Exam Prep: Bloom's Taxonomy Packet

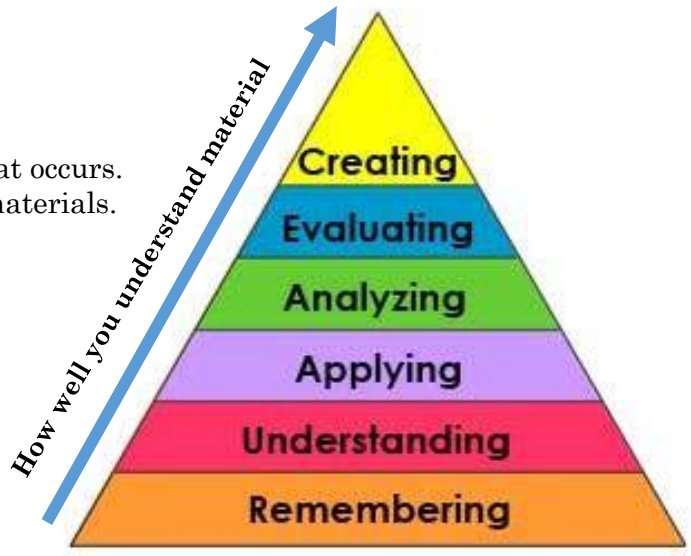
It is important to be effective while studying. This can eliminate wasted time studying without purpose or reason.

Habit: You study by reading and re-reading your notes. It seems like you are ready for the test, right? Nope.

Solution: *Understand the material on a deeper level*

Bloom's Taxonomy of Learning

This pyramid represents the magnitude of learning that occurs.
The lower levels represent shallow understanding of materials.
The higher levels represent mastery of materials.
Aim for the top when you study.



Remembering: can you recall the information?
Create charts and lists. Recite information

Understanding: can you explain ideas or concepts?
Summarize, draw, and teach others

Applying: can you use the information in a new way?
Model, build, present to novice audience

Analyzing: can you distinguish between different parts?
Chart, plan, question, and organize concepts

Evaluative: can you justify why it is that way?
Critique, evaluate, and recommend future directions

Creating: can you create a new product or point of view?
Produce a new game, poem, story, or algorithm using material

Adapted from "The A Game"
by Dr. Kenneth Sufka
and Iowa State University, Academic Success Center

Bloom's Taxonomy Key Verbs and Questions

Credit to: EDUPRESS EP 729 – www.edupressinc.com (from Quick Flip Questions for the Revised Bloom's Taxonomy)

This handout to help them better understand each Bloom's Category by utilizing the definitions, key verbs, and common question types per category.

LEVEL 1 – REMEMBERING		LEVEL 2 – UNDERSTANDING		LEVEL 3 - APPLYING	
Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.		Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas.		Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	
Key Words	**Questions**	**Key Words**	**Questions**	**Key Words**	**Questions**
Choose Define Find How Label List Match Name Omit Recall Relate Select Show Spell Tell What When Where Which Who why	What is…? Where is…" How did ___happen? Why did…? When did…? How would you show…? Who were the main…? Which one…? How is…? When did ___ happen? How would you explain…? How would you describe…? Can you recall…? Can you select…? Can you list the three…? Who was…?	Classify Compare Contrast Demonstrate Explain Extend Illustrate Infer Interpret Outline Relate Rephrase Show Summarize translate	How would you classify…? How would you compare…? How would you contrast…? State in your own words…? Rephrase the meaning…? What facts or ideas show…? What is the main idea of…? Which statements support…? Explain what is happening…? What is meant…? What can you say about…? Which is the best answer…? How would you summarize…?	Apply Build Choose Construct Develop Experiment with Identify Interview Make Use Of Model Organize Plan Select Solve Utilize	How would you use…? What examples can you find to…? How would you solve ___ using what you've 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 way 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…?

LEVEL 1 – REMEMBERING		LEVEL 2 – UNDERSTANDING		LEVEL 3 - APPLYING	
Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.		Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas.		Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	
Individual Study Strategies	**Group Study Strategies**	**Individual Study Strategies**	**Group Study Strategies**	**Individual Study Strategies**	**Group Study Strategies**
1) Practice labeling diagrams 2) List characteristics 3) Identify biological objects or components from flash cards 4) Quiz yourself with flash cards 5) Take a self-made quiz on vocabulary 6) Draw, classify, select, or match items 7) Write out the textbook definitions	1) Check a drawing that another student labeled 2) Create lists of concepts and processes that your peers can match 3) Place flash cards in a bag and take turns selecting one for which you must define a term 4) Do the above activities and have peers check your answers	1) Describe a biological process in your own words without copying it from a book or another source 2) Provide examples of a process 3) Write a sentence using the word 4) Give examples of a process	1) Discuss content with peers 2) Take turns quizzing each other about definitions and have your peers check your answer	1) Review each process you've learned and then ask yourself: What'd happen if you increase or decrease a component in the system or what would happen if you alter the activity of a component in the system? 2) If possible, graph a biological process & create scenarios that change shape or slope of graph	1) Practice writing out answers to old exam questions on the board and have your peers check to make sure you don't have too much or too little information in your answer 2) Take turns teaching your peers a biological process while the group critiques the content

LEVEL 4 – ANALYZING		LEVEL 5 – EVALUATING		LEVEL 6 - CREATING	
Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.		Present and defend opinions by making judgements about information, validity of ideas, or quality of work based on a set of criteria		Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.	
Key Words	**Questions**	**Key Words**	**Questions**	**Key Words**	**Questions**
Analyze Assume Categorize Classify Compare Conclusion Contrast Discover Dissect Distinguish Divide Examine Function Inference Inspect List Motive Relationships Simplify Survey Take Part In Test For Theme	What are the parts 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 Who would you classify…? How would you categorize Can you identify What evidence can you find…? What is the relationship…? Can you distinguish between…? What is the function of…? What ideas justify…?	Agree Appraise Assess Award Choose Compare Conclude Criteria Criticize Decide Deduct Defend Determine Disprove Dispute Estimate Evaluate Explain Importance Influence Interpret Judge Justify Measure Opinion Perceive prove Rate Recommend Select support value	Do you agree with the actions…? Do you agree with the outcome..? What is your opinion of…? How would you prove/disprove..? Assess the value/importance of? Would it be better if…? Why did they (the character) choose…? What would you recommend…? How would you rate…? How would you cite to defend the actions…? How could you determine…? What choices…? How would you prioritize…? What judgement can you make…? 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…? What was it better than…? How would you compare the ideas? How would you compare the people…?	Adapt Build Change Choose Combine Compile Compose Construct Create Design Develop Discuss Elaborate Estimate Formulate Happen Imagine Improve Invent Make Up Maximize Minimize Modify Original Originate Plan Predict Propose Solution Solve Suppose Test Theory	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 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…? Cab you predict the outcome if…? How would you estimate the results for…? What facts can you compile…? Construct a model that would change…? Think of an original way for the…?

LEVEL 4 – ANALYZING		LEVEL 5 – EVALUATING		LEVEL 6 - CREATING	
Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.		Present and defend opinions by making judgements about information, validity of ideas, or quality of work based on a set of criteria		Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.	
Individual Study Strategies	**Group Study Strategies**	**Individual Study Strategies**	**Group Study Strategies**	**Individual Study Strategies**	**Group Study Strategies**
1) Analyze and interpret data in primary literature or a textbook without reading the authors interpretation and then compare the authors interpretation with your own 2) Analyze a situation and then identify the assumptions and principles of the argument 3) Compare and contrast two ideas or concepts 4) Create a map of the main concepts by defining the relationships of the concepts using one- or two-way arrows	1) Work together to analyze and interpret data in primary literature or a textbook without reading the authors interpretation and defend your analysis to your peers 2) Work together to identify all of the concepts in a paper or textbook chapter, create individual maps linking the concepts together with arrows and words that relate the concepts, and then grade each other's concept maps	1) Generate a hypothesis or design an experiment based on information you are studying 2) Create a model based on a given data set 3) Create summary sheets that show how facts and concepts relate to each other 4) Create questions at each level of Bloom's Taxonomy as a practice test and then take the test	1) Each student puts forward a hypothesis about biological process and designs an experiment to test it. Peers critique the hypotheses and experiments 2) Create a new model/summary sheet/concept map that integrates each group member's ideas	1) Provide a written assessment of the strengths and weaknesses of your peers' work or understanding of a given concept based on previously determined criteria	1) Provide a verbal assessment of the strengths and weaknesses of your peers' work or understanding of a given concept based on previously described criteria and have your peers critique it