



PEDAGOGY IN ACADEMIC PLATFORM BLOOMS WELL BY FOLLOWING BLOOM'S TAXONOMY

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ABSTRACT

Pedagogy is the discipline that deals with the theory and practice of teaching. Pedagogy informs teaching strategies, teacher actions and teacher judgments and decisions by taking into consideration theories of learning, understandings of students and their needs and the backgrounds and interests of individual students. Pedagogy includes how the teacher interacts with students and the social and intellectual environment the teacher seeks to establish. Spanning a broad range of practice, its aims range from furthering liberal education (the general development of human potential) to the narrower specifics of vocational education (the imparting and acquisition of specific skills). Instructive strategies are governed by the pupil's background knowledge and experience, situation and environment, as well as learning goals set by the student and teacher. One example would be the Socratic schools of thought. The teaching of adults, as a specific group, is referred to as andragogy.

KEYWORDS: Pedagogy, Andragogy, Bloom's Taxonomy, Remember, Understand, Apply, Analyze, Evaluate,

INTRODUCTION

The educational philosophy and pedagogy of **Johann Friedrich Herbart** highlighted the correlation between personal development and the resulting benefits to society.^[1,2] Johann Friedrich Herbart (4 May 1776 – 14 August 1841) was a German philosopher, psychologist and founder of pedagogy as an academic discipline. In other words, Herbart proposed that humans become fulfilled once they establish themselves as productive

citizens. Herbartianism refers to the movement underpinned by Herbart's theoretical perspectives. Referring to the teaching process, Herbart suggested 5 steps as crucial components. Specifically, these 5 steps include: preparation, presentation, association, generalization, and application. Herbart suggests that pedagogy relates to having assumptions as an educator and a specific set of abilities with a deliberate end goal in mind.^[3]



Johann Friedrich Herbart



Dr. Benjamin Bloom

Figure-1: Two academic pedagogical stalwarts.

Pedagogical approaches

Critical pedagogy: Critical pedagogy is both a pedagogical approach and a broader social movement. Critical pedagogy acknowledges that educational practices are contested and shaped by history, schools are not politically neutral spaces and teaching is political. Decisions regarding the curriculum, disciplinary practices, student testing, textbook selection, the language used by the teacher and more can empower or disempower students. It recognizes that educational practices favour some students over others and some practices harm all students. It also recognizes that educational practices often favour some voices and perspectives while marginalizing or ignoring others.

Another aspect examined is the power the teacher holds over students and the implications of this. Its aims include empowering students to become active and engaged citizens, who are able to actively improve their own lives and their communities.^[4] Critical pedagogical practices may include, listening to and including students' knowledge and perspectives in class, making connections between school and the broader community and posing problems to students that encourage them to question assumed knowledge and understandings. The goal of problem posing to students is to enable them to begin to pose their own problems. Teachers acknowledge their position of authority and exhibit this authority through their actions that support students.^[5]

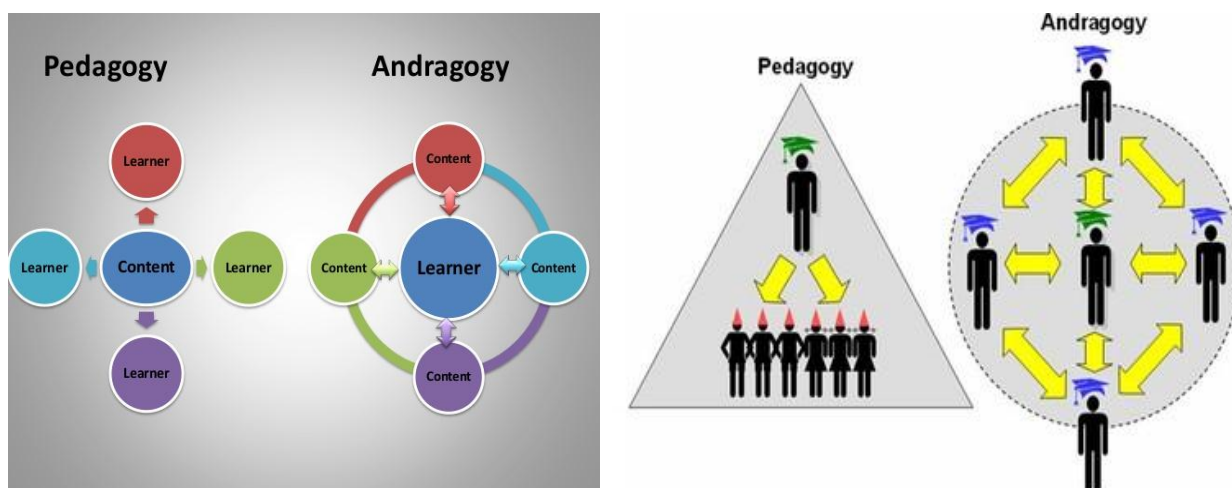


Figure-2: Pedagogy & Andragogy.

Academic degrees: An academic degree, Ped. D., Doctor of Pedagogy, is awarded honorarily by some US universities to distinguished teachers (in the US and UK, earned degrees within the instructive field are classified as an Ed. D., Doctor of Education or a Ph.D. Doctor of Philosophy). The term is also used to denote an emphasis in education as a specialty in a field (for instance, a Doctor of Music degree in piano pedagogy).

Education: Bloom's taxonomy, a standardized categorization of learning objectives in an educational context which includes classification of Instructional Programs, a taxonomy of academic disciplines at institutions of higher education in the United States and SOLO taxonomy, Structure of Observed Learning Outcome, proposed by Biggs and Collis Tax.^[6]

Bloom's Taxonomy

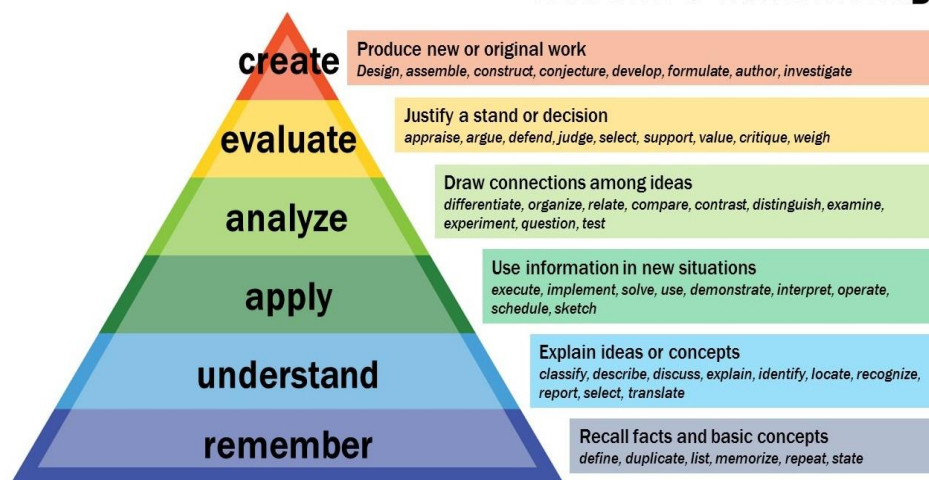


Figure-3: Bloom's Taxonomy.

Bloom's Taxonomy was created in 1956 under the leadership of educational psychologist **Dr. Benjamin Bloom** in order to promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures and principles, rather than just remembering facts. Benjamin Samuel Bloom (February 21, 1913 – September 13, 1999) was an American educational psychologist who made contributions to the classification of educational objectives and to the theory of mastery learning. He also directed a research team which conducted a major investigation into the development of exceptional talent whose results are relevant to the question of eminence, exceptional achievement and greatness.^[7] In 1956, Bloom edited the first volume of *Taxonomy of educational objectives: the classification of educational goals*, which outlined a classification of learning objectives that has come to be known as Bloom's taxonomy and remains a foundational and essential element within the educational community as evidenced in the 1981 survey *Significant writings that have influenced the curriculum: 1906-1981*, by H.G. Shane and the 1994 yearbook of the National Society for the Study of Education. Bloom's 2 Sigma Problem is also named after him. Bloom's taxonomy is a set of three hierarchical models used to classify educational learning objectives into levels of complexity and specificity. The three lists cover the learning objectives in cognitive,

affective and sensory domains. The cognitive domain list has been the primary focus of most traditional education and is frequently used to structure curriculum learning objectives, assessments and activities. The models were named after Benjamin Bloom, who chaired the committee of educators that devised the taxonomy. He also edited the first volume of the standard text, *Taxonomy of Educational Objectives: The Classification of Educational Goals*.^[8]

History

Although named after Bloom, the publication of *Taxonomy of Educational Objectives* followed a series of conferences from 1949 to 1953, which were designed to improve communication between educators on the design of curricula and examinations. The first volume of the taxonomy, *Handbook I: Cognitive* was published in 1956, and in 1964 *Handbook II: Affective*. A revised version of the taxonomy for the cognitive domain was created in 2001. The cognitive domain (knowledge-based). In the original version of the taxonomy, the cognitive domain is broken into the following six levels of objectives. In the 2001 revised edition of Bloom's taxonomy, the levels are slightly different: **Remember, Understand, Apply, Analyze, Evaluate and Create**. (rather than Synthesize).

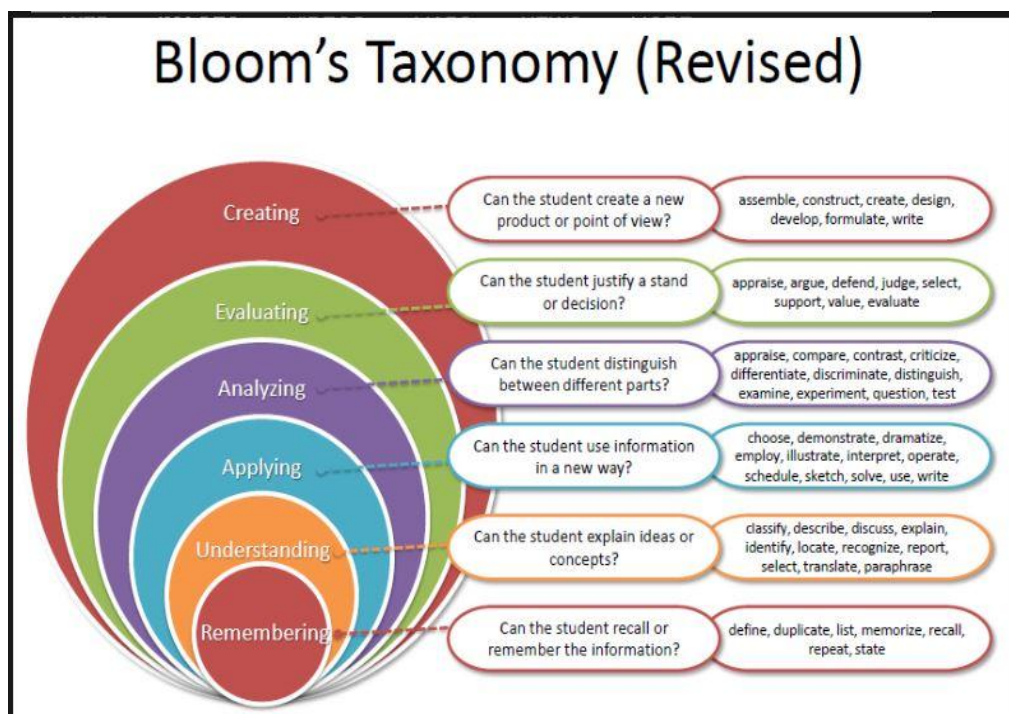


Figure-4: Correlation between original and new domain pedagogy.

Bloom's taxonomy is a classification system used to define and distinguish different levels of human cognition—i.e., thinking, learning and understanding.^[9]

Table-1: Analysis of Bloom's Taxonomy.

Category	Examples, key words (verbs), and technologies for learning (activities)
Remembering: Recall or retrieve previous learned information.	Examples: Recite a policy. Quote prices from memory to a customer. Recite the safety rules. Key Words: defines, describes, identifies, knows, labels, lists, matches, names, outlines, recalls, recognizes, reproduces, selects, states Technologies: book marking, flash cards, rote learning based on repetition, reading
Understanding: Comprehending the meaning, translation, interpolation, and interpretation of instructions and problems. State a problem in one's own words.	Examples: Rewrite the principles of test writing. Explain in one's own words the steps for performing a complex task. Translate an equation into a computer spreadsheet. Key Words: comprehends, converts, defends, distinguishes, estimates, explains, extends, generalizes, gives an example, infers, interprets, paraphrases, predicts, rewrites, summarizes, translates Technologies: create an analogy, participating in cooperative learning, taking notes, storytelling, Internet search
Applying: Use a concept in a new situation or unprompted use of an abstraction. Applies what was learned in the classroom into novel situations in the work place.	Examples: Use a manual to calculate an employee's vacation time. Apply laws of statistics to evaluate the reliability of a written test. Key Words: applies, changes, computes, constructs, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses Technologies: collaborative learning, create a process, blog, practice
Analyzing: Separates material or concepts into component parts so that its organizational structure may be understood. Distinguishes between facts and inferences.	Examples: Troubleshoot a piece of equipment by using logical deduction. Recognize logical fallacies in reasoning. Gathers information from a department and selects the required tasks for training. Key Words: analyzes, breaks down, compares, contrasts, diagrams, deconstructs, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, relates, selects, separates Technologies: Fishbowls debating, questioning what happened, run a test
Evaluating: Make judgments about the value of ideas or materials.	Examples: Select the most effective solution. Hire the most qualified candidate. Explain and justify a new budget. Key Words: appraises, compares, concludes, contrasts, criticizes, critiques, defends, describes, discriminates, evaluates, explains, interprets, justifies, relates, summarizes, supports Technologies: survey, blogging
Creating: Builds a structure or pattern from diverse elements. Put parts together to form a whole, with emphasis on creating a new meaning or structure.	Examples: Write a company operations or process manual. Design a machine to perform a specific task. Integrates training from several sources to solve a problem. Revises and process to improve the outcome. Key Words: categorizes, combines, compiles, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, rearranges, reconstructs, relates, reorganizes, revises, rewrites, summarizes, tells, writes Technologies: Create a new model, write an essay, network with others

Definition of knowledge

In the appendix to Handbook I, there is a definition of knowledge which serves as the apex for an alternative, summary classification of the educational goals. This is significant as the taxonomy has been called upon significantly in other fields such as knowledge management, potentially out of context. "Knowledge, as defined here, involves the recall of specifics and universals, the recall of methods and processes, or the recall of a pattern, structure, or setting."^[10]

The taxonomy is set out as follows: Knowledge; Knowledge of specifics; Knowledge of terminology; Knowledge of specific facts; Knowledge of ways and means of dealing with specifics; Knowledge of conventions; Knowledge of trends and sequences; Knowledge of classifications and categories; Knowledge of criteria; Knowledge of methodology; Knowledge of the universals and abstractions in a field; Knowledge of principles and generalizations & Knowledge of theories and structures.



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Bloom's Digital Taxonomy Activities

Remembering

Analyzing

Understanding

Evaluating

Applying

Creating

De Describing											Blg Blogging
Li Listing	Bo Bookmarking					Mnd Mind Mapping	Ar Arguing	Crq Critiquing	Clb Collaborating	Flm Filming	
Lo Locating	Ne Networking					Ad Advertising	Cnv Convincing	Mod Moderating	Dsg Designing	Inv Inventing	
Hi Highlighting	Su Summarizing	Com Commenting	Jo Journaling	Ac Acting Out	IL Illustrating	Exa Examining	PL Planning	Va Validating	Edt Editorializing	Mfy Modifying	Pdc Podcasting
Re Recalling	Pa Paraphrasing	Ou Outlining	Exp Explaining	Ed Editing	In Interviewing	Ap Appraising	Ma Marketing	Rcm Recommending	Rfl Reflecting	Pb Publishing	Rpy Roleplaying
Fa Favoriting	Cmp Comparing	Pe Predicting	Up Uploading	Sh Sharing	Pr Proofreading	Su Surveying	Dec Deconstructing	Rep Reporting	Gr Grading	Vbg Video Blogging	Wk Wiki Building
Se Bulleting	Ds Demonstrating	Id Identifying	Exp Explaining	Con Constructing	Ar Articulating	Ded Deducing	Ctg Categorizing	Li Linking	Rt Rating	Hy Hypothesizing	Prd Producing

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Figure-5: Chemical Periodic Table implementation in Bloom's Taxonomy.

CONCLUSION

Bloom's taxonomy is a classification system used to define and distinguish different levels of human cognition—i.e., thinking, learning and understanding. Educators have typically used Bloom's taxonomy to inform or guide the development of assessments (tests and other evaluations of student learning), curriculum (units, lessons, projects, and other learning activities) and instructional methods such as questioning strategies.

Bloom's taxonomy was originally published in 1956 by a team of cognitive psychologists at the University of Chicago. It is named after the committee's chairman, Benjamin Bloom (1913–1999). The original taxonomy was organized into three domains: Cognitive, Affective, and Psychomotor. Educators have primarily focused on the Cognitive model, which includes six different classification levels: Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation.



While still widely used, Bloom's taxonomy is gradually being supplemented—and may perhaps even supplanted one day—by new insights into the workings of human thought and learning made possible by advances in brain imaging and cognitive science. Still, it is likely, given its logical simplicity and utility that Bloom's taxonomy will continue to be widely used by educators.

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