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Teaching with games:
A market survey of Web sites supporting classes
on games and pedagogy

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EDIT 271: Web-Based Learning

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6 April 2005

Executive Summary

The purpose of this market survey is to analyze Web sites that support classes related to the use of games and simulations in teaching. Fifteen classes at a variety of higher education institutions were found using Google to search the Web. A scorecard was used to evaluate the selected Web sites based on the presence of desired elements both within the site (communications, resources, etc.) and in the class (teaching strategies, readings) and to evaluate the site's design by rating various attributes.

Most of the sites contain information about the instructor, including contact modes, office hours, and sometimes a home page or blog. Most also contain the course metadata that is often found in a syllabus, including course descriptions, goals, and objectives; and meeting and assignment schedules. Many also include assignments descriptions, readings, and supporting materials.

The Web sites are generally well designed, with even the single-page sites using structural HTML and the appropriate formatting to present the information in a readable and meaningful way. Surprisingly few images are used on these sites.

Lecture, discussion, and project based learning are the most prevalent strategies used in these classes, followed closely by instructional games and simulations. By cataloging the most common readings reference on the sites, several texts were identified as being common across several classes.

Overview

The use of games and simulations in teaching is a clear trend, as reported in various issues of EDUCAUSE Review (Foreman, Oblinger) and in a recent report by the Pew Internet and American Life project (Jones). Naturally schools of education are both leading and responding to this trend by offering classes on designing, evaluating, and using games and simulations as instructional strategies.

The purpose of this market survey is to analyze Web sites that support classes related to the use of games and simulations in teaching. The goal is to identify the best practices and ideas for teaching the use of games in teaching. Fifteen classes at a variety of higher education institutions were found using Google to search the Web for various combinations of these terms: games, simulations, learning, education, syllabus, pedagogy. The institutions range from small to large, public and private, in the United States, Canada, and the United Kingdom. Classes are undergraduate and graduate level and are usually—but not always—offered by schools of education. Classes primarily dealing with game development or game history were excluded unless significant emphasis was given to pedagogical concerns; likewise classes primarily concerned with pedagogy were excluded unless significant emphasis was given to the use of games and simulations.

A scorecard was developed and used to evaluate the selected Web sites. The scorecard was used to tally the presence of desired elements both in the site (communications, resources, etc.) and in the class (teaching strategies, readings) and to rate the attributes of the site's design.

Methodology

A model evaluation form was modified based on a review of the standards, attributes, and content of the selected Web sites to create a scorecard for evaluating and comparing them (see Appendix A). The first part of the scorecard was used to tally the presence of desired items within these topics: Communication and Assignments, Course Syllabus, Readings and Resources, and Teaching Strategies. The second part of the scorecard was used to rate the quality of four attributes of Web design: Layout, Navigation, Images, and overall HTML skill. The sites were rated for each attribute on a scale of 1 to 5 based on a rubric (see Appendix B). Additionally, the primary readings from the classes were cataloged to determine the most frequently used texts.

Results were collected in Microsoft Excel, then imported into Microsoft Access for collation (i.e. each scorecard was appended to a table so that all scorecards ended up in one table) and summary. Results were returned to Excel for charting.

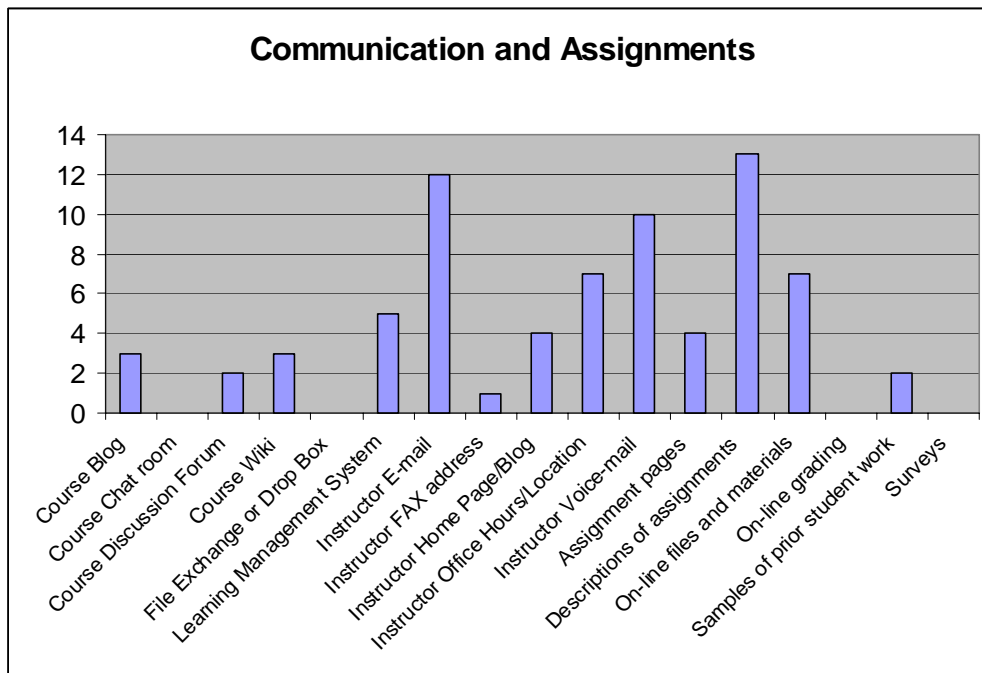
Classes Selected for Market Survey

Title	Institution	Department
<u>Exploratory Learning through Simulation and Games</u>	San Diego State University	Educational Technology
<u>Impact of Games & Simulations in Instruction</u>	Indiana University	Instructional Systems Technology
<u>Computer Games and Simulations for Investigation and Education</u>	Massachusetts Institute of Technology	Teacher Education Program
<u>Special Topics: Serious Games: The Role of Simulations in 21st Century Learning and Decision Making</u>	University of Michigan	School of Information
<u>Digital Games</u>	University of Washington	Technical Communication
<u>Instructional Simulations</u>	Utah State University	Instructional Technology
<u>Using Advanced Interactivities, Games and Simulations</u>	University of Calgary	Continuing Education
<u>Trends and Issues: Modeling and Simulation in Training</u>	Old Dominion University	Occupational and Technical Studies
<u>Digital Game Based Learning</u>	University of Calgary	Educational Research
<u>Design & Use of Training Gaming & Simulations</u>	Western Carolina University	
<u>Knowledge Media Design and Learning</u>	University of Toronto	
<u>Educational Play</u>	Parsons School of Design	
<u>Mindtools for Investigation and Education</u>	University of Maryland	College of Education: Educational Technology Outreach
<u>Educational Simulations and Games</u>	Concordia University	Educational Technology Department
<u>Motivating Learners Through Gaming and Simulation</u>	National University	School of Education

Results

Communication and Assignments

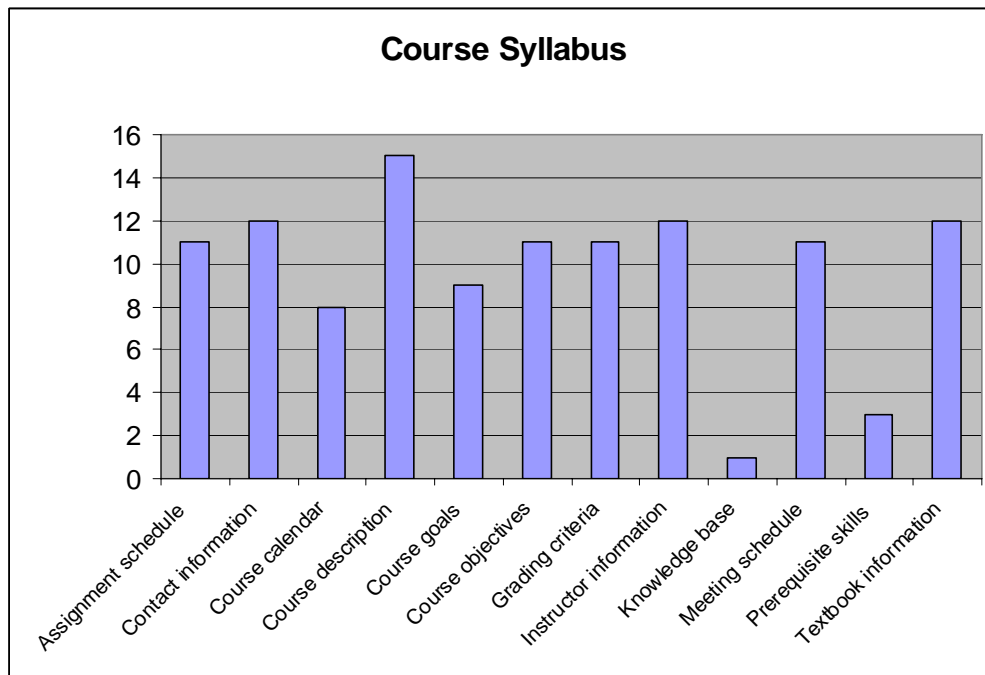
This topic includes ways in which learners communicate with the instructor and with each other, as well as how they manage their assignments and deliverables.



The majority of sites contain the instructor's basic contact information (email, voicemail, office hours/location). Nearly all sites (13) contain descriptions of assignments, but only four have individual pages for each assignment. Classes that use a learning management system (5) were not tallied for the various components that are often part of such a system (chat, discussion, file exchange). Blogs and wikis, while relatively new, are favored over chat rooms and discussion forums in these classes.

Course Syllabus

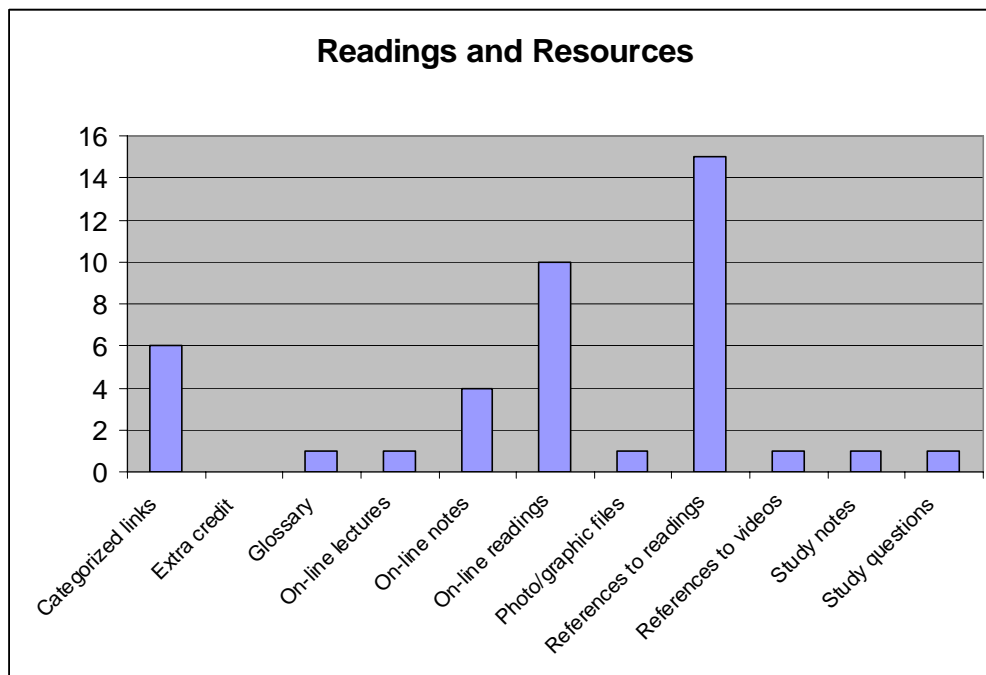
This topic covers course information available on a syllabus or set of pages that function as one. Many of these elements are course metadata: course description, goals, and objectives; and meeting and assignment schedules.



Class Web sites are clearly being utilized to provide this kind of information. All sites contain a course description, and most (12) also have instructor and textbook information. However, two areas, knowledge base (1) and prerequisite skills (3), are rarely presented on these Web sites. The one example of a knowledge base, a pathfinder for “serious games,” is exemplary.

Readings and Resources

This topic includes the various texts and recordings used in classes. All of these Web sites contain references to readings, usually textbooks, photocopied materials, and electronic reserves. Many (10) also contain online readings. The lack of study notes, questions, and other files may be because they are inaccessible to the researcher (behind a firewall, in a learning management system, etc.).



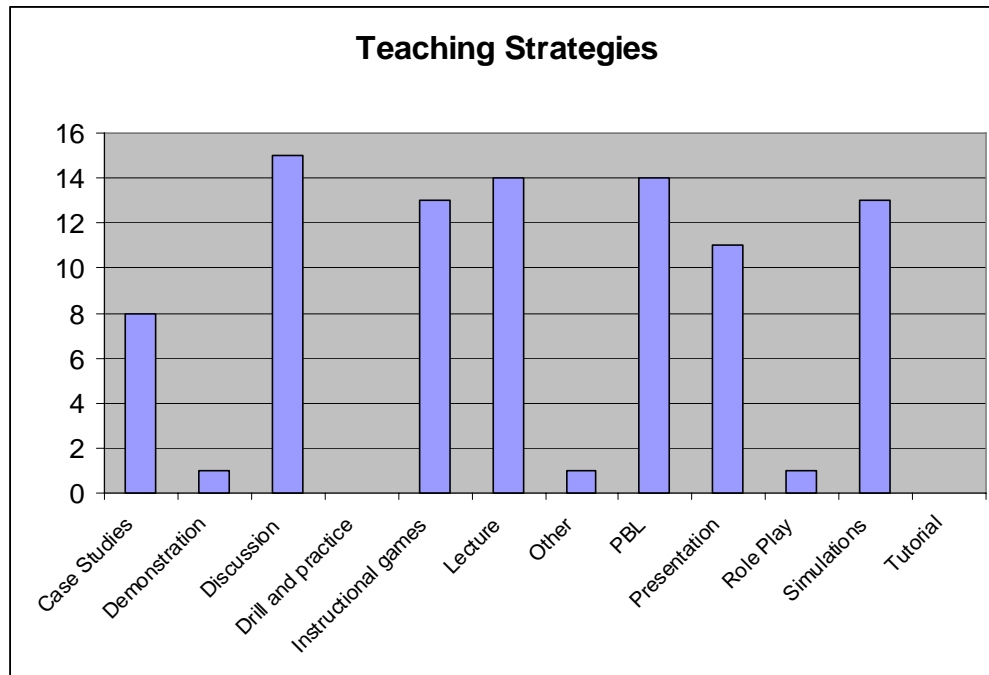
Many of the books and articles listed or linked on these sites were cataloged to determine the most commonly used texts. Not surprisingly, Prensky's and Gee's books top the list with each used in four classes; Lloyd Rieber's seminal article "Seriously considering play" is also used in four classes.

Most Popular Readings		
Resource	Author	Count of Classes
Digital Game-Based Learning	Prensky, Marc	4
What Video Games Have to Teach Us About Learning and Literacy	Gee, James Paul	4
Seriously considering play	Rieber, L. P.	4

Most Popular Readings		
Resource	Author	Count of Classes
Rules of Play : Game Design Fundamentals	Salen, Katie & Zimmerman, Eric	3
A handbook of game design	Ellington, H., Addinall, E., & Percival, F.	2
Learning by Doing: A Comprehensive Guide to Simulations, Computer Games, and Pedagogy in E-Learning and Other Educational Experiences	Aldrich, Clark	2
Game design perspectives	Laramee, F.D. (Ed.)	2
Making learning fun: A taxonomy of intrinsic motivations for learning.	Malone, T. W., & Lepper, M. R. (1987).	2
Flow: The psychology of optimal experience.	Csikszentmihalyi, M.	2
Replaying History: Engaging Urban Underserved Student in Learning World History Through Computer Simulation Games	Squire, Kurt & Barab, Sasha	2
Simulations and the Future of Learning - An Innovative (and Perhaps Revolutionary) Approach to e-Learning	Aldrich, Clark	2

Teaching Strategies

This topic includes the various methods used by instructors according to their syllabi, course objectives, assignment descriptions/details, and other documents on these Web sites.



Lecture, discussion, and project based learning are the most prevalent strategies used in these classes, followed closely by instructional games and simulations. The latter two are probably used more frequently in these classes than normal because they are also the topic of the classes. Many of the projects involve analyzing or designing a game or simulation.

Web Site Design

In addition to reviewing the use and content of these Web sites, they were evaluated on four attributes of Web design: Layout, Navigation, Images, and overall HTML skill. The sites were rated for each attribute on a scale of 1 to 5 based on a rubric (see Appendix B).

Item	Average	Minimum	Maximum
HTML Skill	4.20	3	5
Images	2.07	1	5
Layout	4.07	3	5
Navigation	3.47	2	5

On average these sites displayed a high degree of competency in their use of HTML. Even the lowest scoring sites had structured content with appropriate formatting, while the highest scoring were also consistent in layout and navigation and used lists and images properly. Most of the sites used few or no images, but those that did had a clear relation to the text.

Total design scores for the class Web sites ranged from 9 to 20, with the highest rated being Bernie Dodge's EDTEC 670 (Exploratory Learning through Simulation and Games) at San Diego State University.

Class Title	Design_Total
Exploratory Learning through Simulation and Games	20
Educational Play	19
Digital Games	16
Design & Use of Training Gaming & Simulations	16
Computer Games and Simulations for Investigation and Education	15
Trends and Issues: Modeling and Simulation in Training	15
Digital Game Based Learning	14
Mindtools for Investigation and Education	14
Instructional Simulations	14
Educational Simulations and Games	12
Using Advanced Interactivities, Games and Simulations	12
Knowledge Media Design and Learning	11
Special Topics: Serious Games: The Role of Simulations in 21st Century Learning and Decision Making	10
Motivating Learners Through Gaming and Simulation	10
Impact of Games & Simulations in Instruction	9

Summary

In general, Web sites seem to be an important component of classes concerned with the use of games and simulations in teaching. They are widely used to publish typical course syllabus information as well as assignments, readings, and supporting materials. They are used to a lesser degree for communication, but their use of newer technologies like blogs and wikis is probably more prevalent than in other classes.

The instructors of these classes use a variety of instructional strategies, with most classes requiring projects related to the design and development of games and simulations for teaching. Games and simulations are often used in these classes, usually as examples and objects of analysis. Several of these classes require common texts, with the most popular books being Prensky's "Digital Game Based Learning" and Gee's "What Video Games Have to Teach Us About Learning and Literacy."

An area of further research might be to catalog the games that are studied in these kinds of classes. As with the texts, there is probably some uniformity in the games that are chosen and the contexts in which they are played and analyzed.

References

Foreman, J. (2004). Game-based learning: How to delight and instruct in the 21st century.

EDUCAUSE Review, 39, (5), 50.

Jones, S. (2003). Let the games begin: Gaming technology and entertainment among college students. Retrieved April 6, 2005 from

http://www.pewinternet.org/pdfs/PIP_College_Gaming_Reporta.pdf.

Oblinger, D. (2003). Boomers, Gen-Xers, and Millennials: Understanding the new students.

EDUCAUSE Review, 38, (4), 37.

Appendix A

Market Survey Scorecard

Topic	Item	Present
Course Syllabus	Course description	
Course Syllabus	Instructor information	
Course Syllabus	Meeting schedule	
Course Syllabus	Assignment schedule	
Course Syllabus	Textbook information	
Course Syllabus	Course calendar	
Course Syllabus	Knowledge base	
Course Syllabus	Prerequisite skills	
Course Syllabus	Contact information	
Course Syllabus	Course objectives	
Course Syllabus	Grading criteria	
Course Syllabus	Course goals	
Readings and Resources	On-line readings	
Readings and Resources	References to readings	
Readings and Resources	References to videos	
Readings and Resources	On-line lectures	
Readings and Resources	On-line notes	
Readings and Resources	Glossary	
Readings and Resources	Study questions	
Readings and Resources	Extra credit	
Readings and Resources	Photo/graphic files	
Readings and Resources	Categorized links	
Readings and Resources	Study notes	
Communication and Assignments	Instructor Office Hours/Location	
Communication and Assignments	Instructor E-mail	
Communication and Assignments	Instructor Voice-mail	
Communication and Assignments	Instructor FAX address	
Communication and Assignments	Instructor Home Page/Blog	
Communication and Assignments	Course Discussion Forum	
Communication and Assignments	Course Chat room	
Communication and Assignments	Course Blog	
Communication and Assignments	Course Wiki	
Communication and Assignments	Learning Management System	
Communication and Assignments	File Exchange or Drop Box	
Communication and Assignments	Assignment pages	

Communication and Assignments	Descriptions of assignments
Communication and Assignments	Surveys
Communication and Assignments	On-line grading
Communication and Assignments	On-line files and materials
Communication and Assignments	Samples of prior student work
Teaching Strategies	Simulations
Teaching Strategies	Drill and practice
Teaching Strategies	Instructional games
Teaching Strategies	Case Studies
Teaching Strategies	Role Play
Teaching Strategies	PBL
Teaching Strategies	Lecture
Teaching Strategies	Discussion
Teaching Strategies	Tutorial
Teaching Strategies	Demonstration
Teaching Strategies	Presentation
Teaching Strategies	Other
User Interface	HTML Skill
User Interface	Layout
User Interface	Navigation
User Interface	Images

Appendix B

Web Design Scoring Rubric

HTML Skill	1	No HTML formatting tags; Text is not broken into paragraphs
HTML Skill	2	Text is broken in paragraphs; Headings are used; no other tags
HTML Skill	3	Paragraphs; headings; title ; and the following tags as appropriate: preformatted text ; styles ; centered text ; horizontal rule
HTML Skill	4	Same as Level 3 plus: links (images optional)
HTML Skill	5	Same as Level 4 plus at least two lists, images as Links (optional), "Return to..." links, colored text/background, background image
Layout	1	Layout has no structure or organization
Layout	2	Text broken into paragraphs and/or sections
Layout	3	Headings label sections and create hierarchy; some consistency Hierarchy closely follows meaning; Headings and styles are consistent within pages;
Layout	4	Text, images, and links flow together Consistent format extends page-to-page; design is intentional; attention to different
Layout	5	browsers and monitor size
Navigation	1	One Page
Navigation	2	One Page with TITLE, Heading
Navigation	3	2 pages (or one page with links to other resources)
Navigation	4	3 pages with clear order, labeling and navigation between pages; all links work Title Page with other pages branching off, and at least four pages total; Navigation
Navigation	5	path is clear and logical, all links work
Images	1	No images Images are unrelated to page/text/proposal; most images were recycled from other
Images	2	pages on the Internet; Images too big/small in size or resolution; Images poorly cropped or have color problems
Images	3	Images have strong relation to text; some Images are student produced; Images have proper size, resolution, colors, and cropping
Images	4	Same as Level 3 plus images are from 3 or more sources (scan, CD-ROM, QuickCam, ZapShot, video tape, net, SuperPaint, PhotoShop, LogoMotion, etc.)
Images	5	Same as Level 4 with either: more advanced Photoshop, PhotoDeluxe or Illustrator work