Bloom's Taxonomy

Each of the three categories requires learners to use different sets of mental processing to achieve stated outcomes within a learning situation.

Benjamin Bloom (1913-1999) was an educational psychologist who was interested in improving student learning. In the late 1940s, Bloom and other educators worked on a way to classify educational goals and objectives, which resulted in three learning categories or ―domains‖ and the taxonomy of categories of thinking. Each of the three categories requires learners to use different sets of mental processing to achieve stated outcomes within a learning situation. Thus, instructional goals and objectives should be designed to support the different ways learners process information in these domains.

- **Cognitive domain** (knowledge) verbal or visual intellectual capabilities
- **Affective domain** (attitudes) feelings, values, beliefs
- **Psychomotor domain** (skills) physical skill capabilities

The ―original‖ Bloom's taxonomy, Figure 1, is still widely used as an educational planning tool by all levels of educators today. In 2001 a former student of Bloom and others published a new version the taxonomy to better fit educational practices of the 21st century. At that time, the six categories were changed from nouns to verbs because verbs describe actions and thinking is an active process. Figure 2 represents the revised Bloom's taxonomy. Both models are portrayed as hierarchical frameworks where each level is subsumed by the higher, more complex level – students who function at one level have also mastered the level or levels below it. Using the revised taxonomy, Figure 2, for example, a student who has reached the highest level ―Creating‖ has also learned the material at each of the five lower levels. Thus, a student has achieved a high level of thinking skills.

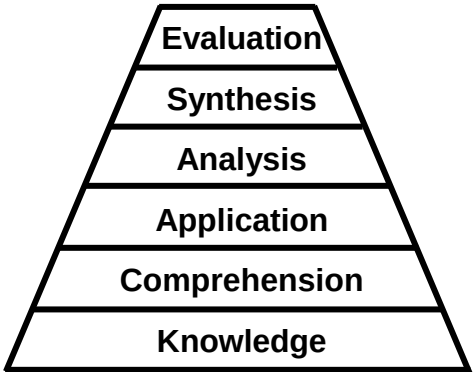

Figure 1
Bloom's Taxonomy 1956

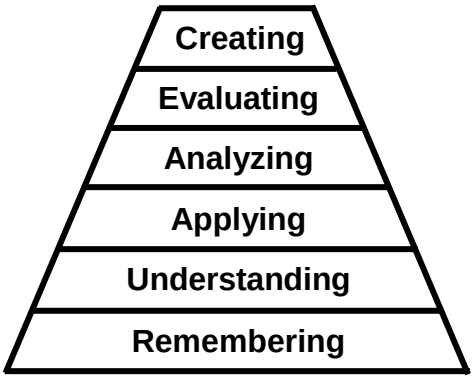

Figure 2
Bloom's Revised Taxonomy 2001

Why Use Bloom's Taxonomy?
Bloom's Taxonomy can be useful for course design because the different levels can help you move students through the process of learning—from the most fundamental *remembering* and *understanding* to the more complex *evaluating* and *creating* (Forehand, 2010).

The taxonomy can be helpful as you develop assessments by matching course learning objectives at any given level of mastery. When teaching lower division, introductory courses, you might measure mastery of objectives at the lower levels and when teaching more advanced, upper division courses you would most likely be assessing students' abilities at the higher levels of the taxonomy.

Instructional objectives are more effective if they include specific verbs which can tell students what they are expected to do. The verbs listed in Table 1 are linked with each level of thinking, which in turn are tied to activities, products and/or outcomes specific to the objective.

Table 1

Verbs and Products/Outcomes based on the six levels Bloom's Revised Taxonomy

Adapted from ―Bloom's Bakery, An Illustration of Bloom's Taxonomy‖ by Argiro, Forehand, Osteen, & Taylor (2007)

Verbs	Level of Thinking	Potential activities, products or outcomes
change combine compare compose construct create design devise formulate generate hypothesize imagine improve invent plan predict propose	**Creating** **Creating something new**	– algorithm – framework – haiku – multimedia presentation – game – poem – story – theorem – treatment
argue appraise assess check debate decide defend determine dispute editorialize judge justify prioritize rate recommend select support verify	**Evaluating** **Defending a concept or idea**	– critique – judgment – opinion – recommendation – report – self-evaluation

advertise appraise categorize contrast distinguish identify investigate outline sequence	analyze attribute compare differentiate examine infer organize separate test	**Analyzing** **Distinguishing different parts of a whole**	– chart – plan – questionnaire – spreadsheet – summary – survey
classify complete dramatize execute implement show use	construct demonstrate examine illustrate practice solve	**Applying** **Using information in new way**	– collection – interview – model – building – presentation – role playing – scrapbook – simulation
calculate describe distinguish explain interpret outline report translate	compare discuss expand identify locate predict restate define	**Understanding** **Explaining information and concepts**	– drawing – Paraphrasing – peer teaching – show & tell – story problems – summary
describe find locate recall reproduce tell write	duplicate list name recognize state underline	**Remembering** **Recalling information**	– definitions – fact charts – lists – recitations – work-sheets

To further develop effective and meaningful instruction, use meaningful and probing questions to elicit student response. Refer to Table 2 to create sample questions or statements at each level of learning to challenge students to move from the most basic skills (remembering) to more complex learning which leads to higher order thinking (creating). Questions to encourage possible thinking at each of the six levels can be used in combination with appropriate verbs and related activities, products and/or outcomes.

Table 2

Verbs and Products/Outcomes Based on the Six Levels Bloom's Revised Taxonomy Adapted from *Good Questions are the Key to Good Research* by Dalton (1986)		
Verbs	**Sample question / statement stems**	**Potential activities, products or outcomes**
Creating		
change combine compare compose construct create design devise formulate generate hypothesize imagine improve invent plan predict propose	– Design a… to…? – How would you improve…? – Formulate a theory for…? – Predict the outcome of…? – How would you test…? – How would you estimate the results for…? – If you had access to all resources how would you deal with…? – What would happen if…? – How many ways can you…? – Develop a new proposal which would… – Create new and unusual uses for… – Construct a new model that would change…	– Invent a machine to do a specific task – Design a computer lab for your program – Create a new product and plan a marketing campaign – Design a cover for a DVD – Sell a product – Write a musical score for … – Write about your feelings in relation to…
Evaluating		
argue appraise assess check debate decide defend determine dispute editorialize judge justify prioritize rate recommend select support verify	– What is your opinion of…? – How would you prove or disprove...? – Would it be better if…? – What would you recommend…? – How would you rate the…? – What would you cite to defend the actions…? – How could you determine…? – How would you prioritize…? – Based on what you know, how would you explain…? – What data were used to make the conclusion? – How would you compare the ideas …? – How would you compare the people? How would you justify...?	– Prepare a brief – Form a panel to discuss views – Write a letter to… expressing your views on … – Write an end of the year report – Write a job aid for… – Explain and justify a proposal – Select the most useful products for…

Analyzing		
advertise analyze appraise attribute categorize compare contrast differentiate distinguish examine identify infer investigate organize outline separate sequence test	– What are the parts of features of …? – How is____related to …? – What is the theme …? – List the parts …? – What inferences can you make …? – How would you classify …? – How would you categorize …? – What evidence can you find …? – What is the relationship between …? – What is the function of …? – What motive is there …? – Identify the different parts …?	– Gather data and analyze them according to … – Troubleshoot problems with lab equipment – Design a survey – Write a story about an interviewee – Arrange a conference and all necessary steps – Make an organizational chart of your unit or department – Write a ad campaign for your organization – Construct a flow chart which illustrates a system
Applying		
classify construct complete demonstrate dramatize examine execute illustrate implement practice show solve use	– How would you use…? – What examples can you find to…? – How would you solve____using what you've learned? – What approach would you use to…? – What would result if…? – What elements would you choose to change …? What questions would you ask in an interview with …?	– Make a model of an activity – Paint a wall poster to advertise a special event – Design a marketing strategy for your organization – Design a store window for homecoming – Develop a storyboard of digital images to demonstrate a process Use a set of standards to evaluate performance

Understanding		
calculate compare describe discuss distinguish expand explain identify interpret locate outline predict report restate translate	– How would you classify the type of...? – How would you compare or contrast…? – How would you rephrase the meaning...? – What facts or ideas show…? – Which statements support…? – What can you say about…? – Which is the best answer…? – How would you summarize…?	– Illustrate what you think the main idea was – Write and perform a play based on the story – Retell the story in your own words – Paint a picture of some aspect you like – Write a critique of a presentation – Prepare a flow chart to illustrate the sequence of events
define describe duplicate find list locate name recall recognize reproduce state tell underline write	– What is…? – Where is ? – How did____happen? – How would you describe…? – Who was…? – Who were the main…? – When did…? – Recall…?	– Make a list of the main events – Make a timeline of events… – Make a facts chart – Recite a poem – List all the____in the story. – Write a list of any pieces of information you can remember

Summary
Bloom's Revised Taxonomy is one of many tools which can be used to create effective and meaningful instruction. Use it to plan new or revise existing curricula, test relevance of course goals and objectives, design instruction and assignments and activities, and develop authentic assessments.

References

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