Bloom’s Taxonomy was originally created by Benjamin Bloom in 1956. This is an invaluable tool that will help you write learning outcomes, develop assignments, create a training module, ask effective questions, and design activities. The lower level critical thinking skills are located on the bottom of the triangle (knowledge, comprehension). The higher level critical thinking skills are located on the top of the triangle (synthesis and evaluation). Refer to the grid for examples.

### Introduction to Bloom’s Taxonomy

<table>
<thead>
<tr>
<th>Competence</th>
<th>Skills Demonstrated</th>
</tr>
</thead>
</table>
| Knowledge    | • observation and recall of information  
• knowledge of dates, events, places  
• knowledge of major ideas  
• mastery of subject matter  
• Question Cues:  
  list, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where, etc. |
| Comprehension| • understanding information  
• grasp meaning  
• translate knowledge into new context  
• interpret facts, compare, contrast  
• order, group, infer causes  
• predict consequences  
• Question Cues:  
  summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, |
<table>
<thead>
<tr>
<th>Application</th>
<th>use information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>use methods, concepts, theories in new situations</td>
</tr>
<tr>
<td></td>
<td>solve problems using required skills or knowledge</td>
</tr>
<tr>
<td></td>
<td><em>Questions Cues:</em> apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Analysis</th>
<th>seeing patterns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>organization of parts</td>
</tr>
<tr>
<td></td>
<td>recognition of hidden meanings</td>
</tr>
<tr>
<td></td>
<td>identification of components</td>
</tr>
<tr>
<td></td>
<td><em>Questions Cues:</em> analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Synthesis</th>
<th>use old ideas to create new ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>generalize from given facts</td>
</tr>
<tr>
<td></td>
<td>relate knowledge from several areas</td>
</tr>
<tr>
<td></td>
<td>predict, draw conclusions</td>
</tr>
<tr>
<td></td>
<td><em>Questions Cues:</em> combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if?, compose, formulate, prepare, generalize, rewrite</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Evaluation</th>
<th>compare and discriminate between ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>assess value of theories, presentations</td>
</tr>
<tr>
<td></td>
<td>make choices based on reasoned argument</td>
</tr>
<tr>
<td></td>
<td>verify value of evidence</td>
</tr>
<tr>
<td></td>
<td>recognize subjectivity</td>
</tr>
<tr>
<td></td>
<td><em>Questions Cues</em></td>
</tr>
<tr>
<td></td>
<td>assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize</td>
</tr>
</tbody>
</table>

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So, how do you apply Bloom’s Taxonomy to Game Design? Here are a few tips and additional resources:

- The more you progress through Bloom’s Taxonomy, the less control you will have over the game playing process. You must be comfortable letting go of this control and allowing your role as the instructor/trainer to shift. (Note: This does NOT mean you lose control over your learning environment.)
- Game design should start with a learning outcome or objective. What do you want your students or your participants to do?

- Game design can be based on both the process and the outcome. Players can acquire knowledge by:
  - the process of playing the game
  - the process of debriefing/reflection
  - an outcome

- Most instructors/trainers focus on studying the process of playing the game (What happened?). Players are more interested in the outcome (Who won?). Reflection/debriefing is critical to help the players see the overall purpose of the game in an instructional environment.

<table>
<thead>
<tr>
<th>Level of Bloom’s Taxonomy</th>
<th>Roles of Instructor/Trainer and Students</th>
<th>Game Examples</th>
</tr>
</thead>
</table>
| Knowledge                 | Instructor as Leader (High Control over the process) | -Jeopardy© (basic categories)  
- Instructor designs all review questions.  
- Instructor chooses all content. | |
| Comprehension             | - Instructor controls pace of the game.  
- Instructor provides help, guidance, and support.  
- Players answer questions.  
- Players can self assess their knowledge. | -Bingo  
- Memory  
- Crosswords  
- Flash cards  
- Basic Monopoly© -type games  
- Wheel of Fortune©/fill in the blank games | |
| Application               | Instructor as Facilitator (Low Control over the process) | -Simulation games  
- Adapted-type games  
- Adapted versions of traditional games  
- Crosswords  
- Role playing games | |
| Analysis                  | - Instructor designs problems to be solved, but does not provide solutions.  
- Q&A driven by students, instructor adds insight when necessary.  
- Players apply knowledge gained, rather than answer questions.  
- Students control pace of game.  
- Players can self assess their level of understanding.  
- Instructor facilitates debriefing session(s). | - Murder Mystery  
- Simulation games  
- Enhanced  
- Monopoly© -type games | |
| Synthesis                 | Instructor as Observer (Hands-off; no control over the process) | | |
| Evaluation                | - Instructor provides rules and overview of the game.  
- Instructor does not assist in any way.  
- Players lead discussion and problem solving strategies.  
- Players work out frustrations and disagreements themselves.  
- Players evaluate the process.  
- Instructor facilitates debriefing session(s) with strong input from players. | - |
Additional Resources

Online Resources for Games & Active Learning Techniques

Wilderdom
http://www.wilderdom.com/games/

Simulation and Gaming Journal
http://www.unice.fr/sg/about/index.hmt

Scholarly Resources About Games:


