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Simulations and Games for Education

Jan L. Plass, ECT

Overview

- Designing Simulations and Games: Affect
  - Emotional Design
  - Affective Outcomes

Games and Affect

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Overview

- Designing Simulations and Games: Affect
  - Emotional Design
    - The emotional brain
    - Design Model
    - Conceptual Approach
  - Affective Outcomes

Affective Design Factors

- The emotional brain

Affective Design Factors

- Limbic System
  - Hypothalamus
  - Hippocampus in temporal lobe
  - Amygdala
  - Deeply connected to cortical functions

Affective Design Factors

- Response to Emotions
  - Thalamic Pathway
  - Cortical Pathway

Affective Design Factors

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  - Thalamic Pathway
  - Cortical Pathway
Emotions and Learning
- Emotions are essential for decision making (Damasio, 1994)
- Positive mood as effective retrieval cue (Bower, Stiller, & Zayas, 1978)
- Positive mood increases creativity (Bower, Duker, & Novak, 1977)
- Positive mood leads to more positive judgments and more favorable feedback (Fiske & Taylor, 1993; Petty et al., 1993; Weiss et al., 1999)
- Positive emotions facilitate intrinsic motivation (Isen & Krueger, 1987; Isen & Irwin, 2000)
- Positive emotions facilitate learning (Isen, Song, & Plass, 2007; Um & Plass, submitted)

Positive Emotions

Design Model

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Positive Emotions

Educational Games
- Plass & Perlin

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Educational Games
- Gamasutra (Bures)
How can learners' emotions be manipulated in games?

- Game Mechanics
- Audio
- Sound Effects
- Musical Score
- Visual
- Lighting (Color)
- Shapes
- Tactile
  - Force feedback controllers

- Emotional Game Design Approach
  - Emotion and Engagement, Motivation, Interest
  - Emotion and Cognition
  - Affective Communication

Class Activity

Emotional Design for Math Game
- Murphy's Math Game (g4li.org)
- What approaches can be used to enhance the game using emotional design?
- Emotion and Cognition
- Communication

- Designing Simulations and Games: Affect

Overview

- Emotional Design
- Affective Outcomes
  - Attitudes (Persuasion)
  - Interest, Motivation
  - Identity

Affective Design Factors

Effect of Emotion on Interest, Motivation, Engagement
- Affect as a signal to act or assess (e.g., Lane, 2002; 2003; Carver & Scheier, 1998; Kuhlkan, 2003)
  - Negative affect: signals that goal is not met
  - Positive affect: signals that primary goal is met
  - Lower-order goals can be addressed
Affective Design Factors

Effect of Emotion on Identity
- Attitudes
- Self-esteem
- Self-efficacy

Out of Class Activity

Design your educational game! (project teams, 30-45min)
- Design your educational game from a affective perspective
  - Conceptual Approach
  - Higher-level Objectives
  - Desired Outcomes (attitudes, identity)
  - Activities/Game Mechanics
  - Use Game Design Variable Categories from Burns