

Are You Game? The Future of Learning with Technology

Full-day, preconference workshop at AMTEC 2005

WORKSHOP NOTES

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Introduction

Have you ever watched a child or teenager playing a videogame they really liked? Do you wonder what it is about this game that has them so completely engrossed? Part of the answer is that games are motivating, rewarding, engaging, and challenging, all at the same time. The kids will probably just tell you they're fun. But when you think about it, fun and engagement are synonymous, and engagement is something we all want for our learners. Games also show us that challenge *sells* – when was the last time you heard that a game was popular because it was easy? Does a game lose its appeal once it has been won? Rarely. The game loses its appeal *when players have learned all they can from it*. And what do players get as their reward? They get to go buy another game. Want to tap into that eagerness in your classroom? This workshop will help you get started.

This full-day pre-conference workshop includes:

- *An overview of the current use of computer and video games in teaching, learning, and training*
- *The current state of the art of games design*
- *Some of the available resources, both for accessing and for using and building games,*
- *Group discussion*
- *Demonstrations*
- *Collaborative Case studies*
- *Hands-on experience*

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Background

An examination of the power in new learning communities is incomplete without studying how digital game based learning experiences are impacting generations of learners. “Today’s average college grads have spent less than 5,000 hours of their lives reading, but over 10,000 hours playing video games (not to mention 20,000 hours watching TV). Computer games, email, the Internet, cell phones and instant messaging are integral parts of their lives.” **Marc Prensky**, author of *Digital Game-Based Learning* McGraw-Hill, 2001 (<http://www.marcprensky.com/writing/Prensky - Digital Natives, Digital Immigrants - Part1.pdf>)

“We’re talking about the digital generation, and they are going to knock us out with what they can do – if we just give them the tools,” the CNO said. “That’s our responsibility. That’s our part of the promise. We promise to give them the tools.” **U.S Chief of Naval Operations Adm. Vern Clark** Invites Leaders from Industry, Academia to Join Navy’s Revolution in Training (<http://www.lscconference.com/CNO-letter.htm>)

“(Hard fun) is expressed in many different ways, all of which all boil down to the conclusion that everyone likes hard challenging things to do. But they have to be the right things matched to the individual and to the culture of the times. These rapidly changing times challenge educators to find areas of work that are hard in the right way: they must connect with the kids and also with the areas of knowledge, skills and (don't let us forget) ethics adults will need for the future world. “ **Seymour Papert, Founder MIT Media Lab**, (<http://www.papert.org/articles/HardFun.html>)

Life-long learning has become an implicit part of the job description for many professions in the 21st century. The need to supply just-in-time and on demand training, and education that is both effective and well-received now drives a significant corporate sector on an almost global scale. Canadians under the age of 35 do not know a world without digital video games, and many, if not most have played games at some point in their lives. The situation is very similar when we look at school-age people. In fact, a 2002 study at M.I.T.¹ found that 88% of college freshmen had played computer games, while a 2004 report² stated that 100% of surveyed freshman have played games at least once. It can be assumed that results are similar when Canadian freshmen are surveyed. It is also reasonable to assume that these results will be similar when school-age children are surveyed.

The implications of this widespread diffusion are that the digital video game medium is familiar (ubiquitous) technology and accessible to most young people today. They are *already* using games and learning through games. A challenge that this researcher is pursuing is how we might capitalize on the ubiquity of gaming by co-opting the medium in a fashion that both meets the needs of educators and satisfies the eagerness and motivation of learners. Through a variety of small, and larger scale studies, this author is examining the instructional design, implementation and evaluation of digital game-based learning among diverse learners (i.e., K-12, post-secondary) and across a range of learning contexts (i.e., education and training).

When revenues are measured, the electronic games industry has now surpassed the film industry. However, the success of the games industry hinges almost entirely upon its ability to *engage, challenge*, and *motivate* its audience. Those qualities that so effectively capture this industry’s intended audience are the very qualities upon which educators strive to capitalize with

¹ <http://www.williamsinference.com/Reports/2902childrenspotential.htm>

² <http://www.watercoolergames.org/archives/000142.shtml>

other, (currently) more conventional technologies. Games are in some ways even more accessible than more 'accepted' or more common forms of e-learning. **This workshop will explore some of the current trends in digital game based learning and examine first hand several examples of "Serious Games" for powering up new learning communities.**

Who is this Workshop For?

- Teachers, Administrators and Technologists in middle to high school (Grades 5 – 12).
- Research and teaching faculty in higher education.
- Instructional designers and media center personnel.

At The End of The Day

- Participants will consider some of the latest research on gaming.
- Participants will be taken on a hands-on tour of key examples of digital games, both serious and commercial, available today.
- Participants will learn where to look for more information on gaming, who to turn to for more information on who is evaluating and using games for learning.
- Participants will play with a variety of games and experience first-hand some of the serious curricular links that can be made between digital games and learning.
- Participants will begin to design their own game using emerging development engines.

Take-Aways

Each participant will be given

- a CD- containing:
 - copies of free game engines,
 - web-pages containing links;
 - my Serious Games pathfinder pages
 - several of the games as discussed
- Handout versions of all presentations.

All of the information provided on the CD is publicly, and freely available on the Internet. The advantages of the CD are that everything is all gathered in one place, and those with limited or restricted internet access will still be able to access these.

Workshop Day Plan: Morning – Part One

9:00 – 9:20	What are games doing now?	<p>20 MIN View: watch edited version of “<i>PBS Video Game Revolution</i>” (edited to highlight some of the most recent developments) http://www.pbs.org/kcts/videogamerevolution/</p> <p>Discussion: Have games impacted on your life? In what ways? What do you see as significant dangers and problems with the “video game revolution”?</p> <p>Take-aways:</p> <ul style="list-style-type: none"> • Links to PBS website (above)
9:20 – 9:40	Introduction and Introductions	<p>1.2 Presentation: What’s All The Buzz? 20 MIN Introduce topic; plan for the day; who is this for; at the end of the day</p> <p>Discussion:</p> <ul style="list-style-type: none"> • Find out about audience expectations; experience <p>Take-aways:</p> <ul style="list-style-type: none"> • Power-point presentation (hand-out)
9:40 – 10:00	Case Study 1: A Simple Message	<p>1.3 Presentation & Hands On: Why Use Games? 20 MIN</p> <p>Hands on: play with <i>September 12</i> http://www.newsgaming.com/games/index12.htm</p> <p>Discussion: What does this game tell you? How might you use it in a classroom?</p> <p>Take-aways:</p> <ul style="list-style-type: none"> • <i>September 12</i> – web game (CD: Sept12.zip)
10:00 – 10:30	Case Study 2: Getting Fancy	<p>1.4 What Can Games Do? A Look at Several Prototype Designs: 30 MIN</p> <ul style="list-style-type: none"> • Revolution: a history Role-playing game exploring what life might have been like in the time leading up to the American Revolution. http://www.educationarcade.org/gtt/revolution/index.html • Supercharged! A game intended to help students studying AP and first year college physics understand some of the counter-intuitive issues in electromagnetism, especially Coulombs Law. http://www.educationarcade.org/gtt/EM/Intro.htm • Replicate: Play a virus and replicate inside a host organism-- migrating through the circulation, entering target cells, and replicating inside them. http://www.educationarcade.org/gtt/Virus/Intro.htm • Biohazard: Begin as a junior doctor and become agent for the Center for Disease Control. Diagnose patients, identify the sources of epidemic outbreaks, and prevent the spread of disease. http://www.educationarcade.org/gtt/Biohazard/Intro.htm • Eyewitness – The motivation of this game is to let a new generation of Chinese youth know the Nanjing Massacre more profoundly. http://micn.polyu.edu.hk/~naning/game.html <p>A Look at Several Full-blown Games:</p> <ul style="list-style-type: none"> • Second Life – an example of a commercial massively multiplayer online game where people create and manage their own societies – attend a Catholic mass; experience what it feels like to be a schizophrenic; see how others are already using this game as a learning tool http://secondlife.com/ http://secondlife.blogspot.com/nwn/2004/09/in_the_minds_ey.html • America’s Army – US Army recruiting game – What insights can we gain from this game? http://www.americasarmy.com/ • Nation States - a free nation simulation game. Build a nation and run it according to your own warped political ideals. http://www.nationstates.net/cgi-bin/index.cgi • Virtual U- Virtual U is designed to foster better understanding of management practices in American colleges and universities. http://virtual-u.org/ <p>Take-aways:</p> <ul style="list-style-type: none"> • Web-site links (above)

Workshop Day Plan: Morning – Part Two

10:30 – 10:45	Break	
10:45 – 11:15	Case Study 3: THEN	<p>2.1 Hands On THEN? 30 MIN</p> <p><i>Oregon Trail (version 3)</i> - history; problem solving; resource management <i>Stalin's Dilemma</i> – economics; organization; resource management <i>RealLives</i> – global social studies http://www.educationalsimulations.com/</p> <p>Drill & Practice:</p> <ul style="list-style-type: none"> • <i>MiniClip</i> http://www.miniclip.com/learning.htm • <i>Mathblaster</i> http://knowledgeadventureschool.com/catalog/mb_a46.aspx <hr/> <p>Take-aways:</p> <ul style="list-style-type: none"> • <i>MiniClip & Mathblaster</i> - web-site links (above) • <i>Oregon Trail (version 3)</i> - full game (CD: OregonTrail3/) • <i>Stalin's Dilemma</i> - full game (CD: StalinsDilemma.zip) • <i>RealLives</i> - game demo (CD: Lives.exe) • <i>FlowWords</i> – game (CD – fowlwords/)
11:15 – 11:45	Case Study 4: NOW	<p>2.2 Hands On NOW? 30 MIN</p> <p><i>Virtual Leader</i> - learn and practice leadership skills http://www.simulearn.net/SimuLearn/standalone.htm</p> <hr/> <p>Take-aways:</p> <ul style="list-style-type: none"> • <i>Virtual Leader</i> - web-site links (above)

Workshop Day Plan: Afternoon, Part One

11:45 – 12:30	<i>Break - lunch</i>	
12:30 – 1:15	<p>Welcome to the Arcade</p>	<p>3.1 Hands On 45 MIN Presentation / Demonstration: A look at some of the things we can explore using games. There are ‘stations’ with various games loaded and people are encouraged to wander from machine to machine, looking at what these games have to offer, like an arcade. Included are:</p> <ul style="list-style-type: none"> • [explore website] <i>Kinetic City</i> – science games for elementary and middle school http://www.kineticcity.com/ • [explore website] PBSKids.org http://pbskids.org/ • [explore website] Fin, Fur, and Feather Bureau of Investigation http://www.fffbi.com/ • [explore website] MaMaMedia http://mamamedia.com/ • [explore website] WhyVille.com • [explore website] World of Monkey Island http://www.worldofmi.com/ • [explore website] 360KID.com http://www.360kid.com/ • [explore website] Hungry Red Planet http://hungryredplanet.com/ • [full game] <i>OceanQuest</i> – a game for exploring deep ocean ecosystems. http://pages.cpsc.ucalgary.ca/~parker/OceanQuest/OceanQuest.html • [full game] <i>Ben’s Game</i> – a game to help kids “fight” cancer. http://www.makewish.org/site/pp.asp?c=bdJLITMAE&b=81924 • [web game] <i>Tropical America</i> –Your journey begins as the sole survivor of a terrible massacre - you must find four pieces of evidence to bring justice to the memory of your small village. http://www.tropicalamerica.com/ • [playable demo] <i>Rise of Nations</i> - history http://www.microsoft.com/games/riseofnations/ • [playable demo] <i>Age of Empires</i> http://www.microsoft.com/games/empires/default.htm • [explore website] <i>Civilization III</i> - history http://www.civ3.com/ and http://apolyton.net/ and http://www.firaxis.com/community/teacher.php is an example of how extensive the 'culture' around a game can be. • [explore website] <i>DDR (Dance Dance Revolution)</i> Physical Ed http://www.ddrgame.com/ and http://www.konami-usa.com/production/ • [playable demo] <i>The Typing of the Dead</i> – hone your typing skills http://www.gamerevolution.com/download/pc/action/typing_of_the_dead.htm <p>Take-aways:</p> <ul style="list-style-type: none"> • Links to game sites (above, and in pathfinder) • Demo copies of games: (CD) <ul style="list-style-type: none"> • <i>OceanQuest</i> web game (CD: OceanQuest.zip) • <i>The Typing of the Dead</i> – game demo (CD: tod-demo.zip) • <i>Ben’s Game</i> – full game (CD: BensGame.zip)

<p>1:15 – 1:30</p>	<p>Debriefing: Where does that leave us?</p>	<p>3.2 Presentation Where to Find; How to Assess Presentation: An overview of what's out there (free and cheap) 30 MIN</p> <ul style="list-style-type: none"> • Games to use • Who is out there evaluating games, like Teachers Evaluating Educational Multimedia [UK] (TEEM), who provides teachers with free access to independent, classroom-based evaluations of educational Digital Resources. Evaluations by teachers. http://www.teem.org.uk/ • Games Parents Teachers http://www.gamesparentsteachers.com/ • GameCritics: http://gamecritics.com/index.php • MobyGames: [http://www.mobygames.com/home] Educational Games: [http://www.mobygames.com/browse/games/c.12/o.2/] • Rocky Mountain Learning Systems: http://www.rmlearning.com/ • Computing With Kids http://www.computingwithkids.com • Home of the Underdogs http://www.the-underdogs.org/ • Serious Games Initiative http://www.seriousgames.org • IGN.com http://www.ign.com • Super Kids http://www.superkids.com/ <p>Discussion: What have we discovered (both the good and the bad) - general discussion – How might we take advantage of this medium in our teaching? Our design work? Our research?</p> <p>Take-aways:</p> <ul style="list-style-type: none"> • Power-point slides (hand-out)
<p>1:30 – 1:45</p>	<p>Introduction to Game Engines</p>	<p>3.3 Presentation What is a game engine? 15 MIN</p> <ul style="list-style-type: none"> • Introduction to game making with Game Maker http://www.gamemaker.nl/index.html <p>Take-aways:</p> <ul style="list-style-type: none"> • Power-point Slides (hand-out)

Workshop Day Plan: Afternoon, Part Two

1:45 – 2:00	Break
2:00-3:30	<p>Make a game!</p> <p>4.1 Make A Game 30 MIN Hands on- using one of the available engines (Game Maker). In groups of 3, we will design and make a simple game – could range from: starting from scratch, to choosing from among a set of possible designs, to taking an existing game and modifying it.</p> <p>The goal is to come away with a microgame that participants made themselves. This knowledge can then be used to create games for the classroom or to facilitate learners in building their own games.</p> <p>Take-aways:</p> <ul style="list-style-type: none"> • <i>Adventure Maker</i> 60-day trial version (CD – AdventureMaker.zip) http://www.adventuremaker.com/ • <i>Game Maker</i> free version (CD – GameMaker/) http://www.gamemaker.nl/index.html • <i>RPG Maker 2000</i> game engine (CD – RPGMaker/) http://www.svatopluk.com/rm2k • Links to source sites (above) • Game, and assets used in sample game (CD – GameMaker/fishes.zip)
3:30 – 4:00	<p>End-Game</p> <p>4.2 End Game 30 MIN Discussion: reactions; comments; next steps?</p> <p>Take-aways:</p>

Additional Notes

Reality Bytes: Eight Myths About Video Games Debunked

Some comments from Henry Jenkins on games in general (reprinted from the website associated with the PBS *Video Game Revolution* documentary program:

<http://www.pbs.org/kcts/videogamerevolution/impact/myths.html>):

A large gap exists between the public's perception of video games and what the research actually shows. The following is an attempt to separate fact from fiction.

1. The availability of video games has led to an epidemic of youth violence.

According to federal crime statistics, the rate of juvenile violent crime in the United States is at a 30-year low. Researchers find that people serving time for violent crimes typically consume less media before committing their crimes than the average person in the general population. It's true that young offenders who have committed school shootings in America have also been game players. But young people in general are more likely to be gamers — 90 percent of boys and 40 percent of girls play. The overwhelming majority of kids who play do NOT commit antisocial acts. According to a 2001 U.S. Surgeon General's report, the strongest risk factors for school shootings centered on mental stability and the quality of home life, not media exposure. The moral panic over violent video games is doubly harmful. It has led adult authorities to be more suspicious and hostile to many kids who already feel cut off from the system. It also misdirects energy away from eliminating the actual causes of youth violence and allows problems to continue to fester.

2. Scientific evidence links violent game play with youth aggression.

Claims like this are based on the work of researchers who represent one relatively narrow school of research, "media effects." This research includes some 300 studies of media violence. But most of those studies are inconclusive and many have been criticized on methodological grounds. In these studies, media images are removed from any narrative context. Subjects are asked to engage with content that they would not normally consume and may not understand. Finally, the laboratory context is radically different from the environments where games would normally be played. Most studies found a correlation, not a causal relationship, which means the research could simply show that aggressive people like aggressive entertainment. That's why the vague term "links" is used here. If there is a consensus emerging around this research, it is that violent video games may be one risk factor - when coupled with other more immediate, real-world influences — which can contribute to anti-social behavior. But no research has found that video games are a primary factor or that violent video game play could turn an otherwise normal person into a killer.

3. Children are the primary market for video games.

While most American kids do play video games, the center of the video game market has shifted older as the first generation of gamers continues to play into adulthood. Already 62 percent of the console market and 66 percent of the PC market is age 18 or older. The game industry caters to adult tastes. Meanwhile, a sizable number of parents ignore game ratings because they assume that games are for kids. One quarter of children ages 11 to 16 identify an M-Rated (Mature Content) game as among their favorites. Clearly, more should be done to restrict advertising and marketing that targets young consumers with mature content, and to educate parents about the media choices they are facing. But parents need to share some of the responsibility for making decisions about what is appropriate for their children. The news on this front is not all bad. The Federal Trade Commission has found that 83 percent of game purchases for underage consumers are made by parents or by parents and children together.

4. Almost no girls play computer games.

Historically, the video game market has been predominantly male. However, the percentage of women playing games has steadily increased over the past decade. Women now slightly outnumber men playing Web-based

games. Spurred by the belief that games were an important gateway into other kinds of digital literacy, efforts were made in the mid-90s to build games that appealed to girls. More recent games such as *The Sims* were huge crossover successes that attracted many women who had never played games before. Given the historic imbalance in the game market (and among people working inside the game industry), the presence of sexist stereotyping in games is hardly surprising. Yet it's also important to note that female game characters are often portrayed as powerful and independent. In his book *Killing Monsters*, Gerard Jones argues that young girls often build upon these representations of strong women warriors as a means of building up their self confidence in confronting challenges in their everyday lives.

5. Because games are used to train soldiers to kill, they have the same impact on the kids who play them.

Former military psychologist and moral reformer David Grossman argues that because the military uses games in training (including, he claims, training soldiers to shoot and kill), the generation of young people who play such games are similarly being brutalized and conditioned to be aggressive in their everyday social interactions.

Grossman's model only works if:

- we remove training and education from a meaningful cultural context.
- we assume learners have no conscious goals and that they show no resistance to what they are being taught.
- we assume that they unwittingly apply what they learn in a fantasy environment to real world spaces.

The military uses games as part of a specific curriculum, with clearly defined goals, in a context where students actively want to learn and have a need for the information being transmitted. There are consequences for not mastering those skills. That being said, a growing body of research does suggest that games can enhance learning. In his recent book, *What Video Games Have to Teach Us About Learning and Literacy*, James Gee describes game players as active problem solvers who do not see mistakes as errors, but as opportunities for improvement. Players search for newer, better solutions to problems and challenges, he says. And they are encouraged to constantly form and test hypotheses. This research points to a fundamentally different model of how and what players learn from games.

6. Video games are not a meaningful form of expression.

On April 19, 2002, U.S. District Judge Stephen N. Limbaugh Sr. ruled that video games do not convey ideas and thus enjoy no constitutional protection. As evidence, Saint Louis County presented the judge with videotaped excerpts from four games, all within a narrow range of genres, and all the subject of previous controversy. Overturning a similar decision in Indianapolis, Federal Court of Appeals Judge Richard Posner noted: "Violence has always been and remains a central interest of humankind and a recurrent, even obsessive theme of culture both high and low. It engages the interest of children from an early age, as anyone familiar with the classic fairy tales collected by Grimm, Andersen, and Perrault are aware." Posner adds, "To shield children right up to the age of 18 from exposure to violent descriptions and images would not only be quixotic, but deforming; it would leave them unequipped to cope with the world as we know it." Many early games were little more than shooting galleries where players were encouraged to blast everything that moved. Many current games are designed to be ethical testing grounds. They allow players to navigate an expansive and open-ended world, make their own choices and witness their consequences. *The Sims* designer Will Wright argues that games are perhaps the only medium that allows us to experience guilt over the actions of fictional characters. In a movie, one can always pull back and condemn the character or the artist when they cross certain social boundaries. But in playing a game, we choose what happens to the characters. In the right circumstances, we can be encouraged to examine our own values by seeing how we behave within virtual space.

7. Video game play is socially isolating.

Much video game play is social. Almost 60 percent of frequent gamers play with friends. Thirty-three percent play with siblings and 25 percent play with spouses or parents. Even games designed for single players are

often played socially, with one person giving advice to another holding a joystick. A growing number of games are designed for multiple players — for either cooperative play in the same space or online play with distributed players. Sociologist Talmadge Wright has logged many hours observing online communities interact with and react to violent video games, concluding that meta-gaming (conversation about game content) provides a context for thinking about rules and rule-breaking. In this way there are really two games taking place simultaneously: one, the explicit conflict and combat on the screen; the other, the implicit cooperation and comradeship between the players. Two players may be fighting to death on screen and growing closer as friends off screen. Social expectations are reaffirmed through the social contract governing play, even as they are symbolically cast aside within the transgressive fantasies represented onscreen.

8. Video game play is desensitizing.

Classic studies of play behavior among primates suggest that apes make basic distinctions between play fighting and actual combat. In some circumstances, they seem to take pleasure wrestling and tussling with each other. In others, they might rip each other apart in mortal combat. Game designer and play theorist Eric Zimmerman describes the ways we understand play as distinctive from reality as entering the "magic circle." The same action — say, sweeping a floor — may take on different meanings in play (as in playing house) than in reality (housework). Play allows kids to express feelings and impulses that have to be carefully held in check in their real-world interactions. Media reformers argue that playing violent video games can cause a lack of empathy for real-world victims. Yet, a child who responds to a video game the same way he or she responds to a real-world tragedy could be showing symptoms of being severely emotionally disturbed. Here's where the media effects research, which often uses punching rubber dolls as a marker of real-world aggression, becomes problematic. The kid who is punching a toy designed for this purpose is still within the "magic circle" of play and understands her actions on those terms. Such research shows us only that violent play leads to more violent play.

Henry Jenkins is the director of comparative studies at MIT.

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