The Innovative Instructor

Center for Educational Resources

Best Practice Forum

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Bloom's Taxonomy, Action Speaks Louder

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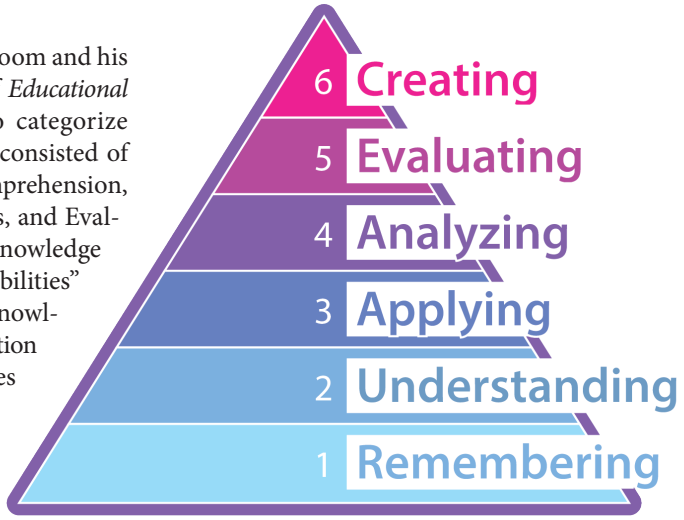
What it is

Created in 1956 by Benjamin Bloom and his collaborators, the "*Taxonomy of Educational Objectives*" is a framework to categorize educational goals. It originally consisted of six categories: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. The categories after Knowledge were presented as "skills and abilities" with the understanding that knowledge was the necessary precondition for putting these skills and abilities into practice.



The updated Bloom's Taxonomy of Educational Objectives

In 2001 Bloom's taxonomy was updated by a group of cognitive psychologists. The authors used verbs to re-label the six categories, and included "action words" to describe the cognitive processes by which learners encounter and work with knowledge. The figures accompanying this article reflect that work. The revised Bloom's taxonomy is a very useful tool that can be used by all instructors.

Why does it matter

About 90% of the questions students handle in any class are memory questions. The memory level (Remembering) is perfectly respectable and even essential in many learning situations. However, there are disadvantages in using pure memory as a measurement of learning that an instructor should keep in mind. The memory level is often called a tool that promotes the use of short term memory, and usually the information is quickly forgotten unless it is otherwise reinforced.

Another problem with the memory level is that it does not guarantee understanding. We often assume that just because a student can produce words, facts, and figures that he or she has understood and "learned" the material. That is not the case. Moving beyond the memory level is not likely to happen without thoughtful preparation. In instructional design, strategies as simple as an intentional progression of questions can lead to higher levels of thinking and involvement. The revised Bloom's taxonomy provides a framework for constructing those questions.

How to use it

Examples of how to incorporate Bloom's taxonomy into classes include the following:

I. Creating course learning objectives

In education, learning objectives are brief statements that describe what students will be expected to learn by the end of a course, unit, or class period. Instructors can benefit from using such a framework to construct and organize learning objectives for themselves and for students. Having an organized set of learning objectives helps instructors plan and deliver appropriate instruction, design valid assessment tasks and strategies, and ensure that instruction and assessment are aligned with the objectives.

What this is

The Innovative Instructor is a forum of published articles (www.cer.jhu.edu/ii) and a blog (ii.library.jhu.edu) related to teaching excellence at Johns Hopkins

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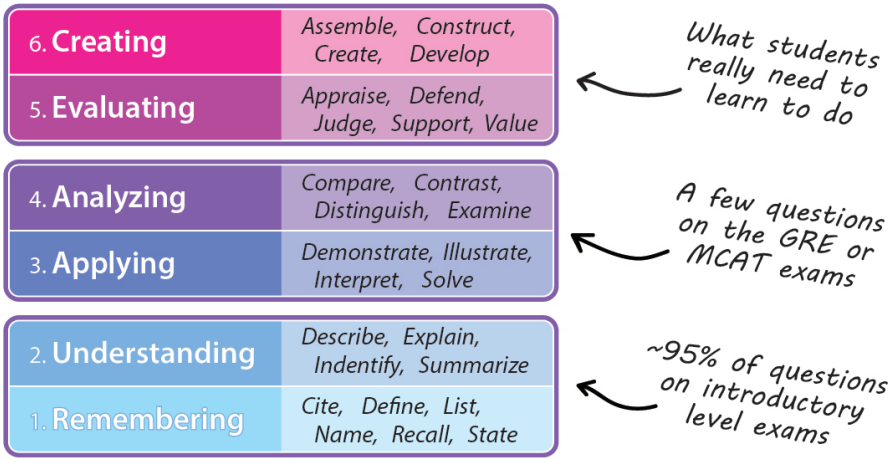

Action verbs for the six categories of Bloom's Taxonomy

For example, learning objectives following the revised Bloom's taxonomy could be constructed as follows.

Students should be able to:

1. **Exhibit** previously learned material by recalling facts, terms and basic concepts.
2. **Demonstrate** understanding of facts and ideas by organizing, comparing, interpreting and giving descriptions and stating main ideas.
3. **Solve** problems by applying acquired knowledge, facts, techniques and rules in a different way.
4. **Examine** and break information into parts by **identifying** motives or causes, making inferences, and finding evidence to support generalizations.
5. **Compile** information in a different way by combining elements in a new pattern or proposing alternative solutions.
6. **Present** and **defend** opinions by making judgments about information, validity of ideas or quality of work based on a set of criteria.

II. Asking questions

In-class questioning can be varied from the simple to the complex. Questions can be categorized following Bloom's hierarchy of cognitive skills. Here are some examples of questions asked about the story *Goldilocks and the Three Bears*. Goldilocks visits the home of the Papa, Mama and Baby bear where she sleeps in their beds, eats their food, and sits in their chairs.

Remembering:
List the items used by Goldilocks while she was in the Bears' house.
Understanding:
Explain why Goldilocks liked Baby Bear's chair the best.
Applying:
Demonstrate what Goldilocks would use if she came to your house.
Analyzing:
Compare this story to reality. What events could not really happen?
Evaluating:
Propose how the story would be different if it was *Goldilocks and the Three Fish*.
Creating:
Judge whether Goldilocks' actions were good or bad. Defend your opinion.

III. Constructing test or exam questions

If the course is arranged around learning objectives designed around Bloom's taxonomy, those objectives can be used to construct test and exam questions. This process will ensure alignment between instruction and assessment and provide validity to the evaluation of students' knowledge and skills in your class.

Additional Resources

- Anderson, L. W., & Krathwohl, D. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: a revision of Bloom's taxonomy of educational objectives.* New York: Longman.
- Bloom, B., Englehart, M. Furst, E., Hill, W., & Krathwohl, D. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain.* New York, Toronto: Longmans, Green.
- Davis, B.G (2009). *Tools for Teaching,* 2nd edition, Jossey-Bass, San Francisco Southey, R.
- (1837) *The Three Bears*.

Author's Background

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Dr. Richard Shingles is a faculty member in the Biology department and also works with the Center for Educational Resources at Johns Hopkins University. He is the Director of the TA Training Institute and The Summer Teaching Institute on the Homewood campus of JHU. Dr. Shingles also provides pedagogical and technological support to instructional faculty, postdocs and graduate students.