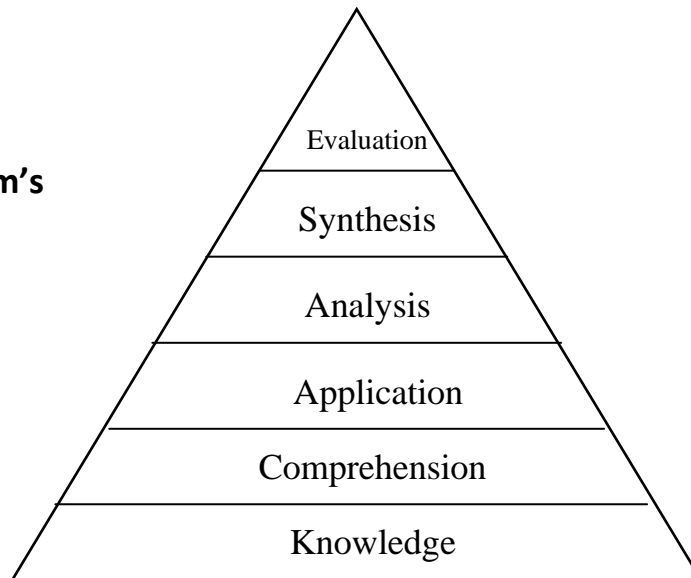


Applying Bloom’s Taxonomy to Game Design

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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



| Competence | Skills Demonstrated |
|-----------------------------|--|
| <p>Knowledge</p> | <ul style="list-style-type: none"> • observation and recall of information • knowledge of dates, events, places • knowledge of major ideas • mastery of subject matter • <i>Question Cues:</i> list, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name, who, when, where, etc. |
| <p>Comprehension</p> | <ul style="list-style-type: none"> • understanding information • grasp meaning • translate knowledge into new context • interpret facts, compare, contrast • order, group, infer causes • predict consequences • <i>Question Cues:</i> summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, |

| | |
|--------------------|---|
| | differentiate, discuss, extend |
| Application | <ul style="list-style-type: none"> • use information • use methods, concepts, theories in new situations • solve problems using required skills or knowledge • <i>Questions Cues:</i> apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover |
| Analysis | <ul style="list-style-type: none"> • seeing patterns • organization of parts • recognition of hidden meanings • identification of components • <i>Question Cues:</i> analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer |
| Synthesis | <ul style="list-style-type: none"> • use old ideas to create new ones • generalize from given facts • relate knowledge from several areas • predict, draw conclusions • <i>Question Cues:</i> combine, integrate, modify, rearrange, substitute, plan, create, design, invent, what if?, compose, formulate, prepare, generalize, rewrite |
| Evaluation | <ul style="list-style-type: none"> • compare and discriminate between ideas • assess value of theories, presentations • make choices based on reasoned argument • verify value of evidence • recognize subjectivity • <i>Question Cues</i> assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize |

From Benjamin S. Bloom *Taxonomy of educational objectives*. Published by Allyn and Bacon, Boston, MA. Copyright (c) 1984 by Pearson Education.

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.

| Level of Bloom's Taxonomy | Roles of Instructor/Trainer and Students | Game Examples |
|---------------------------|--|---|
| Knowledge | Instructor as Leader (High Control over the process) -Instructor designs all review questions. -Instructor chooses all content. | -Jeopardy© (basic categories) -Bingo -Memory |
| Comprehension | -Instructor controls pace of the game. -Instructor provides help, guidance, and support. -Players answer questions. -Players can self assess their knowledge. | -Crosswords -Flash cards -Basic Monopoly© -type games -Wheel of Fortune©/fill in the blank games |
| Application | Instructor as Facilitator (Low Control over the process) -Instructor designs problems to be solved, but does not provide solutions. -Q&A driven by students, instructor adds insight when necessary. | -Simulation games -Monopoly-type games -Adapted versions of traditional games -Crosswords -Role playing games |
| Analysis | -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). | |
| Synthesis | Instructor as Observer (Hands-off; no control over the process) -Instructor provides rules and overview of the game. -Instructor does not assist in any way. -Players lead discussion and problem solving strategies. | -Murder Mystery -Simulation games -Enhanced -Monopoly© -type games |
| Evaluation | -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:

Anderson, K. S. (1998). *Let the games begin: The gaming approach as an alternative paradigm in nursing education*. Unpublished doctoral dissertation, North Carolina State University, Raleigh, NC.

Bloom, B.S. (Ed.) (1956). *Taxonomy of educational objectives: The classification of educational goals: Handbook I, cognitive domain*. New York: Toronto: Longmans, Green.

Boocock, S. (Ed.). (1968). *From luxury item to learning tool: An overview of the theoretical literature on games*. Beverly Hills, CA: Sage Publications.

Greenblat, C. S. (1988). *Designing games and simulations: An illustrated handbook*. Newbury Park, CA: SAGE Publications.

Greenblat, C., and Duke, R. (1981). *Principles and practices of gaming-simulation*. Beverly Hills, CA: Sage.

Honeycutt, B. (2004). Classroom learning activities: Using frame games in the college classroom. *SCHOLE: A Journal of Leisure Studies and Recreation Education*, 19, 169-173.

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Kirk, J. (2004). The making of a gaming-simulation course: A personal tale. *Simulation and Gaming*, 35(1), 85-93.

Kriz, W. C. (2003). Creating effective learning environments and learning organizations through gaming simulation design. *Simulation and Gaming*, 34(4), 495-511

Maidment, R., and Bronstein, R. (1973). *Simulation games: Design and implementation*. Columbus, OH: Bell & Howell.