Are Games Just for Play?

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ARE GAMES JUST FOR PLAY?
PROMOTING CRITICAL THINKING

- 5 minute University
  - Former Saturday Night Live (SNL) character, Father Guido Sarducci, described the features of education only to pass the test
  - In 5 minutes, he will teach you everything the average college graduate remembers 5 years after graduation
- What can we do to promote critical thinking and long-term learning?
Google search on “math anxiety” produced 285,000 results
2/3 of Americans fear or loathe math (Furner & Duffy, 2002)
25.9% of respondents had moderate to high need for help with math anxiety (Jones, 2001)
Negative consequences of math anxiety most dramatic among those with high working memory (Ramirez et al., 2012)
80% of grad students experience statistics anxiety (Onwueggbuzie, 2004)
SERIOUSLY CONSIDERING PLAY

- Pre-print version: http://www.coe.uga.edu/~lrieber/play.html
- Consider how much children learn about the world through play
  - Example: The see saw to illustrate measures of center
- 3 types of playful learning environments:
  - Microworld: Small, but complete, version of a setting of interest (e.g., sandbox)
    - Microworlds: Exploring the Structure of Materials (an interactive tour of current research in the materials sciences at Berkeley Lab's Advanced Light Source)
    - http://www.lbl.gov/MicroWorlds/
  - Simulation: Mimics an environment (e.g., virtual reality environment to learn a foreign language)
  - Games
STUDIES ON MATH GAMES

- (Chen et al., 2012)
  - Collaborative and group scribble game provided improvement in pre- vs. post-test scores
- (Chen et al., 2012)
  - Inclusion of game quests increased enjoyment, goal orientation and intensity
- (Gillespie, Martin, & Parker, 2010)
  - Improvement in math achievement, but not in attitudes toward math
- (Flewwing, 2005)
  - Sense making games better prepare students for life than knowledge learning games
SOME GAMES I HAVE USED

- Jeopardy
- Sudoku
World Wide Interactive Learning Design team
- [http://it.coe.uga.edu/wwild/](http://it.coe.uga.edu/wwild/)
- Homemade Powerpoint games
  ([http://it.coe.uga.edu/wwild/pptgames/index.html](http://it.coe.uga.edu/wwild/pptgames/index.html))
- Creating a homemade Powerpoint game
  ([http://it.coe.uga.edu/wwild/pptgames/creating.htm](http://it.coe.uga.edu/wwild/pptgames/creating.htm))
- Concept Paper ([http://it.coe.uga.edu/wwild/conceptpaper.html](http://it.coe.uga.edu/wwild/conceptpaper.html))
- Search (subject) game under the category education
- Math Bingo: Math problem given, student must solve and find answer on bingo card
- Anagram spelling game: Arrange letters to spell words, contains hints, put your own words in list, contains several languages
- U.S. Presidents (Match ‘em Up History and Geography): Match the picture and description to the president
- Art Museum: Similar to U.S. Presidents
- Chem Lab: Given a chemical mix the appropriate elements in the test tube.
INSTRUCTIONAL DESIGN CONSIDERATIONS IN GAMIFICATION

- Games should address course objectives not vice versa (Landers & Callan, 2011)
- Flow theory (carried away by the “flow” of the activity) (Rieber, 1996)
  - Optimize challenge
  - Avoid boredom and anxiety simultaneously
  - Students can identify with the character(s) and problem in the game
- Discuss a challenging learning objective in your curriculum
  - Would a game be appropriate to address this objective? Why or Why not?
  - How would you incorporate flow into the game?
  - What impact would you like to see from the game on your students?
REFERENCES