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Simulations and Games for Education

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Overview

- Introductions
- Overview
- Game Genres and their Educational Potential
  - Types of Environments
  - Game Genres

Additional Design & Engineering Patterns

Game Genres

- Types of Environments

Game Genres

- Environments
  - Games
  - Simulations
  - Animations
  - Microworlds
  - Virtual Reality
  - Augmented Reality

Game Genres

- Game Genres
### Game Genres

**Genres (Jonathan’s list)**
- First-person shooter (FPS)
- Real Time Strategy (RTS)
- Role-playing (RPG)
- Massively Multiplayer Online (MMO)
- Puzzle
- Simulation
- Sports
- Fighting
- Virtual Life / Virtual World
- Action/Adventure

- Turn-based strategy
- Casual Games

### Educational Game Genres

- Open-ended simulation (sandbox) games
- Targeted conceptual games
- Professional role-playing games
- Multi-user virtual environments (MUVEs)
- MMOs

### Group Activity

**Discuss the educational potential of games!** (15 min., Groups of 3-4)
- What are possible benefits and pitfalls of using games for education?
- Consider genres separately
- Review Examples provided on the course documents page
- What can be done to avoid the pitfalls?
- What learning theory could such an environment be based on?
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
  - apply conceptual understanding to transform context
  - opportunities to examine impact of participation on context
- Quest Atlantis

RiverCity (Dede)

Scaffolds (Barab et al. 2009)

- Narrative
- Social
- Perceptual
- Interactive

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

Elements of Educational Game Design
Educational Games

- 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

Out of Class Activity

- Play a game!
  - Play a computer/console game at home
- Write one paragraph reflecting on your experience
- Design a game!
  - Development a game