

Games and Simulations in Computer-Based Distance Education

Katrina Coker

University of New Mexico

OLIT 535, Theory and Practice of Distance Learning

October 27, 2003

Can computer-based distance education programs benefit from digital game-based learning applications? The growing popularity of computer and video games has driven sales of these products past the sales of books and movies in America, Europe and around the world. (Bryce & Rutter, 2001) At the same time there has been an explosive growth in computer based distance education, fueled by the success of programs like Phoenix University. The purpose of this paper is to explore the potential of interactive game-based learning in the context of computer-based distance education by identifying existing projects as well as potential future applications.

It must first be stated that there is little serious research on digital game-based learning. Over five years ago Sherry Turkle and Amy Bruckman studied MOO players in a broad, statistical format, but few researchers have studied the social interaction and learning potential of digital gaming. (Squire, 2001) Considering the huge leaps digital gaming technology has made in the past five years, this is disappointing. But, is it really necessary to study the most up-to-date high tech gaming gadgetry to determine the potential of game-based learning in distance education? Not necessarily. This is because not all digital game-based learning is of the high-tech variety.

For of the purpose of this review, we can divide digital game-based learning into three categories: high-tech, low-tech and mid-

tech. On the high end we will look at technologies taken from the gaming world such as distributed interactive virtual environments (Massively Multi-player Online Role-Playing Games) and complex physical, procedural and situational simulations. (McManus, 2003) Most of these technologies require teams of designers and content specialists (not to mention lots of capital) to create. On the low end we will examine game-based learning environments that use easily accessible tools such as e-mail and Internet to provide the setting for learning. Somewhere in between these two extremes is a middle level comprised of free or low cost web-based tools currently in development.

The rapid spread of broadband Internet access coupled with advancing multimedia technologies is creating new opportunities for digital learning. Many educational software companies in the K-12 market are already leading the way to the future of software distribution by providing web-based education programs. Riverdeep's (<http://www.riverdeep.com>) Destination Reading & Math series is offered exclusively on-line through subscription services. Tom Snyder Production's (<http://www.tomsnyder.com>) Decisions, Decisions Online and Reading For Meaning Online are other examples of successful web-based educational subscription services. With content-rich multimedia resources easily available, it is no longer necessary to limit our learning experiences to the dry, text-heavy courses that populate most university distance ed programs. But

does text-based always equal boring? Is it necessary to "juice" up content with multimedia "flash" to motivate learners?

Australian instructional designer, Sivasailam Thiagarajan, PhD, has spent the past few years "designing, facilitating, evaluating and researching a web conferencing strategy called 'e-mail games.'" Based on constructivist learning theories, e-mail games provide adult learners with an environment for learning through knowledge construction and sharing of ideas by collaboration on issues of importance to the learner. (Jansinski & Thiagarajan, 2000)

Thiagarajan designed "e-mail game templates" which a facilitator uses to guide discussion. Different templates are designed to achieve different learning outcomes. The templates range from role-playing games to collaborative problem solving activities,

"In an e-mail game, a facilitator and a group of players address a key issue by sending and receiving e-mail messages during several rounds of play spread over days or weeks . . . In the early rounds of play, the interaction is between players and the facilitator, while in later rounds, players come together to discuss processed content and to debrief." (Jansinski & Thiagarajan, 2000)

In the analysis of Sixty-four game sessions with more than 1,250 players, the designers concluded that e-mail games promote effective learning through a process that is "motivating and engaging but not time-consuming or laborious." (Jansinski & Thiagarajan, 2000)

Another low-tech game that has garnered rave reviews in K-12 education is the WebQuest. Introduced in 1995 by San Diego State University's Professor of Educational Technology, Bernie Dodge, the WebQuest is defined as, "an inquiry-oriented activity in which some or all of the information that learners interact with comes from resources on the Internet." (<http://webquest.sdsu.edu/>) Designed with motivation in mind, the WebQuest embodies the principals of motivation found in computer games as described by Lepper & Malone in "Making Learning Fun: Taxonomy of Intrinsic Motivations for Learning." (Dodge, 2003)

In the "mid-tech" range of digital game-based learning technologies is the Fablusi Role-Play Simulation Generator. (<http://www.fablusi.com>) This simulation generator mimics the environment of widely used conferencing software, such as WebCT. However, the similarities end with the user interface. It is how the environment is designed to be used that makes it so unique:

"The Role Play Simulation Generator allows educators to design and implement a web based simulation as easily as

navigating through a web-site. (Instructors) are able to experiment with creating simulations and getting the students to interact, collaborate, discuss, lobby and practice the skills and theories demanded by their field of study."

This is achieved through "Dynamic Goal-Based Scenarios" where the task goals are defined by the student within the pre-designated structured scenario set up by the instructor. (Ip, Linser & Naidu, 2001)

Beyond e-mail and web-based games and simulations are the high-tech computer/video games and simulations sold as entertainment or used by the military to train soldiers. Games such as The Sims, RollerCoaster Tycoon, Civilization and Black & White (top selling entertainment games) are being examined by educators and touted as "edutainment" by vendors. (Squire, 2001) Even more compelling than researching the educational value of existing commercial computer games are the recent collaborative efforts by movers and shakers in the gaming industry and university and civic groups. Three projects in particular are worth noting:

- The University of Texas at Austin - The Digital Media Collaboratory (King, 2003) determines its vision is "to facilitate coordinated, inter-departmental research and

development in digital and interactive media.”

(<http://dmc.ic2.org/>)

- MIT - The Games-To-Teach Project (Squire, 2001) “is a partnership between MIT and Microsoft to develop conceptual prototypes for the next generation of interactive educational entertainment.”
- The Woodrow Wilson Center’s Foresight and Governance Project - “Game Based Learning Models & Simulations: Expert Blueprints for Project Success” Conference (Sawyer, 2002) mission is “to create a better understanding of how commercial game and simulation developers, practices, and technology can be utilized by a wider field of organizations that build and apply models and simulations in the area of public policy.

(<http://wwics.si.edu/subsites/game/exsum.htm>)

Each of these projects represent serious efforts of institutions of higher learning and gaming industry experts to examine the potential of digital game-based learning.

The potential of digital game-based learning technologies integration into computer-based distance education is far from being realized. Despite the fact that more and more content and multimedia technology is available via the Internet, few educators have made the leap to integrating those technologies into their on-line courses. Not many distance ed instructors have the resources or vision to move beyond basic text-based collaborative

technologies. Even low-tech e-mail games and WebQuests require pedagogical departures from common practice that few are willing to risk. Without sufficient research in the field of game-based learning and creative thinking on the part of course designers this is not likely to change any time soon.