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Are Games Just for Play?

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ARE GAMES JUST FOR PLAY?
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)

Pre-print version: [http://www.coe.uga.edu/~lriebber/play.html](http://www.coe.uga.edu/~lriebber/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)

- 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 works, 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