The Games Show

Guidelines for Planning and Implementing the Use of Commercial Games for Learning

Joanne Gikas
Richard Van Eck, Ph.D.
University of Memphis
http://idt.memphis.edu/~rvaneck/NLII.html
What Are the Assumptions of This Presentation?

A. You’re Aware of Rationale for Using Games for Learning
B. You Want a Practical Guide to Integrating Games in the Classroom
C. Cost to Develop Games Precludes Widespread Development by Educators
D. All of the Above
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Assumptions & Approach

We assume you:
- Know why games can be effective
  - Anchored Instruction, Situated Learning & Cognition, Play Theory, Intrinsic Motivation
- Want to know how to begin

Are Two Basic Approaches
- Design new games
- Implement existing games
- Not mutually exclusive

Our Focus
- Use instructional design process
- Focus on learning & game taxonomies
Which of the Following Is TRUE About Games in Learning Environments?

A. Games Are a Panacea for Technology-Based Learning

B. Integrating Games in the Classroom Is Quick, Easy, & Inexpensive

C. Any Game Can/Should Be Used for Problem-Solving & Motivation

D. None of the Above
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Games are No Panacea

Like Any Technology Integration, Takes Time
- Easy to make non-effective learning material
- Not for all topics, learners, or environments
- Expensive to integrate & implement
  - Expense of installation and maintenance in lab environments
  - Higher cost of required hardware
  - Shared space issues (saved games, speakers vs. headphones)

Games are effective ONLY if:
- Instruction is matched to the medium (e.g., Kozma, 1985)
- Content is integrated with the game (e.g., not just for motivation)
Playing the Matching Game

Not All Games Alike
- Card games, video “arcade” style games, & interactive adventure games:
  - different strategies, different learning supported
- Analyze individually for underlying strengths and strategies

Matching Game and Learning Taxonomies
- Learning taxonomies can be matched to game taxonomy
- A beginning (Gagne, Bloom, & Bates’ Taxonomies--handout)

Games & Problem Solving
- Handout shows games CAN be effective at all taxonomy levels
- Problem solving/synthesis is often missing in instruction (time, difficulty)
- Adventure games may be best for higher levels (problem-based; subordinate skills/knowledge)

Like Thematic Units
- Theme organizes and structures individual lessons, topics, and units
- Game can serve same purpose, but much is prescribed already
Choosing the Game

Choosing a Suitable Game

Sometimes Topic Matches Content of Course

<table>
<thead>
<tr>
<th>Game</th>
<th>Game Content</th>
<th>Course Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of Empires, Civilization</td>
<td>History</td>
<td>History</td>
</tr>
<tr>
<td>Sim City</td>
<td>Geography, Civil Engineering</td>
<td>Geography, Civil Engineering</td>
</tr>
<tr>
<td>Law &amp; Order, C.S.I.</td>
<td>Criminal Justice</td>
<td>Criminal Justice</td>
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</tbody>
</table>
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Other times, Gameplay Matches Content of Course

<table>
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<tr>
<th>Game</th>
<th>Gameplay</th>
<th>Course Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contraption, Roller Coaster Tycoon</td>
<td>Build Machines To Specification &amp; Tolerances</td>
<td>Physics, Mathematics, Engineering</td>
</tr>
<tr>
<td>Cruise Ship Tycoon</td>
<td>Manage Budgets, Purchase Supplies, Ensure Financial Success</td>
<td>Business, Economics, Resort Management</td>
</tr>
</tbody>
</table>
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A. Liking & Playing Games Yourself Has No Relevance to Teaching With Them

B. Students Universally Enjoy Computer Games

C. Computer Games Make Teamwork Impractical (one game = one student)

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Analysis & Design: People

One Size Does NOT Fit All

Are Your Students Game?
- Play games? (speed and familiarity)
- Individual differences (gender, etc.)
- Access to appropriate computers?

Have You Got Game?
- Do you play computer games?
- What is YOUR approach to game play? (linear vs. non-linear)
- How do your answers to these questions match your students?
- Must know the game THOROUGHLY (start to finish and then some)
Analysis & Design: Resources

Environment
- Your Computer
- School Computers
- Access to Computers
  - During and outside of class

Gathering Resources
- Game Web Sites
  - Patches
  - FAQs
- Walkthroughs
- Hint Books
- CNN (Children, Nephews, & Nieces)
Analysis & Design: The Game

Things to Consider

Interface
- Game management (inventory, save game, etc.)
- Navigation (ease of, flow)

Instructional/Learning Factors
- What type/level of learning is supported by game (taxonomy)?
- What type/level of learning is supported by puzzle (taxonomy)?
- What is the relation of puzzles to story, plot, and/or goal (flow)?
- What types of strategies are promoted by game/puzzles? (trial & error vs. scientific method)

Learner Characteristics
- Protagonist/learner representation (Avatar)
- Intended audience
- Does this match well with your learners?
Analysis & Design: The Game

Things to Consider

Suitable for Groups or Individuals?
- Collaboration has pedagogical value
- Collaboration has practical value (group play minimizes resources, maximizes your time to facilitate)
- Game may not be designed for it, but may support it

How Long Does it Take to Play?
- Good players take less time

Is it Linear or Is There Learner Control?
- Linear means the game experience is identical for all
- Learner control means there are different experiences for different learners
- Either activities accommodate different experiences, or lesson/unit controls the learner experience
Analysis & Design: Content

It’s in the Game

What IS Covered?
- Topics focus on breadth or depth?
- Which topic(s) will you focus on?

What IS NOT Covered?
- Missing topics (breadth)
- Missing content within topic (depth)
- Pre-requisite knowledge required

What IS Wrong? (teachable moments)
- Inaccurate information
- Misleading information
- Alternate viewpoints/interpretations
- Inappropriate/incorrect strategies
Based on Analysis, What About:

- **Missing & Inaccurate Content**
  - Which content will you have to add?
  - Who will provide this? (you, students, both)
  - Maximize learner responsibility

- **Activities**
  - What instructional activities can you create to maximally address weaknesses (e.g., missing/inaccurate content)?

- **Is It Worth the Time?**
  - Is the amount of potential learning justified by the amount of work and time to implement the game?
  - Must be willing to admit it is not!
Which of the Following Is A GOOD Way to Integrate Games?

A. Play the Game, Then Study the Content and Refer Back to the Game

B. Study the Content, Then Use the Game for Application & Assessment

C. Alternate Playing the Game With Activities That Extend the Game/Learning

D. All of the Above
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Instructional Activities

Top-down or Bottom-up
- Game as Frame for New Learning (top-down)
- Game as Chance to Synthesize and Apply Pre-learned Skills (bottom-up)

Hybrid

Stay in the Game

Flow & Gaming
- Games can promote optimal flow experiences
- Flow may be optimal learning state
- Interruptions to game equal interruptions to flow
- Maximize game time AND focus on game world
Instructional Activities

Staying in the Game

- Intrinsic Motivation (Malone & Lepper, 1987)
  - Endogenous vs. exogenous fantasy (in relation to content)
  - Endogenous fantasy will promote flow
  - When not IN game, keep activities & roles endogenous TO game

Types of Activities (handout)

- Math & Numbers
  - Budgets, spreadsheets, reports/charts, databases

- Writing
  - Diary, scientific report, letters, legal briefs, dictionary, faxes
  - Multiple viewpoints

- Science
  - Design, duplicate, conduct experiments (endogenously!)
  - Conduct/write up feasibility studies
  - Hypothesis testing