

Grounded Instructional Strategies

Grounded instructional strategies are rooted in established theories of and research on human learning. They form the basis for designing and sequencing meaningful e-learning interactions and for creating online, hybrid and conventional classroom learning environments. Table 1 outlines the primary instructional events associated with published instructional strategies that are grounded and grouped according to major classes of learning theories.

Table 1. Primary events associated with grounded instructional strategies

Constructivist (Learner-Centered) Approaches		
Experiential Learning <small>(Pfeiffer & Jones, 1975)</small>	Experiential Learning Model <small>(Kolb, 1984)</small>	Guided Experiential Learning <small>(Clark, 2004)</small>
<ol style="list-style-type: none"> 1. Experience 2. Publish 3. Process 4. Internalize 5. Generalize 6. Apply 	<ol style="list-style-type: none"> 1. Concrete Experience 2. Reflective Observation 3. Abstract Conceptualization 4. Active Experimentation 	<ol style="list-style-type: none"> 1. Goals 2. Reasons and Activation 3. Demonstration 4. Application 5. Integration 6. Assessment
Learning by Doing <small>(Schank, Berman & Macpherson, 1999)</small>	Problem-Based Learning <small>(Barrows, 1985; Boud & Feletti, 1997)</small>	Collaborative Problem-Solving <small>(Nelson, 1999)</small>
<ol style="list-style-type: none"> 1. Define Goals 2. Set Mission 3. Present Cover Story 4. Establish Roles 5. Operate Scenarios 6. Provide Resources 7. Provide Feedback 	<ol style="list-style-type: none"> 1. Start New Class 2. Start a New Problem 3. Problem Follow-Up 4. Performance Presentation(s) 5. After Conclusion of Problem 	<ol style="list-style-type: none"> 1. Build Readiness 2. Form and Norm Groups 3. Determine Preliminary Problem 4. Define and Assign Roles 5. Engage in Problem-Solving 6. Finalize Solution 7. Synthesize and Reflect 8. Assess Products and Processes 9. Provide Closure
BSCS 5E Model <small>(BSCS, 2005; Bybee, 2002)</small>	WebQuest <small>(Dodge, 1998)</small>	Case-Based Reasoning <small>(Aamodt & Plaza, 1994)</small>
<ol style="list-style-type: none"> 1. Engage 2. Explore 3. Explain 4. Elaborate 5. Evaluate 	<ol style="list-style-type: none"> 1. Introduction 2. Task 3. Process 4. Resources 5. Evaluation 6. Conclusion 	<ol style="list-style-type: none"> 1. Present New Case 2. Retrieve Similar Cases 3. Reuse Information 4. Revise Proposed Solution 5. Retain Useful Experiences
Simulation Model <small>(Joyce, Weil, & Showers, 1992)</small>	Inquiry Training <small>(Joyce, Weil, & Showers, 1992)</small>	Inductive Thinking <small>(Taba, 1967)</small>
<ol style="list-style-type: none"> 1. Orientation 2. Participant Training 3. Simulation Operations 4. Participant Debriefing 5. Appraise and redesign the simulation 	<ol style="list-style-type: none"> 1. Confrontation with the Problem 2. Data Verification 3. Data Experimentation 4. Organizing, Formulating and Explanation 5. Analysis of inquiry process 	<ol style="list-style-type: none"> 1. Concept Formation 2. Interpretation of Data 3. Application of Principles

Table 1 (con’t). Primary events associated with grounded instructional strategies

Constructivist (Learner-Centered) Approaches (con’t)		
<p>Jurisprudential Inquiry (Oliver & Shaver, 1971)</p> <ol style="list-style-type: none"> 1. Orientation to the Case 2. Identifying the Issues 3. Taking Positions 4. Exploring the Stance(s) 5. Refining and Qualifying the Positions 6. Testing Factual Assumptions Behind Qualified Positions 	<p>Scaffolded Vee Diagram (Crippen, Archambault, & Kern, in press)</p> <ol style="list-style-type: none"> 1. Big Problem 2. Initial Ideas 3. Concept Map 4. Analysis and Artifacts 5. Claims 6. Expert Opinion 7. Reflection 	<p>Historical Inquiry (Waring, 2011)</p> <ol style="list-style-type: none"> 1. A Hook 2. Identify Fundamental Questions 3. Engage in Primary and Secondary Sources 4. Recognize Multiple Perspectives and Historic Causation 5. Create Plausible Narratives 6. Assess Skills, Knowledge and Attitudes 7. Reflect on Experience
<p>Adaptive Instructional Design (Schwartz, Lin, Brophy & Bransford, 1992)</p> <ol style="list-style-type: none"> 1. Look Ahead & Reflect Back 2. Present Initial Challenge 3. Generate Ideas 4. Present Multiple Perspectives 5. Research and Revise 6. Test Your Mettle 7. Go Public 8. Progressive Deepening 9. General Reflection and Decisions 10. Assessment 	<p>Eight Events of Student-Centered Learning (Hirumi, 2002, 1998, 1996)</p> <ol style="list-style-type: none"> 1. Set Learning Challenge 2. Negotiate Goals and Objectives 3. Negotiate Learning Strategy 4. Construct Knowledge 5. Negotiate Performance Criteria 6. Assess Learning 7. Provide Feedback (Steps 1-6) 8. Communicate Results 	<p>Constructivist Learning (Jonassen, 1999)</p> <ol style="list-style-type: none"> 1. Select Problem 2. Provide Related Case 3. Provide Information 4. Provide Cognitive Tools 5. Provide Conversation Tools 6. Provide Social Support
Behavioral & Cognitive Information Processing (Teacher-Directed) Approaches		
<p>Nine Events of Instruction (Gagne, 1977, 1974)</p> <ol style="list-style-type: none"> 1. Gain Attention 2. Inform Learner of Objective(s) 3. Recall Prior Knowledge 4. Present Stimulus Materials 5. Provide Learning Guidance 6. Elicit Performance 7. Provide Feedback 8. Assess Performance 9. Enhance Retention and Transfer 	<p>5 Component Lesson Model (Dick, Carey, & Carey, 2009)</p> <ol style="list-style-type: none"> 1. Pre-Instructional Activities 2. Content Presentation and Learning Guidance 3. Learner Participation 4. Assessment 5. Follow Through Activities 	<p>Elements of Lesson Design (Hunter, 1990)</p> <ol style="list-style-type: none"> 1. Anticipatory Set 2. Objective and Purpose 3. Input 4. Modeling 5. Check for Understanding 6. Guided Practice 7. Independent Practice
<p>Direct Instruction (Joyce, Weil, & Showers, 1992)</p> <ol style="list-style-type: none"> 1. Orientation 2. Presentation 3. Structured Practice 4. Guided Practice 5. Independent Practice 		

Neuro-Biological Approaches		
<p style="text-align: center;">Principles of Natural Learning (Caine, Caine, McClintic & Klimek, 2005; Caine & Caine, 1997)</p> <ol style="list-style-type: none"> 1. Relaxed Alertness <ol style="list-style-type: none"> a. Challenge enhances, threat inhibits learning. b. Social brain/mind c. Innate search for meaning d. Emotions are critical to patterning 2. Orchestrated Immersion <ol style="list-style-type: none"> a. The brain processes parts and whole b. All learning engages the physiology. c. Meaning occurs through patterning d. Learning is developmental 3. Active Processing <ol style="list-style-type: none"> a. Two types of memory: Declarative and Procedural. b. Learning involves both focused attention and peripheral perception. c. Learning is both conscious and unconscious. d. Each brain is uniquely organized. 	<p style="text-align: center;">Brain-Based Teaching (Jensen, 2005)</p> <ol style="list-style-type: none"> 1. Malleable memories 2. Non-conscious experience runs automated behaviors 3. Reward and addiction dependency 4. Attentional limitations 5. Brain seeks and creates understanding 6. Rough drafts/Gist learning 7. Input limitations 8. Perception influences our experience 9. Malleability/Neural plasticity 10. Emotional-Physical state dependency 	<p style="text-align: center;">Interplay Strategy (Hirumi & Stapleton, in press; Stapleton & Hirumi, 2011; Hirumi, Atkinson & Stapleton, 2011)</p> <ol style="list-style-type: none"> 1. Expose 2. Inquire 3. Discover 4. Create 5. Experiment 6. Share
Alternative Approaches		
<p style="text-align: center;">4Mat System (McCarthy, 1987)</p> <ol style="list-style-type: none"> 1. Create an experience 2. Reflect/Analyze experience 3. Integrate reflective analysis 4. Develop concepts/skills 5. Practice defined “givens” 6. Practice adding something 7. Analyze application 8. Apply to new experience 	<p style="text-align: center;">SQR (Maier, 1990)</p> <ol style="list-style-type: none"> 1. Summarize 2. Question 3. Response 	<p style="text-align: center;">SQ3R (Robinson, 1961)</p> <ol style="list-style-type: none"> 1. Survey 2. Question 3. Read 4. Recite 5. Review

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