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Royal Book Publishing

Book Title	An overview of Bloom's Taxonomy applied in Outcome Based Education for Effective Learning
Book Size	6.69 * 9.84 Inch
Paper	Natural Shade
Publisher	Royal Book Publishing **21/11, K M Nagar,** **Ayodhiyapatinam,** **Salem.** **Tamil Nadu-636103** **Cell:+91 7598141199** **Email:** contact@royalbookpublishing.com **Website:** www.royalbookpublishing.com

ISBN Assigned by Raja Ram Mohun Roy National Agency for ISBN,

New Delhi – 110066 (India)

ISBN: 9789391131906

An overview of Bloom's Taxonomy applied in Outcome Based Education for Effective Learning

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Abstract

Bloom's taxonomy benefits the teachers to think and analyse their teaching and student's learning. The structure is used to state clear objectives which can assist the teachers to propose lessons accordingly. Moreover, it can provide a structure for cognitive behaviours which can be applied to comprehend the difficulty of tasks, conduct an assessment, and streamline or confound the activities.

Bloom's Taxonomy helps the teachers to comprehend the objectives of classroom teaching-learning. It guides them to transform the complexity of the questions and helps students to accomplish higher levels of hierarchy. It further helps to develop critical thinking among teachers.

Keywords

Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation

Introduction

Bloom's Taxonomy is a categorization that defines different levels of intelligence including thinking, learning, and understanding. Institutes make use

of bloom's taxonomy to improve curriculum, assessments, and teaching methods. Originally introduced in 1956, Bloom's Taxonomy was a concept created by Mr. Benjamin Bloom along with Mr. Edward Furst, Mr. Max Englehart, Mr. David Krathwohl & Mr. Walter Hill. The concept or rather the educational model has categorized the levels of education as well as the skills that need to be imparted whenever a teacher teaches something. (MasterSoft, 2022)

The fact that Bloom's taxonomy can be applied to any (cognitive) content intended for students to learn, is what makes this framework so powerful. It can be seen, to a greater or lesser extent, in all mark schemes and assessment objectives provided by all examining bodies in almost any curriculum subject. For teachers, Bloom's taxonomy is a practical tool to use, providing a framework in which to plan challenging lessons that help to ensure students' progress is maximised – a fundamental tenet of successful teaching. Among its many uses, Bloom's taxonomy provides an excellent foundation for lessons, as it can be used as a framework in which to deliver appropriate activities, assessment, questioning, objectives and outcomes. (Applying Bloom's Taxonomy to the Classroom, 2022)

Bloom's taxonomy was developed to provide a common language for teachers to discuss and exchange learning and assessment methods. Specific learning outcomes can be derived from the taxonomy, though it is most commonly used to assess learning on a variety of cognitive levels. The table below defines each cognitive level from higher- to lower-order thinking.

The goal of an educator's using Bloom's taxonomy is to encourage higher-order thought in their students by building up from lower-level cognitive skills. Behavioural and cognitive learning outcomes are given to highlight how Bloom's taxonomy can be incorporated into larger-scale educational goals or guidelines. The key phrases can be used (e.g., Example Assessments) to prompt for these skills during the assessment process. (UCF, 2022)

Bloom's Taxonomy is categorized into Knowledge, Comprehension, Application, Analysis, Synthesis, Evaluation

Figure: Bloom's Taxonomy, Source: (IMGBIN, 2022)

Knowledge

Memorize the factual knowledge of specific terminology, ways and means (i.e., conventions, trends, classifications and categories, criteria, methodology), universal axioms and/or abstractions accepted by the field or discipline (principles and generalizations, theories and structures).

Key Phrases for Assessment of "Knowledge" arrange, define, describe, duplicate, enumerate, identify, label, list, match, memorize, name, order, read, recognize, relate, recall, repeat, reproduce, record, select, state, view, write Comprehension/ Understanding Understanding the meaning of information and materials.

Key Phrases for Assessment of "Comprehension/ Understanding" classify, cite, convert, describe, discuss, estimate, explain, express, generalize, give examples, identify, illustrate, indicate, locate, make sense out of, paraphrase, recognize, report, restate (in own words), review, select, summarize, trace, translate, understand

Application

Using information and materials to solve new problems or respond to concrete situations that have a single or best answer.

Key Phrases for Assessment of "Application"

Act, administer, apply, articulate, assess, chart, choose, collect, compute, construct, contribute, control, demonstrate, determine, develop, discover, dramatize, employ, establish, extend, illustrate, implement, include, inform, instruct, interpret, operate, operationalize, participate, practice, predict, prepare, preserve, produce, project, provide, relate, report, schedule, show, sketch, solve, teach, transfer, use, utilize, write

Analysis

Decomposing materials into their component parts so they can be examined and understood.

Key Phrases for Assessment of "Analysis"

Analyse, appraise, break down, calculate, categorize, compare, contrast, correlate, criticize, diagram, differentiate, discriminate, distinguish, examine, experiment, focus, illustrate, infer, limit, outline, point out, prioritize, question, recognize, separate, subdivide, test

Synthesis

Using new and creative applications of prior knowledge and skills.

Key Phrases for Assessment of "Synthesis"

Adapt, anticipate, arrange, assemble, collaborate, collect, combine, communicate, compile, compose, construct, create, design, develop, devise, express, facilitate, formulate, generate, hypothesize, incorporate, individualize, initiate, integrate, intervene, invent, manage, model, modify, negotiate, organize,

plan, prepare, progress, propose, rearrange, reconstruct, reinforce, reorganize, revise, set up, structure, substitute, validate, write

Evaluation

Judging value of materials based on personal values/opinions or definite criteria. Concerned with evaluating material to determine if it fulfills given purpose. Criteria may be internal (organization; defined by student) or external (relevant to the purpose; provided to student).

Key Phrases for Assessment "Evaluation"

Appraise, argue, assess, attach, choose, compare, conclude, contrast, core, criticize, critique, decide, defend, estimate, evaluate, interpret, judge, justify, predict, rate, reframe, select, support, value (UCF, 2022)

As Bloom's taxonomy is a hierarchy of progressive processes ranging from the simple to the complex, in which it is necessary to first master those lower down the pyramid before being able to master those higher up, the framework promotes what Bloom termed 'mastery learning'. In other words, by moving up the taxonomy, students become more knowledgeable, more skilled and develop an improved understanding of the content they are learning. Thus, by creating lesson plans and tasks, using the examples of verbs (in italics) provided, teachers can align with the different levels of the taxonomy.

By simply moving to the higher levels of Bloom's taxonomy, these verbs can serve as the basis for learning objectives, questions or activities. They describe what we want students to be able to do, cognitively, with the content about which the students are learning. The higher up the pyramid of course, the more complex are the cognitive processes involved and, as such, ask students to engage in more challenging cognitive work connected to their lesson's content. As part of successful teaching practice, it can be necessary to scale back challenge in accordance with the response it draws, moving down the taxonomy as necessary.

Comparison of Foundation Bloom's Taxonomy with 21st century version

The most commonly-known changes were made in the Cognitive Process Domain to the levels themselves which were changed from nouns to verbs. For example, 'Analysis' because 'Analysing.' Also, the highest level was now 'Creating' and while 'Evaluating' became the second-highest level and Synthesis was removed entirely (or, arguably, itself synthesized with other ideas, leading to 'Create').

(Teachthought, 2022)

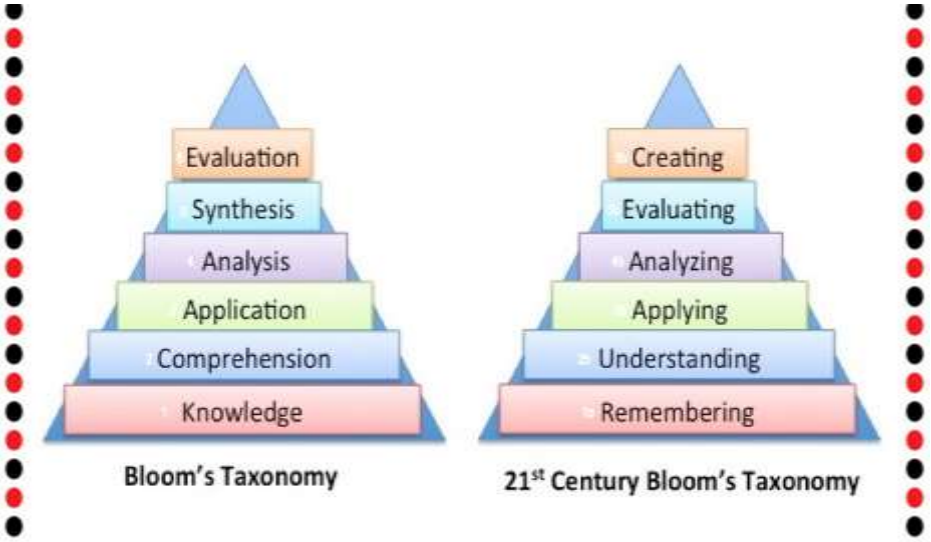

Figure: Bloom's Taxonomy, Source: (Flickr, 2022)

Why Teachers Should Use Bloom's Taxonomy?

The authors of the revised taxonomy suggest a multi-layered answer to this question, to which the author of this teaching guide has added some clarifying points:

Objectives (learning goals) are important to establish in a pedagogical interchange so that teachers and students alike understand the purpose of that interchange.

Organizing objectives helps to clarify objectives for themselves and for students.

Having an organized set of objectives helps teachers to:

- "plan and deliver appropriate instruction";
- "design valid assessment tasks and strategies";and
- "ensure that instruction and assessment are aligned with the objectives."

(University, 2022)

Bloom's taxonomy is a great tool for helping teachers to develop higher order critical thinking abilities in students. Referring to the taxonomy's concepts during the planning process helps teachers to focus in on appropriate objectives for groups and individuals and to plan for their progression in the short, medium, and longer term.

The taxonomy provides a clear framework or system of organization for classifying lesson objectives, as well as a coherent starting point to build lessons from.

(Cummins, 2019)

How Can Teachers Use Bloom's Taxonomy?

The starting point of any planning process should be the consideration of the level of the students. Luckily, Bloom's provides a very convenient framework within which to begin this process.

When creating objectives you can move from the simple to complex, the concrete to abstract, according to the ability of your students through reference to the taxonomy. For example, knowing that Remember refers to the lowest level of cognitive rigor means you can design your objectives with this in mind. Likewise, Create references the highest level of cognitive rigor and this will inform the objectives you create for the most sophisticated of your students.

(Cummins, 2019)

Conclusion

Bloom's taxonomy is widely applied as a tool for teaching to maintain in equilibrium the evaluative and assessment-based questions in exams, assignments, and in-class engagements. It is supportive by ensuring that all orders of thinking are being experienced in the institutes, including aspects of information penetrating.

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