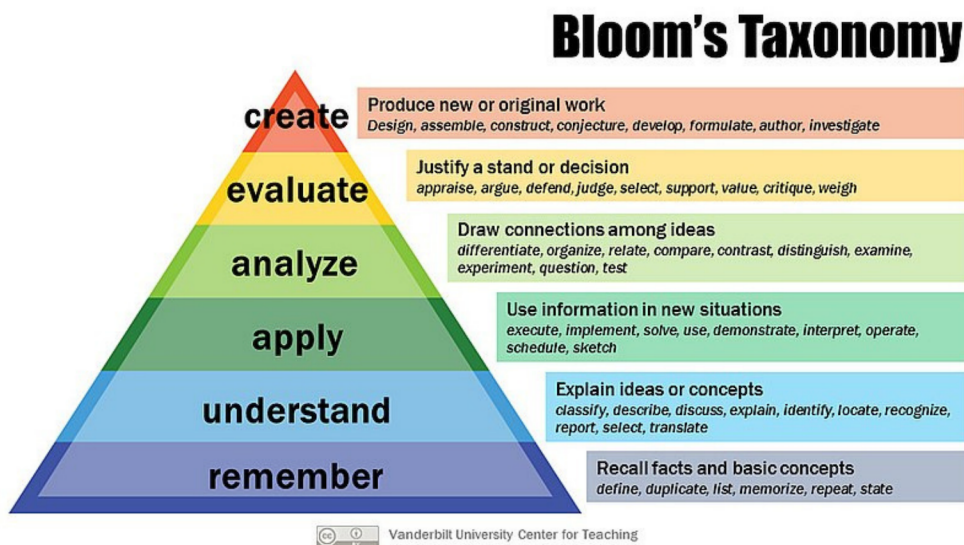


Bloom's Taxonomy of Cognitive Learning Objectives

What is Bloom's Taxonomy?

Bloom's Taxonomy is a framework for identifying and organizing what educators want students to learn from a given instructional activity. It was originally conceived to create common learning objectives across courses and departments and provide educators with standardized language to use when framing learning goals for curricula and comprehensive examinations. Now, Bloom's taxonomy can be used as a potential model for framing educational objectives within a course and as a guide to structuring activities and assessments based on learning goals.



Why is Bloom's Taxonomy Important?

Bloom's Taxonomy is a powerful tool that can help faculty design, implement, assess, and improve student learning. The taxonomy provides a framework for determining the level of student understanding and hence, adjusting instruction and assessment based on student performance. In other words, Bloom's Taxonomy can be used to identify the level of knowledge or understanding a student has attained in a certain topic. It can help faculty understand what students already know and what new knowledge or skills need to be learned. By understanding students' current level of knowledge, faculty can adjust their teaching methods to help bring students up to a higher level of understanding.

How can Bloom's Taxonomy Aid Faculty?

The Taxonomy can aid faculty in developing clear and measurable objectives that are aligned with the goals of the course, determining the level of student understanding, and choosing an assessment type that accurately measures the level of student understanding.

What are the Bloom's Taxonomy verbs?

The Bloom's Taxonomy verbs are: remember, understand, apply, analyze, evaluate, and create. These verbs represent the different levels of thinking, ranging from basic comprehension to higher-level critical thinking. They are used to create learning objectives that target specific levels of thinking and help students to move up the levels of Bloom's Taxonomy.

ACTION VERBS FOR DEVELOPING LEARNING OUTCOMES

Cognitive Level	Skills/Knowledge to be Demonstrated	Action Verbs	Examples
Remembering (Level 1)	<ul style="list-style-type: none"> observe and recall of information knowledge of dates, events, places knowledge of major ideas knowledge of major processes or procedures mastery of subject matter 	arrange, cite, collect, define, describe, duplicate, enumerate, examine, find, identify, indicate, label, list, locate, match, memorize, name, order, outline, quote, recall, recite, recognize, record, relate, repeat, reproduce, retrieve, select, show, state, tabulate.	<ul style="list-style-type: none"> List the first ten alkanes State the steps in the procedure for calibrating a gas chromatograph.
Understanding (Level 2)	<ul style="list-style-type: none"> understand information grasp meaning translate knowledge into new context interpret facts, compare, contrast order, group, infer causes predict consequences 	arrange, articulate, associate, classify, compare, contrast, describe, differentiate, discuss, distinguish, exemplify, expand, explain, express, extend, identify, illustrate, indicate, interpret, locate, match, outline, paraphrase, recognize, relate, report, restate, review, select, summarise.	<ul style="list-style-type: none"> Explain in your own words the concept of vapor pressure. Interpret the output from an ASPEN flowsheet simulation
Applying (Level 3)	<ul style="list-style-type: none"> use information use methods, concepts, theories in new situations solve problems using required skills or knowledge use equipment, tools 	Administer, apply, calculate, chart, classify, collect, compute, control, convert, demonstrate, determine, develop, dramatize, draw, employ, estimate, execute, exhibit, illustrate, implement, manipulate, model, modify, operate, practice, prepare, relate, report, select, show, sketch, transfer, use, utilize.	<ul style="list-style-type: none"> Calculate the probability that two sample means will differ by more than 5% Solve the compressibility factor equation of state for P, T, or V from given values of the other two.

Analyzing (Level 4)	<ul style="list-style-type: none"> • see patterns • organize of parts • recognize of hidden meanings • identify components • simplify complex information; • metacognition 	analyze, calculate, categorize, classify, compare, contrast, correlate, deconstruct, detect, differentiate, discriminate, distinguish, examine, explain, interpret, organize, quantify, research, scrutinize, separate, sequence, subdivide, survey, test, translate	<ul style="list-style-type: none"> • Compare the sales process followed in the USA with that of China. • Explain why we feel warm in 70 F air and cold in 70 F water.
Evaluating (Level 5)	<ul style="list-style-type: none"> • use old ideas to create new ones • compare and discriminate between ideas • relate knowledge from several areas • predict, draw conclusions • think critically • assess the value of theories, presentations • make choices based on reasoned argument • verify or question the value of the evidence • recognize subjectivity 	appraise, argue, assess, categorize, choose, compare, conclude, contrast, critique, debate, decide, deduce, defend, discriminate, dispute, establish, estimate, evaluate, gauge, generalize, hypothesize, infer, interpret, judge, justify, measure, monitor, negotiate, predict, prioritize, propose, prove, rank, rate, recommend, relate, select, solve, support, validate, verify	<ul style="list-style-type: none"> • Determine which of the given heat exchanger configurations is better, and explain your reasoning • Select from among available options for expanding production capacity, and justify your choice • Critique an essay, report, or article for accuracy and style.
Creating (Level 6)	<ul style="list-style-type: none"> • combine ideas to develop an original idea or product • engage in creative thinking. 	adapt, anticipate, assemble, change, communicate, compare, compile, compose, construct, create, derive, design, develop, devise, formulate, generate, hypothesize, improve, incorporate, infer, initiate, integrate, interpret, invent, make, modify, originate, plan, produce, reconstruct, revise, synthesize, transform, visualize	<ul style="list-style-type: none"> • Design and create a prototype using CAD Software.