that, but they're nice
Amanda22: why don't you want to share that with me? do you think im going to tell anyone that
information
Stephanie: I just don't know who you are, and I don't know you too well.
```

Another activity that was done inworld by the treatment group was the creation of their public service announcements. These movies created inworld, machinimas, were recorded using screen capture software. Screen shots from these videos follow:



Figure 1: Screenshot from public service announcement TMI



Figure 2: Screenshot 1 from public service announcement Showing



Figure 3: Screenshot 2 from public service announcement Showing

Findings, Conclusions, and Implications

Introduction

This study was designed to address three research questions. This chapter will give a summary of this study, discuss the findings of the study, draw conclusions, discuss implications, and make recommendations for future research.

Summary of the Study

This researcher investigated whether or not the integration of the virtual world learning environment (VWLE), Grand Central Grid, into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship, has a positive impact on student achievement, higher order thinking skills, and student motivation.

This study focused on the following research questions:

1. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on student achievement?
2. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on higher order thinking skills?
3. What impact does the integration of a VWLE into a unit designed to meet the federally mandated e-rate requirement to teach Internet safety and digital citizenship have on test motivation?

This action research study took place in the researcher's own classroom in a small suburban school district in New York. The subjects were 102 ninth-grade students, 51 in the control group and 51 in the treatment group. The students were assigned to the groups by randomized class scheduling for this required course. Letters explaining the study as well as permission slips to participate in the data collection were distributed and collected from the students and their parents. The Panhandle Consortium Technology Survey was given to all students prior to each group's participation in the study to establish the equality of the groups' technology background going into the study. The four-section Cornell Test of Critical Thinking was divided into two parts, and given as pretests and posttests for higher order thinking

skills, and pre and post academic content tests were given to assess achievement. A self-motivation survey was given to measure motivation to do well on the post unit test. Data collected from each group were analyzed using Excel and SPSS. Two tailed t-tests for the means of each of the posttest scores as well as the motivation survey were calculated for each group. Correlational relationships between independent and dependent variables were calculated.

Findings

The means of the posttest for each of the groups' academic tests, critical thinking tests, and motivation survey were calculated. In each case the t-test for the equality of the means revealed no statistically significant difference between the groups' means on the different assessments. The integration of the virtual world was found to be as effective as traditional class methodologies and provides an alternate means of delivery of the content. It is important to note, however, that the motivation measurement used was for motivation to do well on the unit test, not on motivation to learn the curriculum.

Correlational analysis between the variables revealed two statistically significant relationships. A strong correlational relationship existed between motivation and academic posttest scores. However, since there was no statistically significant relationship between the means of the two groups' scores, the relationship cannot be attributed to the integration of the virtual world. Likewise, a strong correlational relationship existed between the Cornell Test of Critical Thinking tests and the academic posttests. Again, however, since no statistically significant relationship was found between the means of the two groups' scores, the relationship cannot be attributed to the integration of the virtual world.

Conclusions

Although the differences in the results of the achievement, higher order thinking skills, and motivation assessments between the two groups were not statistically significant, they are consistent with other research on K-12 online learning (Figlio, Rush, & Yin, 2010; Harvey-Woodall, 2009; O'Dwyer, Carey, & Klieman, 2007).

There are several possible explanations as to why the two groups' results were not statistically different across the board. One significant possibility is the desensitization to the digital medium. Teens today spend 10.75 hours per day, including multitasking with media. According to the Pew Research Group's Pew Internet & American Life Project (Lenhart, Purcell, Smith, & Zickuhr, 2010), 93% of youths age 8-17 access the Internet. More than 73% of teens have profiles on social networking sites, and 38% of the online teens are sharing content, such as photos, videos, artwork, or stories. Eighty percent of all teens have a console gaming system, and 51% have a portable gaming system. However, only eight percent of teens go into virtual worlds, suggesting they are not stimulating enough environments to capture their attention away from the social networking and game playing sites.

Another possibility as to why the virtual world did not show increased scores on the posttests and surveys is the inherent problems that accompany virtual worlds, such as system requirements, learning curves, and technical failures (Wiecha, Heyden, Sternthal, & Merialdi, 2010). The software requires downloading and significant system requirements for bandwidth, video cards, and processing power. Students in the treatment group frequently had to download and reconfigure the software to access the correct grid. In addition, the learning curve for navigation and interaction in a virtual world is steep and the concentration needed for content learning can be lost in the process of learning to navigate the virtual environment. Students spent two weeks of class time learning how to walk, fly, set up their avatars, and build. Finally, the likelihood of technical problems and failures is high, and, in fact, did occur regularly during the study. The server crashed on an average of one time per week, with downtime being approximately one hour, and lag or latency on Grand Central Grid was common. These problems can individually and collectively have an impact on the learning process.

Not measured as part of the study, but important to note, are this researcher's informal observations during the study. Students in the treatment group appeared to be more engaged, meaning they were not only focused on the task, but also committed to successful completion of the assignments. This was

demonstrated by the enthusiasm with which they interacted with each other when working on an assignment and the quality of work that was produced. Students were on task, and interested in the subject. They looked forward to coming to class and were more immersed in the content since they were interacting with it in both the real and virtual worlds. Increased interactions between students who typically did not talk with each other were noticed. Students engaged in conversations related to the topic that were not heard in the control group.

These informal observations are congruent with current research. In a study to measure user attitude toward using Second Life[®] and to explain the different types of motivational determinants, such as intrinsic and extrinsic, of Second Life[®] use showed that users' extrinsic and intrinsic motivations are significantly associated with their motivation to use Second Life[®]. The experience was enjoyable, intrinsically rewarding, and eventually increased the intention of use (Shin, 2009). A project called 3-D Worlds, for 60 autistic students from 6 high schools in New York City has three goals: a) applying functional living skills, b) increasing communication, and c) expanding social skills. The project uses Second Life[®] where the district designed a space for the students to communicate and develop social and practical living skills (Stroud, 2009). To develop their social skills, the students meet weekly for a community day to interact with one another. Students communicated with other students they did not know, some using text-based chatting, but most using voice communication.

Implications

President Barack Obama's fiscal year 2012 budget request for the Department of Education calls for a) \$372 million for the Expanding Educational Options programs, which will support districts implementing various educational options for students, including online learning; b) \$835 million for the Effective Teaching and Learning for a Complete Education programs, which will support states and districts to identify how best to meet the academic needs of their students and teachers through innovative uses of technology; and c) \$2.5 billion for Effective Teachers and Leaders formula grants, which will support professional development for teachers to use technology effectively in the classroom (Obama, 2011). Billions of dollars are being spent on innovative uses of technology and online learning programs, and it is important that the dollars are spent where they will have the most impact on the greatest number of students.

The integration of Grand Central Grid into the Internet safety and digital citizenship unit was found to be equally as effective at increasing academic achievement, higher order thinking skills, and motivation to do well on the test as not integrating it and is a viable alternative. If these are the only areas of concern for a school district, then investment dollars might be better spent on other areas of technology integration and associated professional development where the technology has a greater impact on these factors. However, if a school district is also concerned about motivation, engagement, interest, and/or social development, then there is a large body of evidence that virtual worlds can meet that need, and investing in those environments would be money well spent (Sheehy, 2007; Shin, 2009; Stroud, 2009).

Future Research

Further study into the integration of virtual worlds into K-12 curricula should be done on the core curricula subject areas of math, science, English, and social studies. It is important to see how well virtual world technology improves these essential areas on which schools are typically rated. The accessibility to successful alternate teaching environments would be very helpful to schools, especially those with lower achieving or unmotivated students. Longitudinal studies should also be conducted to determine how well the students retain information after the integration of a virtual world into the curricula compared to traditional classroom teaching.

Another recommendation for future research would be to incorporate student feedback surveys, interviews, and observations. While this study provided a factual quantitative analysis of the impact integrating virtual worlds into a curriculum has on a student achievement, higher order thinking skills, and test motivation, there are many other facets of student learning and growth that cannot be summed up

quantitatively, such as interest, engagement, social skill development, immersion in the content, and perception of learning.

Finally, qualitative studies measuring the relationship between a student and his/her avatar and social skill development would be beneficial to teachers, guidance counselors, and school psychologists. Anecdotal evidence strongly suggests positive social skill development in virtual worlds, especially for special needs students. Stronger evidence of this could be a catalyst for incorporating virtual worlds into students' programs.

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Collaboration On Virtual Harmony: Stem Research On The Mars Geothermal, Nonlinear Game Design On Atlantis And Unity3d, And The Migration To Moses

Dr. Cynthia Calongne
Chair Emerging Media
Colorado Technical University

Dr. Andrew Stricker
Air University



Abstract

Virtual Harmony is a custom virtual environment that spans over 32 simulations to promote exploration and compelling learning experiences for education in Science, Technology, Engineering, and Mathematics (STEM) as well as the study of history, leadership, innovation and military tactics. This paper introduces the current game design activities on Virtual Harmony and in Unity3D, the collaborative activities on the Military Open Simulator Enterprise Strategy (MOSES) project and a research study that evaluated the use of model-based reasoning and somatic computing for evaluating alternatives in avatar morphology to enhance STEM learning experiences within a Mars Geothermal game simulation.

Introduction

New Harmony, a city in southern Indiana, has long inspired creativity, innovation and artistic expression in its residents and it is the model and inspiration for this virtual world research. Virtual Harmony is modeled after New Harmony, and is a custom virtual environment that serves as both a metaphor for creativity and a workspace for research and development. It is hosted at two locations and spans nearly a dozen simulator regions, including six regions on the Military Open Simulator Enterprise Strategy (MOSES) project (MOSES, 2011) and five regions on the research and development server.

Stimulating the Pioneering Spirit

Virtual Harmony embraces the early pioneering spirit that permeates New Harmony and inspired two utopian societies comprised of educators, scientists, writers and artists to seek to improve society through free education and social reform (IUPUI University Library, 2007).¹ Today, MOSES, sponsored by the U.S. Army's Simulation and Training Technology Center (STTC) continues that tradition and invites researchers from all walks of life to extend the capabilities of an integrated virtual world education grid using open source tools and technologies (MOSES, 2011). An overview of the collaboration in virtual world education research is described on the MOSES project is documented on the MOSES Ephemeral Redmine Wiki²

Today, Virtual Harmony has over 32 simulation settings that span the historical buildings at New Harmony to Jefferson's Dinner Table Bargain, from Camp 4H and Athens to the ruins of Pompeii and the new realm of Atlantis. Rising high above one region, it simulates a Mars mining space station where the Mars Geothermal simulation serves as a research environment. The Mars Geothermal simulation was inspired by the 3D simulations that were described by Stricker, McCrocklin, Holm and Calongne (2009) were sponsored by Air University's Innovations and Integrations Division and hosted on several of the Huffman Prairie regions in Second Life (Stricker et al., 2010).



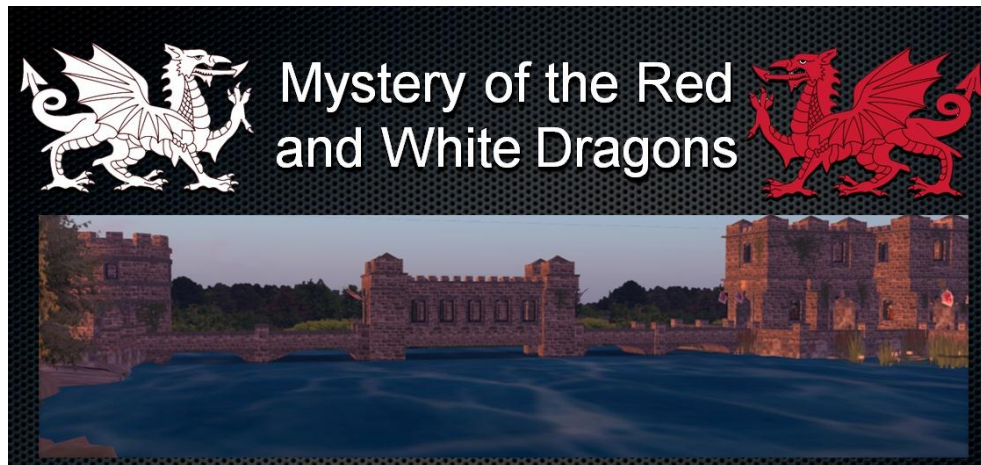
The Mars Expedition, a submission by Calongne, McCrocklin and Stricker (2010), won the Grand Prize in the 2010 Federal Virtual World Challenge.³ Research at Virtual Harmony continues to benefit from collaboration by researchers at Air University, NASA's Jet Propulsion Laboratory and Colorado Technical University who prototype learning innovations across a loosely coupled educational community (Stricker et al., p7, 2011).⁴

¹ Historic New Harmony: <http://maxkade.iupui.edu/newharmony/home.html>

² MOSES Ephemeral Redmine Wiki: <http://107.7.21.234/redmine/wiki/moses/Ephemeral>

³ Mars Expedition GameTech 2010 <http://www.slideshare.net/lyrlobo/mars-expedition-game-tech-2010>

⁴ Collaborative Prototyping of Learning Innovations Across Loosely Coupled Educational Communities
http://ijlm.net/10.1162/IJLM_a_00064



3d Nonlinear Game Design

The Mystery of the Red and White Dragons is a nonlinear learning game set in Atlantis. The game is based on an Arthurian legend and may be played individually or by teams. Game quests and missions are modular with a variety of entry points, using independent navigation that does not drive the player down a particular path. Each quest is designed to promote an understanding of diverse learning styles and to increase digital literacy. Nonlinear games support exploration and discovery, allowing the player to tour the environment and to start game quests at their discretion.

Characteristics and benefits associated with playing the game include:

- Influencing and leading others
- Creating new ways of thinking and doing
- Experimenting with new ideas
- Being sensitive to values
- Imagining the implications of ambiguous situations

The game can be played with the Kolb Learning Style Inventory⁵ and the game benefits from the support for experiential learning theory, which embraces experience, observation and reflection, the formulation of theories and the implications that lead to new experiences.

The Mystery of the Ambassadors

Adapted from a game design by Sue Blackman as described in her book, *Beginning 3D Game Development with Unity: All-in-one, Multi-platform Game Development*,⁶ The Mystery of the Ambassadors game is another example of nonlinear game design that ranges from the virtual world to a Unity3D game. It is used for both educational learning activities at Camp 4H and at Colorado Technical University.

⁵ From Duncan and Schneider's recommendations, featuring Kolb Learning Style Inventory Info: <http://casa.colorado.edu/~dduncan/teachingseminar/KolbLearningStyleInventoryInfo.pdf>

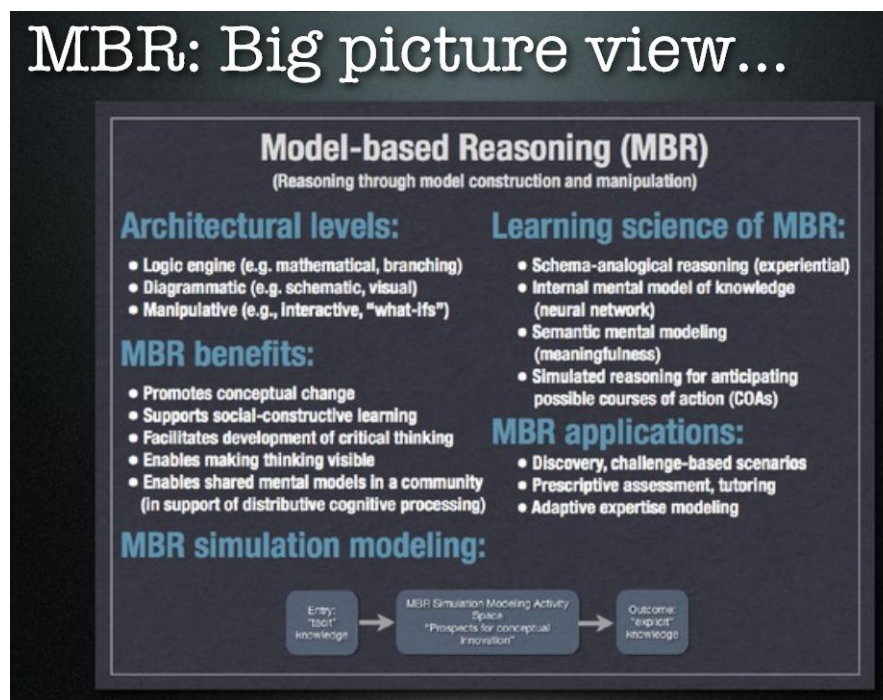
⁶ Information on Sue Blackman's game design, scripts and book: <http://www.3dadventurous.com/>



MBR for Use in Somatic Computing Research

During the summer, a research study evaluated the effect of avatar morphology on STEM learning in the Mars Geothermal quest-based game (Calongne and Stricker, 2011).

MBR: Big picture view...



Observations

This brief tour of the Virtual Harmony educational research projects and nonlinear learning games is intended to offer information to the public for collaboration with future research efforts. A variety of open source virtual world solutions are available as a result of this research.

Areas for Future Research

Future work includes migrating the Atlantis simulation with the Mystery of the Red and White Dragons to MOSES in 2012. Due to the challenges in loading the OAR files for migrating content between the original Virtual Harmony Open Simulator region to the MOSES AETC Virtual Harmony regions, a new region on MOSES will be developed for the Mars Geothermal and space simulations.



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A Multidimensional Info-Sensorium Holodeck: Emerging Analytics to Measure General Organization Evolution

Alfredo Sepulveda
Colorado Technical University
Colorado Springs, CO

Introduction

The info-sensorium holodeck is an immersive 360-degree, multidimensional virtual reality environment in which an organization advocate can observe, control, and readjust trigger points leading to key performance indicators (KPIs) being changed in real time. It is an organization dashboard on virtualized steroids. This is accomplished via multidimensional, multi-sensorial shapes (morphs) suspended holographically that help one visualize the evolution of and causal relationships between KPIs within the organization. By contrast, traditional organization analytics are comprised of 2-D graphs, charts, and tables that display certain attributes of an organization such as profit margins and other indicators of performance. This environment will be known as the orgDECK™ in reference to the holodeck nature of its operation.

What has been lacking in the analytic world has been the ability to visualize evolutionary patterns in the organization lifecycle. These trends in the long-term development of an organization can lead to better, more accurate predictions on the future performance of that organization because they simultaneously correlate and display micro-movements with macro-developments using meso-level control bridges. The information model utilized in the holodeck metamodel involves a third layer of organization complexity - a connecting mesoscopic control mechanism between the micro-processes and the macro-movements (Sepulveda, 2011). The analogy one may use to understand this third process layer is that of fluid dynamics in turbulence around a given structure (Zakharov, Korotkevich, & Dyachenko, 2005). The boundaries of the flow of a fluid, including that of air flow, involve micro-processes of atomic dynamics near the surface of the structure and the macro-flow of accumulated vortices. Near the transition between these scales is a little known phenomena that are just now being illuminated more clearly in recent research. These are the meso-scale processes that connect the transition between the scales of human reality and measurement.

Humans react more effectively to visual cues than numerical ones (Lima, 2011). This is especially true of intuitively led organizations and their respective control groups that are more satisfied and comfortable with relevant and overarching visual presentations. The info-sensorium holodeck implements state-of-the-art immersive virtual reality technology and holography in representing complex and multidimensional real-time business information in dynamic form presentation, (i.e., complex topological objects and their dynamic evolutionary changes take the place of graphs, tables, and charts). For the purposes of the initial low fidelity prototype, Second Life renditions of the orgDECK™ holodeck will be demonstrated.

Solution

In order to succinctly describe the complexity of a general dynamic and evolutionary organization or organism, a multidimensional, multi-sensorial interface was built. Simulated and virtualized holographic projections of quantitative information in the form of traditional performance dashboard – usual graphs, tables, and charts of time period evolution of key performance indicators, such as sales revenue, gross profit margins, stock and market values – are displayed. However, these traditional quantitative displays are then extended by interpreting them in terms of general shapes, such as depicting the evolution of revenues as an elongated bar which changes girth and length based on the magnitude and variability of the measured performance indicator. The girth would measure uncertainty, the length, magnitude, and the height would measure risk assessment. These generalized shapes are called indicator morphs. The time dimension would flow through the morph so that for a given time period, the three measures would outline piecewise connected parallelepiped.

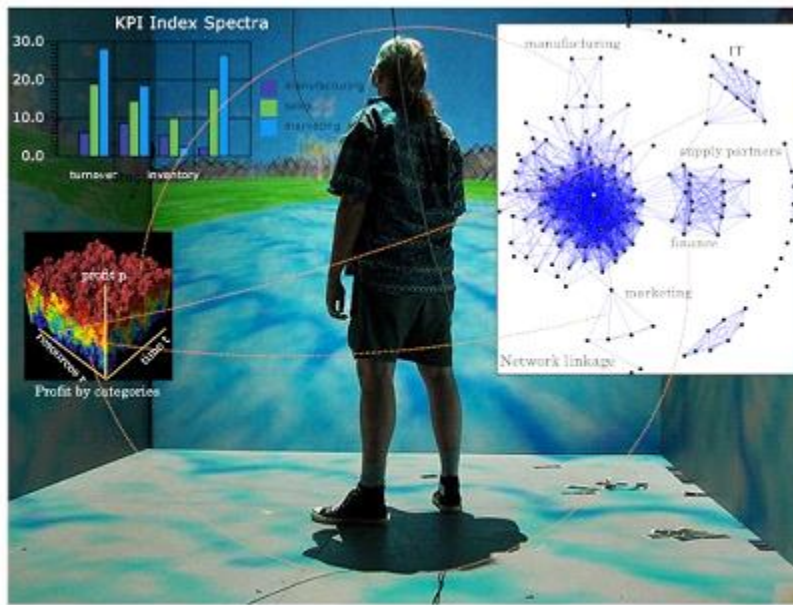


Figure 1 - Info-sensorium holodeck, orgDECK

Background image adapted from "Cave automatic virtual environment at EVL University of Chicago at Chicago" By D. Pape. 2001. Copyright 2001 by D. Pape. Reprinted with permission under the GNU Free documentation license – Creative Commons Attribution-ShareAlike 3.0.

This scenario would only measure a single indicator. Consider now an ensemble of indicators that could be correlated or confounded. If one visualizes the intersection of two shapes that represent different, but possibly related performance indicators, as this intersection's overlap becomes larger, a generalized correlation increases. Hence, for two indicator shapes, the larger the overlap, the larger their posited correlation or stronger relationship becomes.

The quantitative model used for organization evolution is intrinsically different from traditional analytics. It consists of three layers of information complexity; (1) the microprocesses of low level interactions and transactions based on organization agents and co-evolvers such as organizational partners, and exchanges of information made at human consciousness levels, (2) the macroprocesses of global economic movements, market fluctuations, and industry trends, and (3) the mesoprocesses that involve the interchange at the boundaries of macro and micro processes, such as the transitional zones between what one organization artifact produced can do to the global economy because of increased supply or decreased pricing or as a disruptive technology. This information metamodel depicts information infrastructure as being built on a holarchy, a self-similar, fractal organization of holons organized as a holon itself. We dispense with the usual hierarchy and flat matrix structures of traditional organization structures because they are insufficient in describing the dynamics of organization and the interplay of nodes within a complex techno-socio-economic organization.

Analysis

The info-sensorium is a compact CAVE (Cave Automatic Virtual Environment) holodeck, trade labeled as orgDECK™, for use in performing emerging organization analytics and intelligence application in virtual reality and holographically projected visualization props, controlled and manipulated by a business advocate or user immersed in its enclosure. The user enters into an enclosed area approximately the size of a large walk-in clothing closet where four walls, a ceiling, and a motion-sensitized floor define physical boundaries. The user's motions are captured by a system of three triangulated Microsoft Kinect motion capture cameras positioned on the top of each of the front facing walls. This mechanism represents a markerless motion capture system. Alternatively, the user may wear an inertial sensor motion tracking suit with an accompanying inertial sensor head tracking head set. Below the head tracker, the user's eyes are

enclosed in a Sony LED 3D headset that will display the results of simulated holographically projected 3D rendition of the user's 3D motions through a landscape of positioned analytics dashboards. These 3D-type dashboards are generalizations of the usual performance dashboards that show typical graphs, charts, and numerical tables. Shapes replace these analytics display where 3 dimensions measure the magnitude, uncertainty, and risk assessed for a particular business performance indicator such as gross profit margin. The user can travel through each shape to gauge the time epoch of each measurement. Using motion capture gloves, separate from a motion capture suit, the user manipulates indicator morphs to view different angles of their dimensions in order to surmise different properties of that business indicator. By pushing two (or more) different morphs together, the overlap allowed (a tactile feedback will cause resistance to the user) will measure the relationship and correlation between the indicator morphs and their possible linkage. Strong resistance and little, if any, permitted overlap would mean that the indicator morphs are uncorrelated or only loosely related. Maximum overlap and ease of overlapping morphs together means high correlation and relationship.

Digital holographic and motion capture 3D software renders all movements of the user, producing a 3D landscape that is feed into the Sony 3D headset. Additionally, multiple senses will be integrated into the information-sphere. The iSmell olfactory device will emit odors that will match content produced by some property of the indicator morphs. An 11.1 surround sound system will transfer auditory signals from certain auxiliary properties of these same indicator morphs. The orgDECKTM system will then produce a multidimensional aspect to analytics where multi-channels of information will feed the multi-sensorium of a human user. It is posited that humans possess from 14 to 20 senses when considered in combinations. Scent generators will also be part of the feedback mechanism in the orgDECKTM.

The orgDECKTM system instills a group of emerging technologies in virtual reality that gives it a tremendous advantage over the traditional field of 2-D analytics. Large money has followed the big and usually stable IT companies that have adopted product lines in business analytics for the last decade. Business analytics has represented newer ways to correlate and control real-time changes in a business with state-of-the-art decision-making and predictive algorithms in compact performance dashboard form. This initially was conceived from executive and management information portals that were essentially rudimentary intranet websites that grouped 2-D business performance indicator displays together. What was initially missing was the direct tie into the large databases that represented the main information flows of the organization, (i.e., sales, revenue, production, stock information, CRM, ERP, and other data warehousing silos using).

Currently, predictive business analytics is the most ostensible tool in the business intelligence tool chest. The orgDECKTM represents a disruptive innovation in this crowded field of traditional 2-D predictive business analytics and intelligence.

Social Return on Investment

We foresee the use of the orgDECKTM in general organization and educational environments as an affordable alternative to overpriced predictive analytics from the majors and hence will advance the financial and strategic positions of small or non-profit organizations. This will create a cascade of awareness of the holistic behavior of our economies and the network power of industries within these economies. Techno-socio-economic effects based on the more aware organization will lead to a more stable commercial economy and decision-making. Greater awareness and measurement of the health of an organization in vitro can lead to the decision-maker achieving a higher hit rate of success. More novel ways of visualizing organization evolution may also lead to a better awareness of the general economy and subsequent prognostication for more effective risk assessments. Finally, the development of a practical holodeck environment for general organizations would produce a new learning and experimental environment for emerging display and information flow technologies.

Conclusion

We have conceptualized the next generation of predictive modeling, which we call visual predictive analytics. This will be done through the construction of an innovative immersive holodeck featuring multi-

sensorial feedback to and from a human user, immersed inside this holodeck. This holodeck product which will be named the orgDECKTM, involves a multi-dimension, multi-sensorial approach to measuring uncertainty from the countless number of ways that information flows and is created within a complex organism, such as a typical business. Traditional analytics employs graphs, number tables, and charts, all tied together from data warehousing and statistical analysis. The orgDECKTM, by contrast, uses intuitive general shapes in holographically displayed space to show the user how information can be represented in more than 3 dimensions, including simultaneous visualization of risk, uncertainty, and magnitude of key performance indicators. Additionally, these indicator morphs or glyphs, suspended holographically, can be controlled and manipulated by the user in such a way as to create correlation and causal analysis using reshaping alone. No numbers need to be displayed in order to give the user a feeling for the quantitative characteristics of those indicators and how they may impact or are a part of the real-time evolution of the business lifecycle.

Information flow is redefined using newer, more emergent ideas from the physics of information and behavioral economics. These concepts, in tandem, represent a fundamentally different way of looking at businesses and their evolutionary behavior. This will, in turn, help in establishing better prognostication tools for business analysis and decision-making.

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Be Epic: Learn How to Make Machinima from Scratch in Five Weeks

Angela Rizzo (SL: Rosavioletta) has been an EFL teacher to adults in Company courses in Italy. She is currently working independently on designing a module to teach Italian online. She holds a Bachelor (Honours) degree in Educational Sciences with the University of Genoa (Italy) and a Post Graduate Certificate in Online and Distance Education with the Open University (U.K.).

Abstract

The author describes her experience in learning how to make machinima which took place during the five weeks of the 2012 MachinEVO, an EVO sessions (#2012evo) workshop for video productions of language learning conversations in Second Life.

Introduction

It all started with a Tweet. I had not visited my Tweeter account for a while and the message came as I was about to exit it. Out of curiosity I followed the link to the MachinEVO workshop and signed in. In the five weeks of unexpected hard work that followed I entered the magic world of filming, the more magic as it all took place in a “far far away” virtual world: Second Life. Far and yet homely.

I was soon to discover that very little was to be taught as in traditional classes. The wealth of being together derives mainly from how much every participant pours into the communal cauldron. I was quick to adapt and happy to be able to move freely in such a fizzy learning environment.

Circumstances brought me to become group leader of a team of Italian participants. We shared the same mother tongue and very little knowledge of virtual world filming, or none at all, as in my case. Being a group leader involved extra work and presence inworld. Moderator’s meetings had to be attended, group’s activities and meetings had to be scheduled and group reports were to be made.

What follows is a summary of what has been posted in my MachinEVO blog from 11th January to 14th February 2012. (Rosavioletta, 2012).

Week 1: Trailer.

“A film of Second Life (SL) is called a machinima and it is derived from a combination of machine and cinema. Essentially it means recording the screen of the application Second Life. Creating a machinima does not mean just to record one’s screen”. (MachinEVO trailer, 2012).

How creating a machinima is not “just” recording was to be fully understood while we unveiled the content of the workshop.

During the first week we got to know each other and at the kick off everyone was asked to befriend other participants.

“We introduced ourselves and exchanged opinions on which part of the machinima each one would be mostly interested. Only two of our group had some experience in filming. Apart from the same mother tongue - Italian - we all shared a professional interest in finding out more about the use of machinima in language teaching. Our focus became the creation of a film to be used in real life practice.

We were conscious of the technical difficulties we were to face and hoped to learn more during the next meetings. A lively brainstorming about the story started. We decided to revise the times of our group’s meetings to be able to meet with our avatars in Second Life.

Although we seemed to brilliantly cope with communication needs via group e-mail in Italian, we started working on a wiki file in English in case we were to share it with other MachinEVO participants.” (Rosavioletta, 2012).

Week 2: Video Production.

The creation of *machinimas* “includes the basic skills of film productions such as camera angles, audio and the appropriate tools to do the recordings. And we will look at designing videos and determining a digital storyline.” (MachinEVO, 2012).

Whilst a rich calendar of public events continued to be offered at three different times of the day to suit continent needs, we had two weekly group meetings, on Wednesday and Saturdays, Rome time.

Our team members had very little time left after Real Life commitments and one of our members had to soon leave active participation to the group. She remained a precious asset though as she allowed us to set our shooting location on her EduNation’s plot.

We found an agreement on the story, which was to revolve around the encounter of a man and a woman. The educational aspect would find its core in a restaurant conversation.

Our group was assigned an experienced moderator to help us in organizing our work and in the making of the film and took us to visit a range of shooting locations. We started a goggle doc and a doodle calendar to plan our weekly activities.

Week 3: Content Creation and Roleplay.

“During this week we learn the poeise and humour of emoting used in roleplay, how to use gestures and animations and how to provide the backdrop with culturally rich environment so as to enrich the video production”. (MachinEVo, 2012).

The leitmotif of our work could at this point be defined with one word: “flexibility”. A concept that had to be applied many times and to many aspects of our work, from the story to the actors, to the choice of locations. The story had to be reduced a few times and we agreed on starting with the filming of the conversation. We would then add the other scenes to complete the story in its full. We still needed to find the actors.

We begin working with the Avatar shapes. We used items from our inventories for creating robes and set decorations. We had no problems in finding something suitable for the female outfits but the male’s required quite a long search. I decorated the set to make it look like a Mediterranean gazebo whilst another group member took care of other objects like tables, chairs, menu and gestures.

Week 4: Post Production.

“We will learn to edit the recordings, cut, lyp synch with the audio (if needed), file size reduce them and upload them on any of the video platform available.” (MachinEVO, 2012.)

Whilst the workshop steadily paces its schedule forward, we started selecting music and sounds. We studied the best camera angles, numbered and shared them in a dropbox for us all to work on. Power Point introductory and final slides were created. We decided to record with Fraps and share the information on which parameters to make in order to edit: 24 fps and 360 resolution.

The idea to have each group member act in the video had to be revised and the final version will saw just two actors: a member of our group and our moderator. A multitasking little crew was ready to film on Sunday 5th February.

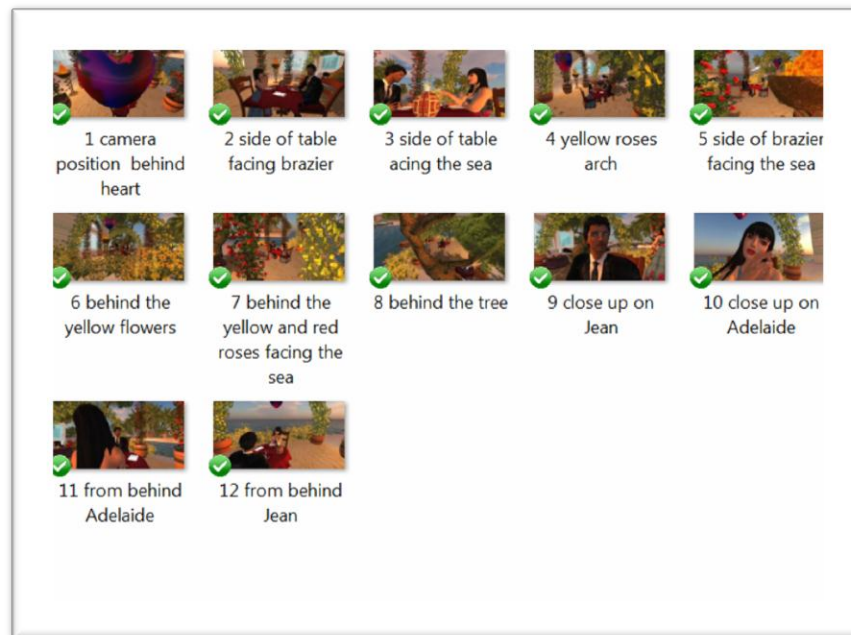


Fig. 1: a screenshot of camera angles from the dropbox.

After shooting for a couple of hours with two cameras, we discovered that one audio sound could not be used. The one with good audio had no lips movement...

Through tutorials on the Internet I learned how to use Virtualdub to downsize The Fraps files to be shared in the dropbox. I tried some editing myself only to realise what a patient and minute work this is, and how much time it requires...With a week to go before the final submission date we have to rely on our moderator's capable hands. He edited our raw material, added soundtracks and slides, uploaded the video on video-sharing website. Without him we would not have had the skills to finish the work.

We had to temporarily put aside the idea of subtitles, as the process would mean delaying the film submission. We prepared two notecards to be distributed during the film festival. The first contained the original conversation and its English translation. The second covered language content areas of Vocabulary, Grammar and Pronunciation.

Week 5: Film Festival.

"During the wrap up time there will be a film festival when we invite other in SL to watch the video productions together in cinema type settings and as in real life there will be an award for the best film" (MachinEVO, 2012).

It was with a thrill of emotion that I assisted at the presentation of the films. We had been invited to wear elegant clothes just as in a real life event. And a presentation of our work was prepared too. I blogged throughout the workshop, took many pictures and above all enjoyed learning in such a busy international environment. Most of the participants were language teachers and the final videos were made in many languages.

Fascinating reflections could be made from Wenger's lens on "*Communities of Practice, Learning, Meaning and Identity*": in this perspective MachinEVO offers an outstanding example of "learning by doing" (Wenger, 1998).

Filming in Second Life added a remarkable value to my understanding of Salmon's Five Stage model, where learning takes place through the four steps of "access and motivation, online socialization, information exchange, knowledge construction." I am now sitting precisely on the fifth one: "development" where "reflecting on personal experience in SL links to real life" (Salmon, 2011, p. 81).

As a teacher I am now aware of the amount of learning and work that lays behind a three minute video clip but I can also see the powerful value of creating a machinima project with a class. I agree that "it is not just about technology. Through making machinima, students can also learn about teamwork and patience" (Deutschmann, M. 2010.)

"As we watch the world move to a state of near-constant change and flux, we believe that connecting play and imagination may be the single most important step in unleashing the new culture of learning" write Thomas and Brown (2011, pg. 117-118) and certainly imagination can be seen as the palpating kernel of a machinima, even of an educational one like ours was.

"Creating a machinima does not mean just to record one's screen". (MachinEVO, 2012) I reported at the beginning of this paper. I hope I have been able to convey the spirit of my participation to the 2012 edition of MachinEVO. "Learn an art and store it aside" recites an Italian saying (my translation) and like many other things I learned, it will be put in my Real Life Inventory, waiting to be clicked on and used again.

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