What is Taxonomy of Cognitive Learning?

Taxonomy of cognitive learning can be used to move your students through the learning process within an organized framework. Benjamin Bloom (1956) was one of the first U.S. educators to build taxonomy of cognitive learning. His version has served as a foundation for many other versions (Davis, Chen, & Campbell, 2010), though for purposes of this document, we will focus on Bloom’s version.

Other versions you may want to investigate include: Miller’s Pyramid of Assessment (Imonet, n.d.), Feisel-Schmitz Technical Taxonomy of Intended Learning Outcomes (Teaching and Learning Laboratory, 2005), or Fink’s Taxonomy of Significant Learning (Fallahi, 2011). By following a taxonomy guide you can develop objectives, outcomes, and assessments that scaffold the knowledge of a topic, whether in a unit, course or program.

Most taxonomies of cognitive learning are divided into categories or levels. Bloom’s Taxonomy is hierarchical. Each level is subsumed by the higher levels. A student functioning at the Analysis level, for example, has also mastered the material at the Application and Comprehension levels (Davis, Chen, & Campbell, 2010).
Why is it important to use a Taxonomy of Cognitive Learning?

Alignment
Alignment is an important component in your course development. Your course assessments should align with your activities and learning objectives. You can use taxonomy of cognitive learning to align both undergraduate and graduate courses; however, the level of application should vary depending on the level of the course. If you are developing a lower level, or undergraduate course/unit using objectives in Bloom’s Comprehension level, you will want to assess your students to determine if they comprehend the information. At the higher levels of Bloom’s, you will want your students to Evaluate and Synthesize information, rather than simply demonstrate that they understand the information.

Scaffolded learning
Scaffolding of taxonomy of cognitive learning can also be applied within a course and within a program. Students can be required to complete assessments in Bloom’s knowledge level early in a course/unit or program and progress to a Synthesis or Evaluation assessment for the final paper or capstone project.

Whether you are using Bloom’s Taxonomy or another taxonomy of cognitive learning, scaffolding learning and assessment is easier when you can map the category or level of learning with verbs that support the category and assessments which measure the level of cognition.

How to use Taxonomy of Cognitive Learning in the Classroom

Bloom’s Taxonomy
Taxonomy of cognitive learning can be used to develop instructional strategies and assessments. When using Bloom’s Taxonomy, lower order categories may require an instructional strategy that includes a lecture or presentation of examples. Higher order categories may be best assessed through case studies, presentations, comparing data, or the creation of a product.

When creating objectives for your course/unit, give thought to how you will assess students, before creating the content. Consider the level of knowledge needed for the level of course/unit you are developing. Be sure to use appropriate and measurable verbs in your objectives, so that you can clearly assess the objective in the course/unit. Setting up these standards early in your development process will ensure a solid structure in your course/unit and ultimately your programs.
Taxonomy of cognitive learning can be used for both undergraduate and graduate courses; however the level of application should vary depending on the level of the course.

The table below provides examples from various disciplines with a focus on undergraduate vs graduate levels.

<table>
<thead>
<tr>
<th>Category (Bloom’s)</th>
<th>Undergraduate example</th>
<th>Graduate Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Identify major anatomical structures of the skull.</td>
<td>Identify functional inter-relationships between major anatomical features of the skull.</td>
</tr>
<tr>
<td>Comprehension</td>
<td>Discuss local public health concerns.</td>
<td>Discuss the impact of global public health concerns upon your local public health environment.</td>
</tr>
<tr>
<td>Application</td>
<td>Sketch linear, exponential and logarithmic functions.</td>
<td>Apply the methodologies learned in the theorems to solve mathematical problems.</td>
</tr>
<tr>
<td>Analysis</td>
<td>Compare liabilities and equity.</td>
<td>Compare liabilities and equity within a case-study and use the information to address the cause of the problem.</td>
</tr>
<tr>
<td>Synthesis</td>
<td>Plan and write a research proposal.</td>
<td>Form a hypothesis based upon an analysis of scholarly research.</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Evaluate various roles of stakeholders in healthcare administration.</td>
<td>Critically evaluate the interdisciplinary role of stakeholders in the application and evaluation of healthcare administration strategies.</td>
</tr>
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</table>

Sources Consulted:


