Rubric for Evaluating Digital Educational Games
(C. Stewart)

Overall score (see rubric below for details):  /36

Desired Learning objective(s) or goal(s):

Target age group or grade level:

Name of the game and URL (if possible):

Brief description of the game:

Technical implementation:

Is the game free? Yes  No  If no, state cost:

Is the game online or computer based? Online  Computer based

Specify program(s) needed to run (e.g. Flashplayer):

Specify hardware, memory and operating system requirements:
Is the required software/hardware accessible by the students (either at school or at home)?

Yes [ ]

No [ ] If no, discuss with tech support at your school to see if use is possible. Consider universal access issues.

Additional Comments:
### Pedagogical Considerations:

<table>
<thead>
<tr>
<th>Category</th>
<th>4</th>
<th>3</th>
<th>2</th>
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</thead>
<tbody>
<tr>
<td>Relation of game content to learning goals</td>
<td>There is a clear connection between the content of the game and the desired learning goals throughout the entire game.</td>
<td>There is a connection between the content of the game and the desired learning goals for most of the game, but some concepts may be missing or additional, unnecessary concepts may be included.</td>
<td>The game addresses the learning goals at a very basic level.</td>
<td>There is a minimal connection between content of the game and learning goals.</td>
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<tr>
<td>Problem-solving characteristics</td>
<td>The game presents well-ordered, scaffolded problems that allow users to work up to harder challenges. Problems or tasks are leveled from beginner to advanced and provided a variety of different scenarios based on user input.</td>
<td>The game presents well-ordered scaffolded problems. The problems or tasks are all at approximately the same level of difficulty but access different content and provide a variety of scenarios based on user input.</td>
<td>There are a variety of problems to solve during gameplay, but the tasks are not scaffolded to each other. There is no connection between tasks. User input has minimal effect on the scenario.</td>
<td>Problems or tasks are limited to basic fact recall. The problems or level of difficulty cannot be varied.</td>
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<tr>
<td>Integration of knowledge content into the game</td>
<td>Knowledge content</td>
<td>The content is integrated into the game such that the player must draw on knowledge or skills the game is designed to foster.</td>
<td>The content is integrated into the game such that the player must occasionally draw on the knowledge or skills learned in gameplay.</td>
<td>Knowledge of the content is often unnecessary to be successful at gameplay. There is little connection between previously learned knowledge and new concepts.</td>
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<tr>
<td>System thinking</td>
<td>System thinking is promoted and players must connect previously learned knowledge with new knowledge as they move through the game.</td>
<td>Some system thinking is required, but much of the knowledge is learned as stand-alone units and little connection between concepts is present.</td>
<td>System thinking may be applied but is not required to move through the game.</td>
<td>There are no opportunities to apply system thinking.</td>
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<tr>
<td>Feedback/instruction</td>
<td>Feedback that supports student success during game play is timely (presented when needed) in small blocks of information.</td>
<td>Feedback that supports student success during game play is presented when needed but may provide too much information at one time.</td>
<td>Feedback that supports student success during game play is not presented when needed but follow a set pattern of release.</td>
<td>Feedback is limited to correct/incorrect.</td>
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### Learner Considerations

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| **Relationship of game content (knowledge) and game control to students ability level(s)** | All of the following are appropriate for the age and ability level(s) of the students:  
- the knowledge (both pre-existing and new concepts in the game)  
- the level of language and quantity of text  
- the game controls (e.g. keyboard, joystick) | There may be concerns regarding the appropriateness of one of the following, but alternatives that do not affect student success are available:  
- the knowledge (both pre-existing and new concepts in the game)  
- the level of language and quantity of text  
- the game controls (e.g. keyboard, joystick) | There may be concerns regarding the appropriateness of two of the following, but alternatives that do not affect student success are available:  
- the knowledge (both pre-existing and new concepts in the game)  
- the level of language and quantity of text  
- the game controls (e.g. keyboard, joystick) | There are concerns regarding the appropriateness of all of the following. If alternatives are available, they may affect the gameplay or require additional instructional time to ensure student success:  
- the knowledge (both pre-existing and new concepts in the game)  
- the level of language and quantity of text  
- the game controls (e.g. keyboard, joystick) |
<p>| <strong>Ease of use</strong>                                | The game is easy to understand and requires minimal time for both students and teachers to become proficient. | The game may require practice time for both students and teachers to become comfortable with the game. | The game requires a substantial amount of instruction in order for students to be successful. Users may require scaffolding in order to understand the game controls and rules. | The game is challenging to understand. The game controls and rules are complicated and would require a large amount of instruction and demonstration. |
| <strong>Collaboration</strong>                              | The game design allows several players to easily collaborate to solve problems or tasks throughout all levels of play. | The game design allows several players to collaborate to solve problems or tasks for some levels of play. | The game design allows collaboration between only two players at a time. Collaboration opportunities may be restricted to specific levels of play. | The game design allows minimal collaboration opportunities. |</p>
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<tr>
<td>Student engagement in the game</td>
<td>The game adequately meets all of the following:</td>
<td>The game adequately meets three of the following:</td>
<td>The game adequately meets two of the following:</td>
<td>The game adequately meets only one of the following:</td>
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<td></td>
<td>• is challenging but not overly frustrating for most learners in chosen target group</td>
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<td>• provides clear goals for players</td>
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<td></td>
<td>• provides roles for student characters and allows growth of character</td>
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<td>• is visually and aurally attractive</td>
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Additional comments:
Rationale for categories

Technical implementation:

Before reviewing a game, it is important to know if your school or students have the required hardware or software to run the game. If not, steps must be taken to determine if it is possible to obtain the necessary equipment.

Relation of game content to learning goals:

Ulicsak and Wright (2010) state that “there needs to be a clear consideration of how [the game] will achieve the teachers’ goals (p. 67).” Implementing game-based learning in a classroom takes time and careful planning. Before investing the time, it is important to ensure the game meets the learning goals or objectives.

Problem-solving characteristics and Integration of knowledge content into the game:

Ulicsak and Wright (2010) describe three generations of game designs based on different pedagogies. Behaviourism, or “learning through conditioning (p. 28), is typical of games that drill and practice, or games where little application of past learning is required to move through the game. Games that allow the player to connect old and new knowledge in order to solve problems follow a constructivist model. Well ordered, scaffolded problems suit this approach. To achieve the highest point score, a game should require the player to synthesize knowledge from a variety of sources and user input can have an impact on the outcome of the scenario. Inclusion of these categories encourages the evaluator to consider the “higher order thinking skills” (Educational Technology and Mobile Learning, 2013) that are embedded in the game. Games that encourage creating, evaluating, analyzing and applying will receive scores in the 3-4 point range. Games that allow few opportunities for knowledge application and focus mainly on understanding or remembering will receive a lower 1-2 point score.

These categories also align with the ‘Relevance’ level of the RETAIN model, where new content “should be introduced and set in context with previously learned materials” (Gunter, et al., 2007, p. 527)

Feedback/instruction:

James Gee (2013) believes that small blocks of information provided “just in time and on demand” are effective as tools to support problem-solving. This category is included in the rubric to support the previous two categories. Without feedback that supports students during game play in a form that is easily understood and at the appropriate time, the problem-solving characteristics, knowledge content and system thinking can be ineffective.

Relationship of game content (knowledge) and game control to students ability level(s):

Teachers need to consider whether their students are prepared to learn using the chosen game. To assess this, consider if the knowledge level of the game is appropriate. Students should be able to access existing knowledge required to be successful at the beginner levels. The level of language and quantity of text is also considered as part of the Feedback/Instruction category, but here it is specifically referring to the grade level of vocabulary used to provide game instructions. Game controls are an important consideration, as games that require use of a keyboard may not be appropriate for younger students (Nonis, 2006).
Ease of use:
The time required by both the students and the teacher to understand the game and its rules is important to consider. Often, a teacher’s time to prepare for a class is limited, and it is not effective to spend a large amount of time trying to understand a game that is meant to enhance learning. If a game is too challenging for students to grasp relatively quickly, they may become frustrated with the game itself and not focus on the learning.

Collaboration:
Learners today feel a need to “stay connected with their peers and actively participate in the learning process” (Gunter et al., 2007, p. 3) and games that provide a platform for collaboration rate higher in the rubric than those that do not. Collaboration allows people to solve problems collectively that would be challenging to solve individually (McGonigal, 2010; Van Eck, 2011).

Student engagement in the game:
Gee (2013) believes a game should be “pleasantly frustrating”. The task that you are given should be something you are capable of but on the verge of being too difficult (McGonigal, 2010). Clear goals and roles for players ensure that frustration can be kept to a minimum. A user interface that is appealing and opportunity for growth of a player’s character can also enhance engagement.

References


