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Bloom's Taxonomy: A Closer Look

In 1948, Dr. Benjamin Bloom met with other college and university examiners at a yearly meeting of the American Psychological Association where the creation of the *Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook I: Cognitive Domain* was initiated (Seaman, 2011). During subsequent meetings over the next four years, 34 participants contributed to the development of the *Handbook,* which was divided into the cognitive, affective and psychomotor domains (Seaman, 2011). The cognitive domain, now known as Bloom's Taxonomy, was published in 1956 and is broken down into six major categories: knowledge, comprehension, application, analysis, synthesis, and evaluation. The creators of this work intended it as "a theoretical framework which could be used to facilitate communication among examiners" and "promote the exchange of test materials and ideas about testing" (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956, p. 4).

After the completion of the initial draft, the *Handbook* was examined and critiqued by educational practitioners, graduate students, professional colleagues and test developers leading to additional concepts being integrated into the revisions (Seaman, 2011). For example, the word "curriculum" has a greater prevalence in the final edition (Seaman, 2011).

The progress of this work included discussions of the educational, logical and psychological principles by which the taxonomy might be developed (Bloom et al., 1956). Much consideration was placed on the "educational distinctions teachers make in planning curricula or in choosing learning situations," the logical classification to "define terms as precisely as possible and to use them consistently," and being "consistent with relevant and accepted psychological principles and theories" (Bloom et al., 1956, p. 6).

At its introduction, many were unfamiliar with the educational term "taxonomy" and gave little attention to the *Handbook,* however, as the framework gained in popularity it "became widely known and cited, eventually being translated into 22 languages" (Krathwohl, 2002, p. 213). The original Taxonomy was frequently used to classify test items and objectives within a curriculum to demonstrate their range across the taxonomies categories (Krathwohl, 2002).

The six categories of cognitive skills contained within Bloom's taxonomy begins with the foundational skill of knowledge and progresses through to the pinnacle of evaluation (Adams, 2015). At the knowledge base, students encounter "lower order skills" which require less cognitive processing and progress through to "higher order skills" which involve "deeper learning and a greater degree of cognitive processing" (Adams, 2015, p. 152). For example, the memorization of multiplication tables would be a cognitive skill within the knowledge category of the taxonomy whereas applying the multiplication skills through solving word problems would require a much higher level of cognitive thinking. Bloom's original taxonomy was organized so that skills and ideas were presented from simple to more complex and concrete concepts become increasing more abstract, necessitating the mastery of the simpler categories before mastery of the more complex category could be obtained (Krathwohl, 2002).

One of the most significant revisions of Bloom's Taxonomy occurred in 2001 by a group of eight scholars lead by Lorin Anderson and David Krathwohl (Seaman, 2011). The revision task was attempted with two goals in mind: to "refocus educator's attention to the value of the original *Handbook*" and "incorporate new knowledge and thought into the framework" (Anderson & Krathwohl, 2001, p. xxi-xxii). Changes seen in the revised edition included a change in terminology from a noun form (knowledge, application, comprehension) to a verb

form (remember, apply, understand) as well as the incorporation of a knowledge dimension to the original cognitive process dimension (Seaman, 2011).

Over the years, there have been several alternatives to Bloom's Taxonomy. The Structure of the Observed Learning Outcomes (SOLO) Taxonomy "was designed in accordance with Piaget's different cognitive stages of development by John Biggs in 1982 for the purpose of classifying students' responses" (Chan, Tsui, Chan, & Hong, 2002, p. 513). Like Bloom's Taxonomy, the SOLO Taxonomy uses a hierarchical model of increasing structural complexity from Pre-structural to Abstract (Chan et al., 2002).

In response to the shortcomings of Bloom's Taxonomy, Marzano (2000) developed a New Taxonomy of Educational Objectives. He believed that "one of the problems in the approach taken by Bloom and his colleagues is that it attempted to use degrees of difficulty as the basis for the different levels of the taxonomy"(Marzano, 2000, p. 10). Based on three systems (Self, Metacognitive, Cognitive) and the knowledge domain, it "incorporates a wider range of factors that affect how students think and provides a more research-based theory to help teachers improve their students' thinking" (Marzano, 2000; Santiago & Dubas, 2016, p. 64). In the study by Santiago and Dubas (2016), they hypothesized that "it is not about how hard the question appears (as it is in Bloom's), it is about how intentional the thought process is as students answer a question (p. 64).

Fink's Taxonomy of Significant Learning was developed in 2003 by L. Dee Fink as "a new approach to designing, or redesigning, college courses that he believed if implemented would create learning experiences that would result in significant changes in students' lives" (Taylor-Greathouse, 2013, p. 15). The six components of Fink's Taxonomy (Foundational Knowledge, Application, Integration, Human Dimension, Caring, and Learning How to Learn)

encompasses Bloom's conventional composition through the understanding of the human implications of what they have learned in an effort retain and utilize concepts (Taylor-Greathouse, 2013).

When referring to taxonomies in curriculum planning, they can be useful in classifying goals which have been previously conveyed, however "they do not resolve the issue of relevance of any particular goal to contemporary society or to one's own students" (Ornstein, Pajak, & Pajak, 2015, p. 16). The taxonomies of Bloom and Krathwohl, with their conceived hierarchal organization, place emphasis on higher levels of thinking that are not always more important or even necessary (Ornstein et al., 2015).

Wineburg and Schneider (2009) hypothesize that if knowledge is the foundation for learning, Bloom's decision to place it at the bottom of a pyramid may diminish its importance. "Putting knowledge at the base implies that the world of ideas is fully known and that critical thinking involves gathering known facts to cast judgment" (Wineburg & Schneider, 2009, p. 61).

While one of the strengths of Bloom's taxonomy is the formation of learning from a "simple, unidimensional, behaviorist model to one that was multidimensional and more constructivist in nature" with an emphasis on higher levels of thinking, it is often criticized for oversimplifying "the nature of thought and its relationship to learning" (Marzano & Kendall, 2007, p. 8). However, it remains one of the most widely used taxonomies in K-12 education today.

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