Bloom's Taxonomy within the Columbia Classroom

Hour 4

Hour 3

Hour 1&2

Prior to class
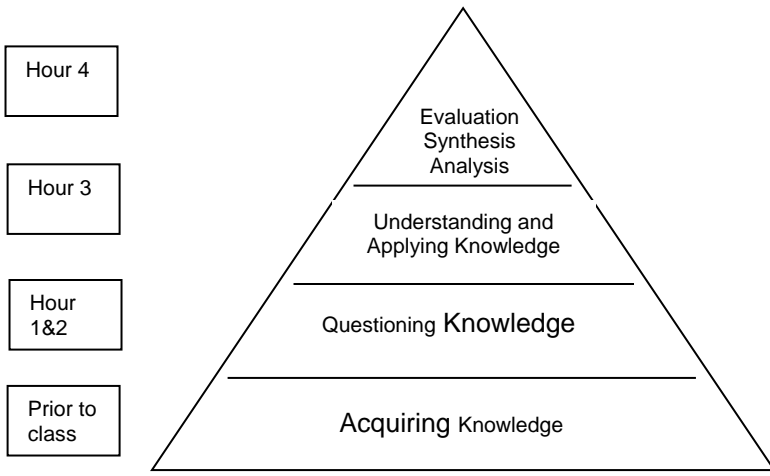
Columbia's Four Stage Model Hours

Evaluation
Synthesis
Analysis

Understanding and Applying Knowledge

Questioning Knowledge

Acquiring Knowledge

Bloom's Taxonomy

Over a half century ago, Benjamin Bloom headed a group of educational psychologists who developed a classification of levels of intellectual behavior important in learning. Bloom found that over 95% of the test questions students encounter require them to think only at the lowest possible level…the <u>recall</u> of information.

Bloom identified multiple levels within the cognitive domain, from the simple recall or recognition of facts, as the lowest level, through increasingly more complex and abstract mental levels, to the highest order which is classified as evaluation.

Bloom's Taxonomy key words used and the type of questions asked may aid in the establishment and encouragement of critical thinking, especially at the higher levels.

The diagram above demonstrates how Bloom's Taxonomy lines up with Columbia's Four Stage Student-Centered Model.

Acquiring Knowledge – Here at Columbia College, in professional programs, faculty should create lesson plans that ensure new concepts (knowledge and understanding) are introduced via student homework. Wherever possible, faculty in pre-career programs should also attempt to teach and evaluate students to a higher level of intellectual behaviour.

Questioning Knowledge – here students exhibit previously learned material by recalling facts, terms, basic concepts and answers.

Key Words: who, what, why, when, omit, where, which, choose, find, how, define, label, show, spell, list, match, name, relate, tell, recall, select

Questions that faculty should include in a lesson plan and evaluation include:

What is…? How is…?
Where is…? When did _____ happen?
How did _____ happen? How would you explain…?
Why did…? How would you describe…?
When did…? Can you recall…?
How would you show…? Can you select…?
Who were the main…? Can you list three…?
Which one…? Who was…?

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Understanding Knowledge – here students demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas. This and subsequent levels of higher order thinking normally occurs as a result of discussion of a case or problem presented in class.

Key Words: compare, contrast, demonstrate, interpret, explain, extend, illustrate, infer, outline, relate, rephrase, translate, summarize, show, classify

Questions that faculty should include in a lesson plan and evaluation include:

How would you classify the type of…?
How would you compare…? contrast…?
Will you state or interpret in your own words…?
How would you rephrase the meaning…?
What facts or ideas show…?
What is the main idea of…?
Which statement support…?
Can you explain what is happening…what is meant…?
What can you say about…?
Which is the best answer…?
How would you summarize…?

Applying Knowledge – have students solve problems by applying acquired knowledge, facts, techniques and rules in a different way.

Key Words: apply, build, choose, construct, develop, interview, make use of, organize, experiment with, plan, select, solve, utilize, model, identify

Questions that faculty should include in a lesson plan and evaluation include:

How would you use…?
What examples can you find to…?
How would you solve _____ using what you have learned…?
How would you organize _____ to show…?
How would you show your understanding of…?
What approach would you use to …?
How would you apply what you learned to develop…?
What other would you plan to…?
What would result if…?
Can you make use of the facts to…?
What elements would you choose to change…?
What facts would you select to show…?
What questions would you ask in an interview with…?

Analysis – have students examine and break information into parts by identifying motives or causes, making inferences, and finding evidence to support generalizations.

Key Words: analyze, categorize, classify, compare, contrast, discover, dissect, divide, examine, inspect, simplify, survey, take part in, test for, distinguish, list, distinction, theme, relationships, function, motive, inference, assumption, conclusion

Questions that faculty should include in a lesson plan and evaluation include:

What are the parts or features of…?
How is _____ related to…?
Why do you think…?
What is the theme…?
What motive is there…?
Can you list the parts…?
What inference can you make…?
What conclusions can you draw…?
How would you classify…?
How would to categorize…?
Can you identify the different parts…?
What evidence can you find…?
What is the relationship between…?
Can you make a distinction between…?
What is the function of…?
What ideas justify…?

Synthesis – have students compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.

Key Words: build, choose, combine, compile, compose, construct, create, design, develop, estimate, formulate, imagine, invent, make up, originate, plan, predict, propose, solve, solution, suppose, discuss, modify, change, original, improve, adapt, minimize, maximize, delete, theorize, elaborate, test, improve, happen, change

Questions that faculty should include in a lesson plan and evaluation include:

What changes would you make to solve…?
How would you improve…?
What would happen if…?
Can you elaborate on the reason…?
Can you propose an alternative…?
Can you invent…?
How would you adapt _____ to create a different…?
How could you change (modify) the plot (plan)…?
What could be done to minimize (maximize)…?
What way would you design…?
What could be combined to improve (change)…?
Suppose you could _____ what would you do…?
How would you test…?
Can you formulate a theory for…?
Can you predict the outcome if…?
How would you estimate the results for…?
What facts can you compile…?
Can you construct a model that would change…?
Can you think of an original way for the…?

Evaluation – have students present and defend their opinion(s) by making judgments about information, validity of ideas or quality of work based on a set of criteria.

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Key Words: award, choose, conclude, criticize, decide, defend, determine, dispute, evaluate, judge, justify, measure, compare, mark, rate, recommend, rule on, select, agree, interpret, explain, appraise, prioritize, opinion, support, importance, criteria, prove, disprove, assess, influence, perceive, value, estimate, influence, deduct

Case studies, problem solving, and decision making activities and exercises should include the following questions. This would be the most desired method in helping students learn how to take new concepts and learn how to apply them.

Questions that faculty should include in a lesson plan and evaluation include:

Do you agree with the actions…? with the outcomes…?
What is your opinion of…?
How would you prove…? disprove…?
Can you assess the value or importance of…?
Would it be better if…?
Why did they (the character) choose…?
What would you recommend…?
How would you rate the…?
What would you cite to defend the actions…?
How would you evaluate…?
How could you determine…?
What choice would you have made…?
What would you select…?
How would you prioritize…?
What judgment would you make about…?
Based on what you know, how would you explain…?
What information would you use to support the view…?
How would you justify…?
What data was used to make the conclusion…?
Why was it better that…?
How would you prioritize the facts…?
How would you compare the ideas…? people…?

NOTE:
This document was developed as a result of adopting generous portions of information from web articles found at the following two sites:

www.officeport.can/edu/bloom.htm
www.kcmetro.cc.ma.us/longview/ctac/blooms.htm

For further Web-based information on Bloom's taxonomy:

http://www.eecs.usma.edu/cs383/bloom/default.htm
http://www.valdosta.edu/~whuitt/psy702/cogsys/bloom.html
http://www.eecs.usma.edu/usma/academic/eecs/instruct/howard/slidesho/sigcse2/index.htm
http://www.uct.ac.za/projects/cbe/mcqman/mcqappc.html

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