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*
Bloom’s Taxonomy Key Verbs and Questions

Credit to: EDUPRESS EP 729 – [www.edupressinc.com](http://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.

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<td>Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</td>
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<tr>
<td>Choose</td>
<td>What is...?</td>
<td>Classify</td>
<td>How would you classify...?</td>
<td>Apply</td>
<td>How would you use...?</td>
</tr>
<tr>
<td>Define</td>
<td>Where is...”</td>
<td>Compare</td>
<td>How would you compare...?</td>
<td>Build</td>
<td>What examples can you find to...?</td>
</tr>
<tr>
<td>Find</td>
<td>How did ___ happen?</td>
<td>Contrast</td>
<td>How would you contrast...?</td>
<td>Choose</td>
<td>How would you solve ___ using what you’ve learned?</td>
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<td>How</td>
<td>Why did...?</td>
<td>Demonstrate</td>
<td>State in your own words...?</td>
<td>Construct</td>
<td>How would you organize ___ to show ...?</td>
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<td>Label</td>
<td>When did...?</td>
<td>Explain</td>
<td>Rephrase the meaning...?</td>
<td>Develop</td>
<td>How would you show your understanding of ...?</td>
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<td>List</td>
<td>How would you show...?</td>
<td>Extend</td>
<td>What facts or ideas show...?</td>
<td>Experiment</td>
<td>What approach would you use to...?</td>
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<td>Match</td>
<td>Who were the main...?</td>
<td>Illustrate</td>
<td>What is the main idea of...?</td>
<td>Identify</td>
<td>How would you apply what you learned to develop...?</td>
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<tr>
<td>Name</td>
<td>Which one...?</td>
<td>Infer</td>
<td>Which statements support...?</td>
<td>Interview</td>
<td>What other way would you plan to...?</td>
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<td>Omit</td>
<td>How is...?</td>
<td>Interpret</td>
<td>Explain what is happening...?</td>
<td>Make Use Of</td>
<td>What would result if...?</td>
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<td>Recall</td>
<td>When did ___ happen?</td>
<td>Outline</td>
<td>What is meant...?</td>
<td>Model</td>
<td>Can you make use of the facts to...?</td>
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<td>Relate</td>
<td>How would you explain...?</td>
<td>Relate</td>
<td>What can you say about...?</td>
<td>Organize</td>
<td>What elements would you choose to change...?</td>
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<td>Select</td>
<td>How would you describe...?</td>
<td>Rephrase</td>
<td>Which is the best answer...?</td>
<td>Plan</td>
<td>What facts would you select to show...?</td>
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<td>Show</td>
<td>Can you recall...?</td>
<td>Show</td>
<td>How would you summarize...?</td>
<td>Select</td>
<td>What questions would you ask in an interview with...?</td>
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<td>Spell</td>
<td>Can you select...?</td>
<td>Summarize</td>
<td>translate</td>
<td>Solve</td>
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<td>Tell</td>
<td>Can you list the three...?</td>
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<td>Utilize</td>
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<td>1) Practice labeling diagrams</td>
<td>1) Check a drawing that another student labeled</td>
<td>1) Describe a biological process in your own words without copying it from a book or another source</td>
<td>1) Discuss content with peers</td>
<td>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?</td>
<td>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</td>
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<td>2) List characteristics</td>
<td>2) Create lists of concepts and processes that your peers can match</td>
<td>2) Provide examples of a process</td>
<td>2) Take turns quizzing each other about definitions and have your peers check your answer</td>
<td>2) If possible, graph a biological process &amp; create scenarios that change shape or slope of graph</td>
<td>2) Take turns teaching your peers a biological process while the group critiques the content</td>
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<td>3) Identify biological objects or components from flash cards</td>
<td>3) Place flash cards in a bag and take turns selecting one for which you must define a term</td>
<td>3) Write a sentence using the word</td>
<td>3) Give examples of a process</td>
<td>3) 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</td>
<td>3) Take turns teaching your peers a biological process while the group critiques the content</td>
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<td>4) Quiz yourself with flash cards</td>
<td>4) Do the above activities and have peers check your answers</td>
<td>4) Describe a biological process in your own words without copying it from a book or another source</td>
<td>4) Give examples of a process</td>
<td>4) If possible, graph a biological process &amp; create scenarios that change shape or slope of graph</td>
<td>4) Take turns teaching your peers a biological process while the group critiques the content</td>
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<td>5) Take a self-made quiz on vocabulary</td>
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<td>5) 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?</td>
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<td>6) Draw, classify, select, or match items</td>
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<td>6) If possible, graph a biological process &amp; create scenarios that change shape or slope of graph</td>
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<td>7) Write out the textbook definitions</td>
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<td>7) 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</td>
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### LEVEL 4 – ANALYZING
Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.

#### Key Words
- 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

#### Questions
- 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...?

### LEVEL 5 – EVALUATING
Present and defend opinions by making judgements about information, validity of ideas, or quality of work based on a set of criteria.

#### Key Words
- 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

#### Questions
- 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...?

### LEVEL 6 – CREATING
Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.

#### Key Words
- 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

#### Questions
- 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...?
- Can 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...?
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<td>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</td>
<td>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</td>
<td>1) Generate a hypothesis or design an experiment based on information you are studying</td>
<td>1) Each student puts forward a hypothesis about biological process and designs an experiment to test it. Peers critique the hypotheses and experiments</td>
<td>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</td>
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<td>2) Analyze a situation and then identify the assumptions and principles of the argument</td>
<td>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</td>
<td>2) Create a model based on a given data set</td>
<td>2) Create a new model/summary sheet/concept map that integrates each group member’s ideas</td>
<td>2) 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</td>
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<td>3) Compare and contrast two ideas or concepts</td>
<td>3) Create summary sheets that show how facts and concepts relate to each other</td>
<td>3) Create questions at each level of Bloom’s Taxonomy as a practice test and then take the test</td>
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<td>4) Create a map of the main concepts by defining the relationships of the concepts using one- or two-way arrows</td>
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