Learning from Educational Games

- Literacy vs. Education vs. Training... vs. Fun?
- Skills, Conceptual Knowledge, Metacognitive Skills
- Features and affordances for learning
- Elements of Game Design
Learning

What is Learning?
- Active Process
- Cognitive Aspects
- Emotional Aspects
- Socio-Cultural Aspects
- Narrative

What conditions facilitate Learning?
- Authentic materials
- Meaningful – Narrative
- Situated learning
- Group collaboration
- Focus on problem solving rather than facts
- Adaptive environments
- Affective/emotional component

Learning with Games

Function of Games in Learning
- Games to prepare future learning (CCT, Schwartz)
- Teaching for specific learning goals: Mini-games (G4LI)
- Simulation games for hypothesis testing (M&M, Squire)
- Practice of Existing Knowledge

Games and Learning
- Math Skills: Factor Reactor
- Math Skills: Supertransformation!

Educational Game Genres
- Open-ended simulation (sandbox) games
- Targeted conceptual games
- Professional role-playing games
- Multi-user virtual environments (MUVEs)
- MMOs
Class Discussion

What educational potential do you see for games?
Review Examples provided on the course document page.

- What are possible benefits and pitfalls of using games for
  education?
- How do game genres differ in their potential?
- What kind of learning would such an environment foster?
- What are benefits and how can they be applied?
- What are possible pitfalls and how can they be avoided?

Learning with Games

Examples
- RT Strategy games turn learners/players into teachers
- Augmented Reality games for real-life application
- Role-playing games for skills, procedures, etc.

Educational Games

Meaningful Play (experiential schemas)

Play-Definition (Salen & Zimmerman)
- Game Play (formalized interactions, following rules, goal/outcome)
- Ludic Activity (play activities beyond games, no goal/outcome)
- Being Playful (playful state of mind that affects other actions)

Educational Games

Play of Experiences (Salen & Zimmerman)
- Concentration and Auditory Discriminations
- Visual Scanning and Motor Responses
- Perceptual Patterns of Learning

Educational Games

Core Mechanics
- Essential play activity
- Experiential building blocks of player interactivity
- Moment-to-moment activities of player, repeated
- Involves hardware input device
Educational Games

- Play of Pleasure (LeBlanc)
  - Sensation
  - Fantasy
  - Narrative
  - Challenge
  - Fellowship
  - Discovery
  - Expression
  - Submission

Class Activity

- Games for Learning
  - What should a definition include?
  - __________________
  - __________________
  - __________________

Educational Games

- Literacy vs. Education vs. Training... vs. Fun?

Introduction

- Definitions
  - Literacy
  - Education
  - Training

Game Genres

- Games and Education
  - Literacy
  - Focus on social learning, identity
  - Exploration and knowledge creation
  - Legitimate Participation in community of practice
  - Apprenticeship (reciprocal)
  - Learning through design & creating new artifacts
What is Learning?
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Review game play from last week (10 min., Group of 3-4)
- Revisit the game play in last week’s class:
  - How were specific educational elements (situated learning, active engagement, construction, ...) implemented?
  - How could the game be improved to better implement them?

Comparison of Games and Learning Approaches (15 min., Group of 3-4)
- Compare the approaches by Gee, Squire, and Barab:
  - What aspects of learning do they emphasize?
  - What aspects of games does each approach highlight?
  - What kind of games would best incorporate each approach?

<table>
<thead>
<tr>
<th>Game</th>
<th>Learning</th>
<th>Literacy</th>
<th>Squire</th>
<th>Barab</th>
<th>Gee</th>
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Introduction

- Learning and Literacy (Gee, 2006)
  - Models and Modeling
  - Simulations
  - Distributed intelligence
  - Motivation and Ownership
  - Emotion
  - Situated Meaning

Game Genres

- Open-ended simulation games (Squire, 2008)
  - Open-ended worlds
  - Multiple solution paths
  - Space for knowledge creation and discovery
  - Learning as process of coming to understand a system
  - Ideological worlds, interpretative communities
  - Possibility spaces
    - Intellectual play spaces
    - Identity places
  - Learning through social game play

Games for Education

- Activity Theory & Games (Squire)

- Conceptual Play Spaces (Barab et al., 2009)
  - support empathetic embodiment for complex systems
  - Form discourse communities
  - Conceptual Play=Engagement, involving
    - Character role
    - Party fantastic problem context
    - Opportunities to examine impact of participation on context
  - Quest Atlantis

Game Genres

- Quest Atlantis (Barab)

Game Genres

- RiverCity (Oode)
Game Genres

- Scaffolds (Barab et al. 2009)
  - Narrative
  - Social
  - Perceptual
  - Interactive

Class Discussion

- What kind of questions have not yet been addressed in research on the educational use of games?

Evaluational Games

- Elements of Educational Game Design

Evaluational Games

- Plass & Perlin
  - Player Experience
  - Player Effectiveness
  - Reward
  - Aesthetic Design
  - Art Direction
  - Relevance
  - Player Effectiveness
  - Interaction Design
  - Game Mechanics
  - High Score
  - Social Standing
  - Cooperation
  - Competition
  - => Emotional effect
  - Narrative
  - Authenticity
  - Curricular Relevance
  - Intellectual Challenge
  - Make progress visible
  - Visual Design of Materials
  - Musical Score
  - Sound Effect
  - => Emotional effect
  - Level of Interactivity
  - Level of Control
  - Empowerment
  - => Emotional effect
  - Educational Content
  - Strategic Content
  - Scaffolds

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The Learning Circle

- Special place and time created by a game
- Separated from the real world
- Finite space with infinite possibilities
- Lusory Attitude—arbitrary authority to guide and direct play
- Learning attitude—educational goals to guide and direct play