Source Materials, Theories, and Frameworks

Learning Principles and Theories Used in the Learning Objectives Assistant

Core Learning Design Principles

1. Constructive Alignment

   - Aligning learning objectives, activities, and assessments

   - Ensuring coherence across educational design elements

   - Supporting intentional learning pathways

2. Backward Design

   - Starting with desired outcomes before planning activities

   - Three-stage process: identify results, determine evidence, plan experiences

   - Focus on evidence of understanding

3. Bloom's Revised Taxonomy

   - Cognitive process dimensions (remember, understand, apply, analyze, evaluate, create)

   - Knowledge dimensions (factual, conceptual, procedural, metacognitive)

   - Hierarchical complexity of thinking skills

4. SMART Objectives Framework

   - Specific, Measurable, Achievable, Relevant, Time-bound

   - Creating clear, actionable learning targets

   - Supporting assessment design

5. Learning Domains Integration

   - Cognitive domain (knowledge and thinking)

   - Affective domain (attitudes and emotions)

   - Psychomotor domain (physical skills)

Educational Game Design Principles

1. Intrinsic Integration

   - Seamless connection between learning content and game mechanics

   - Avoiding "chocolate-covered broccoli" approach

   - Learning through gameplay rather than interrupting gameplay

2. Scaffolded Learning

   - Progressive challenge aligned with skill development

   - Support structures that fade as mastery increases

   - Zone of proximal development application

3. Meaningful Choices

   - Decision-making that reflects learning objectives

- Consequences that demonstrate understanding
- Agency as motivational and educational tool

4. Transfer-Oriented Design

- Bridging game contexts to real-world application
- Explicit connections to learning objectives
- Reflection opportunities to solidify learning

5. Universal Design for Learning

- Multiple means of engagement
- Multiple means of representation
- Multiple means of action and expression

Learning Principles and Theories Used in Game Type Assistant

Game Design Frameworks

1. MDA Framework (Mechanics, Dynamics, Aesthetics)

- Mechanics: rules and components that define game structure
- Dynamics: emergent behaviors that arise during play
- Aesthetics: emotional responses evoked in players

2. Game Design Patterns for Learning

- Recurring solutions to common design problems
- Patterns that support specific learning processes
- Structural elements that enhance educational effectiveness

3. Learning Mechanics-Game Mechanics (LM-GM) Model

- Mapping learning mechanics to appropriate game mechanics
- Ensuring pedagogical alignment with gameplay
- Creating coherent learning-play experiences

4. Elemental Tetrad (Schell)

- Mechanics: procedures and rules
- Story: sequence of events
- Aesthetics: sensory experiences
- Technology: materials and interactions

5. Typology of Game-Based Learning

- Categorization by primary learning mechanism
- Classification by cognitive engagement type
- Organization by skill development focus

Learning Theory Applications

1. Constructivism in Game Environments

- Knowledge construction through gameplay experiences

  - Player as active meaning-maker

  - Games as environments for discovery and experimentation

2. Situated Learning Theory

  - Learning embedded in authentic contexts

  - Communities of practice within game environments

  - Knowledge application in meaningful situations

3. Flow Theory (Csikszentmihalyi)

  - Balance between challenge and skill

  - Clear goals and immediate feedback

  - Deep engagement supporting sustained learning

4. Self-Determination Theory

  - Autonomy: meaningful choices and control

  - Competence: mastery and skill development

  - Relatedness: social connection and context

5. Cognitive Load Theory

  - Managing intrinsic, extraneous, and germane cognitive load

  - Scaffolding complex learning through game progression

  - Using game mechanics to support information processing

Game Type Classification Principles

1. Learning Objective Alignment

  - Matching game types to specific learning outcomes

  - Supporting different cognitive processes through appropriate mechanics

  - Ensuring game structure reinforces educational goals

2. Engagement Mechanism Differentiation

  - Primary motivational drivers in different game types

  - Engagement patterns across player demographics

  - Sustaining interest through appropriate game selection

3. Implementation Feasibility

  - Technical requirements for different game types

  - Resource considerations for development and deployment

  - Scalability across educational contexts

4. Transfer Potential

  - How different game types support knowledge transfer

  - Application of game-learned skills to real-world contexts

- Bridging game experiences to educational objectives

5. Accessibility and Inclusivity

- Ensuring game types accommodate diverse learners

- Addressing barriers to participation

- Supporting multiple learning preferences and needs

Learning Principles and Theories Used in Game Learning Assessment Assistant

Assessment Design Frameworks

1. Evidence-Centered Design

- Focus on evidence that demonstrates learning

- Three-layer model: student model, evidence model, task model

- Alignment between assessment and learning objectives

2. Stealth Assessment

- Embedding assessment within gameplay

- Continuous data collection during play

- Reducing test anxiety while gathering authentic evidence

3. Performance Assessment

- Evaluating learning through authentic tasks

- Observation of process and product

- Rubrics and criteria for complex performances

4. Formative Assessment Cycle

- Ongoing assessment to guide instruction

- Feedback loops for improvement

- Adjusting learning experiences based on assessment data

5. Multi-Modal Assessment

- Using multiple methods to evaluate learning

- Triangulation of evidence across contexts

- Addressing different learning dimensions

Learning Measurement Principles

1. Validity and Reliability

- Ensuring assessments measure intended constructs

- Consistency across assessment instances

- Appropriate inferences from assessment data

2. Learning Progression Mapping

- Tracking development along defined pathways

- Milestone identification and measurement

- Growth-oriented assessment approaches

3. Competency-Based Assessment

- Measuring mastery rather than time spent

- Clear standards for performance

- Multiple opportunities to demonstrate competence

4. Transfer Assessment

- Evaluating application of learning in new contexts

- Near and far transfer measurement

- Authentic application scenarios

5. Metacognitive Assessment

- Evaluating awareness of learning processes

- Self-assessment and reflection

- Strategic thinking measurement

Game-Based Assessment Integration

1. Game Analytics for Learning

- Using gameplay data to infer learning

- Pattern recognition in player behavior

- Connecting game metrics to learning outcomes

2. Embedded Assessment Design

- Assessment mechanics integrated with gameplay

- Natural assessment opportunities within game flow

- Balance between gameplay and assessment

3. Feedback Integration

- Just-in-time feedback during gameplay

- Scaffolded guidance based on performance

- Progress visualization for learners

4. Adaptive Assessment

- Difficulty adjustment based on performance

- Personalized assessment pathways

- Optimal challenge maintenance

5. Multi-Dimensional Scoring

- Assessing multiple learning dimensions simultaneously

- Weighted scoring based on learning priorities

- Comprehensive learning profiles

Thanks for attending this training session. Please share your success stories and game details once you have completed them. Happy Designing!

Mike Jones, MFA
Assistant Director of Indiana Wesleyan University's National & Global Office of Academic Innovation Future Learning Lab

Mike.jones@indwes.edu