Supporting Innovative Technology with Contemporary Pedagogy:

A Layered Learning Approach for Developing Multimedia Curricula

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Disclosures

• Eric Bauman: CAE Healthcare (Stock Shareholder excluding mutual funds); Clinical Playground LLC (Consultant); Clovis Oncology Inc (Stock Shareholder excluding mutual funds); General Electric (Stock Shareholder excluding mutual funds); Pfizer (Stock Shareholder excluding mutual funds); Springer Publishing Co. (Royalties); Zynga (Stock Shareholder excluding mutual funds)

• Kim Leighton: no disclosures

• Angela Samosorn: no disclosures
Objectives

Following completion of the session, participants will be able to:

1. Analyze pedagogy that supports innovative learning tools including game-based learning, multi-media technology and mobile learning applications.
2. Critique existing curricula to identify opportunities to integrate clinical simulation and gaming applications.
3. Design a storyboard for a game-based learning intervention.
Traditional Experiential Pedagogy

- Kolb – Experiential Learning Cycle
- Schön – Reflection “in” and “on” Action
- Benner – Thinking in Action
Traditional Theorists

• Could theorists like Kolb, Schön and Benner have predicted the rapid advances in technology being used for clinical education?

• Many contemporary theories that support multimedia teaching and learning draw in part from experiential learning theories
Contemporary Pedagogy
For the digital learning landscape

• Gee – Socially Situated Cognition
• Squire – Designed Experience
• Games & Bauman – Ecology of Culturally Competent Design
• Bauman – Layered Learning Model
Socially Situated Cognition: Refers to learning that is situated within a material, social, and cultural world. Learning that is situated takes place in contextually specific and authentic environment with a host of values and expectations.
Designed Experience: Is engineered to include structured activities targeted to facilitate interactions that drive anticipated experiences. These activities are created to embody participant experience as performance.
Games & Bauman
Ecology of Culturally Competent Design

Four-element model that emphasizes the importance of:

1. **Activities**: What players/learners do in the game or environment
2. **Contexts**: The context in which activities take place
3. **Narratives**: The story that situates the learning and drives psychological fidelity
4. **Characters**: How player and non-player characters are represented in the digital environment
Bauman - Layered Learning Model

Situated learning experiences link didactic content with practical hands on experiences

- Didactic Preparation
- Interactive Applications & Games
- Task Trainer or Simulator
- Real World Experience

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### Why Embrace Game Based Learning Pedagogy: Connect Learning with Reward

<table>
<thead>
<tr>
<th><strong>Intrinsic</strong></th>
<th><strong>Extrinsic</strong></th>
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<tbody>
<tr>
<td>Reward comes from Mastery</td>
<td>Tangible Reward</td>
</tr>
<tr>
<td>Goals are clear, meaningful and situated</td>
<td>Goals assigned</td>
</tr>
<tr>
<td>Progress is intuitive apparent and immediate [real-time or just-in-time]</td>
<td>Progress is determined or assigned outside of the current activity</td>
</tr>
<tr>
<td>Endorses or reinforces behavior you are already committed to or hope to engage in the future – Represents Player Agency</td>
<td>If you complete this task you will be given access to another task – Hierarchical Direction</td>
</tr>
</tbody>
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**Autonomous** | **Directed**

- Active Learning
- Creative
- Deep Meaning
- Shallow
- Compliance
- Outcome Driven

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Identifying Opportunities to Integrate Game Based Learning

Identify and Solve a Problem

- Ask: Can game based learning solve this problem?

- Ask: Is game based learning a good fit?

- Ask: What is the cost/benefit analysis?
Aspects of Fit: Impact

Effective

Efficient

Appealing

Proper Fit

Aspects of Fit: Constraints

![Diagram showing the relationship between Complexity, Learning Objectives, Cost, and Time]

# Digital Fit for Learning Situations

<table>
<thead>
<tr>
<th>Learning Situation or Goal</th>
<th>Type of Game or Simulation</th>
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<tbody>
<tr>
<td>Boring, mundane, undesirable tasks</td>
<td><strong>Games that level up</strong>; intrinsic motivation</td>
</tr>
<tr>
<td>Distinct levels of achievement or competency</td>
<td>Meta-gaming; <strong>use out-of-game resources</strong> or strategies to succeed</td>
</tr>
<tr>
<td>Reinforce information or processes</td>
<td><strong>Mini-games within game</strong></td>
</tr>
<tr>
<td>Define terms; use appropriately; syntax</td>
<td>Quick games; <strong>reward for speed</strong>; <strong>replay from pool</strong></td>
</tr>
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Storyboarding

If you can build a PowerPoint presentation you can build a rudimentary Storyboard

Think about how a comic book or graphic novel unfolds

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Storyboarding

**EMBRYOLOGY**
Early Cellular Stages

**Intro Screen**

Introduction:
Can you sequence the stages of cellular development?

Watch the video and then sort video clips in the proper order

**Order the Video Clips**

Drag and drop

**Answer Questions**

Multiple Choice Questions...
What is the name for this stage of cell growth?

Answer 1
Answer 2
Answer 3

**Ordering Completed**

Finish
Storyboarding
Discussion & Questions
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References


