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Measuring Learning in an Honors Interdisciplinary Course on Video Games

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Measuring Success in an Honors Interdisciplinary Course on Video Games: A Second-Year Review

Rudy McDaniel and Peter Telep
University of Central Florida
A Few Game Facts from the ESA

• In 2007, video games:
  – accounted for $9.5 billion in revenue
  – were played by 65 percent of Americans
  – were noted to be a positive part of children’s lives by 63 percent of parents

• The *average* videogame player:
  – is 35 years old
  – has played games for 13 years
What does this mean?

- Many of our students are playing games!
- We have an opportunity to engage students by using a technology they are passionate about.

Twoplayer Comics
http://comics.gamesfirst.com
GAMING 360
The History, Culture, and Design of Video Games

A Team-Taught Honors Interdisciplinary Seminar
SCHOLARSHIP OF TEACHING AND LEARNING PROJECT

Rudy McDaniel
Department of Digital Media

Peter Telep
Department of English

BACKGROUND
We proposed a SoTL project to measure student learning in an honors interdisciplinary seminar first taught during the spring 2007 semester. A critical goal is to communicate to students the utility of gaming technologies for non-entertainment purposes.

RESEARCH QUESTION
How will students improve their understanding of video game concepts and applications of video games as cultural and critical tools as a result of participation in our honors seminar?

LITERATURE REVIEW
We have identified salient literature in each of the following categories:
- Video Games and Pedagogy
- History of Video Games
- Video Game Design
- Cultural Impact of Video Games
- Teaching in Honors

METHODOLOGY
- We are using a quasi-experimental repeated measures analysis of variance design.
- We are administering pre- and post-tests using Forms Manager.
- We have received full IRB approval for our study.

PUBLICATION
Proposal drafted: "Direct and Indirect Measures of Student Success in an Honors Interdisciplinary Video Games Course: A Rhetorical Analysis in Three Parts"

FUTURE RESEARCH
We plan to teach this course several more times and propose new research into applications for gaming as a tool for learning in all disciplines.
Research Question

• How can we measure student learning in a course about videogames?

http://www.theonion.com/content/video/are_violent_video_games
Timeline

• Fall 06: SOTL Project Created
• Spring 07: Course Taught 1st Time
• Fall 07: Data Presented at 1st SOTL Commons Conference
• Spring 08: Course Taught 2nd Time
• Spring 09: Course Taught 3rd Time
• Spring 09: Data Presented at 2nd SOTL Commons Conference
Challenges

• How do we measure student learning in a course about video games?

• This is complicated because:
  – Interdisciplinary nature of the topic
  – Interdisciplinary nature of the course organization
  – Videogames often have a bad reputation
  – Videogames are often more controversial than other texts
Controversial Games
Approach

• Direct and indirect measures of student learning through pre- and post-test instruments.

• Careful analysis of feedback from students on course evaluations.

• Informal networking with students through email and social networking sites.
Findings

• As we completed our test instruments, we found our data was not really measuring the things we wanted to measure.

• As a result, we eventually moved from a course that included only pre- and post-test survey questionnaires to a course that also included midterm and final examinations.
Sample Survey Question

• The very first “violent” video game *Death Race*, a free-standing driving simulator arcade game, was released in:
  a) 1966
  b) 1976
  c) 1981
  d) 1992
  e) I don’t know
What We’ve Learned from Our SOTL Work

• Our initial surveys were not really measuring what we wanted to measure, which was:
  – A) students’ ability to see videogames as critical texts through which to analyze society
  – B) students’ ability to create innovative and creative blueprints for their own game concepts
  – C) students’ ability to understand the procedural arguments made by videogames
Recalibration

• Testing declarative knowledge is easy. Testing for critical thinking, creativity, and innovation is more difficult.

• We redesigned our course to focus more on:
  – Application of readings to questions about particular games
  – Discussion of controversial games and gaming topics
  – Development of GDDs using original concepts planned by the students
  – A revised survey with more open-ended responses
Sample Midterm Question (Multiple Choice)

• **Rhetoric and GTA**: Ian Bogost suggests that *Grand Theft Auto: San Andreas* supports a particular political ideology in regards to nutrition, crime, and other factors. Which ideology does he argue the procedural rhetorics of GTA support?
  
  A. Typical Democratic (liberal) ideologies
  B. Typical Independent ideologies
  C. Typical Republican (conservative) ideologies
  D. Typical Green Party ideologies
Sample Midterm Question (Short Answer)

• What do game players want? Address three specific desires, then choose a specific game and analyze how successful the game is at meeting those player desires.
Revised Survey Question

Describe what you see in this image. What does this image say about game design and the characters used by game designers?
Three Student Responses

• “This image presents a stereotypical form of women. Her physical features are exaggerated” (Student 1).

• “Tight clothing, perfect body, etc. But she also is fairly empowered, and gets to be the one doing the shooting” (Student 2).

• “Emphasizes strong female features, but also crosses traditional gender roles by portraying her as an action hero. She's wielding two Desert Eagle pistols ... most people, even experienced shooters, have trouble with one - this could just be ignorance/exaggeration, but could also portray strength” (Student 3).
Best Practices

• We found much value in our SOTL work in measuring how well students were learning what we wanted them to learn, and in providing feedback as how to modify our course

• We also learned, however, how to effectively teach using videogames in the classroom

• In a recent publication, we outlined ten best practices for using games in the classroom
1. Take Advantage of Existing Resources

Midterm Review Game

<table>
<thead>
<tr>
<th>Politics</th>
<th>Advertising</th>
<th>Theory</th>
<th>Technique</th>
<th>Important Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
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</tbody>
</table>

Theory for 300

**Answer:** A three part deductive statement (syllogism) with a proposition omitted.
Online Sites

- MERLOT
  Multimedia Educational Resource for Learning and Online Teaching

- Serious Games Initiative

- Futurelab
  Innovation in Education
## Some Teaching Games

<table>
<thead>
<tr>
<th>Game</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CyberCIEGE</td>
<td>Used in the discipline of Information Technology and computer science to teach students about network security issues.</td>
</tr>
<tr>
<td>Dafur is Dying</td>
<td>Used in the fields of history, cultural studies, or any humanities course to teach students about war and its consequences.</td>
</tr>
<tr>
<td>Food Force</td>
<td>Used in various humanities courses to teach students about world famine issues.</td>
</tr>
<tr>
<td>Global Conflict:</td>
<td>Used in writing and history courses to teach students about journalistic techniques and about the history of Palestine.</td>
</tr>
<tr>
<td>Palestine</td>
<td></td>
</tr>
<tr>
<td>Planet Green Game</td>
<td>Used in the discipline of ecology or general earth science to teach students about global ecological issues.</td>
</tr>
<tr>
<td>Fantastic Contraption</td>
<td>Used in math and physics courses to teach students basic physics concepts.</td>
</tr>
<tr>
<td>Simport</td>
<td>Used in the discipline of engineering to help teach students about large infrastructure projects.</td>
</tr>
<tr>
<td>Burn Center</td>
<td>Used in the discipline of medicine to help train doctors.</td>
</tr>
<tr>
<td>The Mapojib Experience</td>
<td>Used to help teach students the Korean Language. One example of many foreign language games.</td>
</tr>
<tr>
<td>Tycoon (game series)</td>
<td>Used to teach business students resource management and other key business concepts. Game series involving many titles and subjects.</td>
</tr>
<tr>
<td>Legsim</td>
<td>A virtual simulation of the U.S. Congress, State legislature and the European union for students in history and government courses.</td>
</tr>
<tr>
<td>Hazmat: Hot Zone</td>
<td>Used to train first responders to deal with hazardous materials.</td>
</tr>
<tr>
<td>Geosense</td>
<td>Game used to teach students geography.</td>
</tr>
</tbody>
</table>
2. Ask Students to Produce, Not Just Consume

- Game Documents Produced by Students:
  - *Project Action*
  - *Ecorillas: Retribution Earth*
  - *Trashed!*
  - *Food Network Battle Royale*
3. Avoid Being Overly Prescriptive
4. Be Aware of Non-Electronic or Non-Media Intense Games

- Other game-like environments can be created using *MS-PowerPoint* or similar productivity software suites.
5. Be Ready to Take Risks

• A few risks of using games in the classroom:
  – Student competitiveness
  – Mature themes
  – Controversial topics

• Fortunately, there are numerous games to choose from these days, so the latter two risks can be easily minimized.
6. Stay Focused on Learning
7. Embrace Interdisciplinarity

- Students bring a variety of expertise to the classroom.
- Let them use it when producing assignments and projects.
  - Art
  - Sound & Music
  - Programming / Technical
  - Psychology
  - Composition / Writing
  - Biology
  - Etc.
8. Take Advantage of Serious Games

Image Credit: https://blogs.wharton.upenn.edu/staff/remurphy/heart4.jpg
9. Use Collaborative Technologies

The steep learning curve associated with gaming jargon can be mitigated through the use of community-driven Web 2.0 tools.
10. Playtest Your Course!
Q&A / Discussion

• Has anyone in the audience used electronic or non-electronic games in the classroom for your own teaching?
• What might videogames offer to your own discipline in terms of engaging and motivating students to learn?
• What are the disadvantages of teaching with videogames?