

## Bloom's Taxonomy Action Verbs List

| Knowledge   | Comprehension  | Application   | Analysis  | Synthesis  | Evaluation   |
|---|--|---|---|--|--|
| Student recalls, recognizes information   | Student demonstrates understanding of information  | Student applies information to complete task  | Student breaks down information into elements   | Student integrates discrete pieces of information  | Student uses information to make judgments   |
| Arrange<br>Define<br>Duplicate<br>Identify <sup>1</sup><br>Label<br>List<br>Match<br>Memorize<br>Name<br>Order<br>Recognize<br>Relate<br>Recall<br>Repeat<br>Reproduce<br>Select<br>State | Classify<br>Compare <sup>3</sup><br>Contrast <sup>3</sup><br>Convert<br>Defend<br>Describe<br>Discuss<br>Distinguish<br>Estimate<br>Explain<br>Express<br>Extend<br>Give example<br>Identify <sup>2</sup><br>Indicate<br>Infer <sup>3</sup><br>Locate<br>Paraphrase<br>Predict<br>Recognize<br>Rewrite<br>Review<br>Select<br>Summarize<br>Translate | Apply<br>Change<br>Choose<br>Compute<br>Demonstrate<br>Discover<br>Dramatize<br>Employ<br>Illustrate<br>Interpret<br>Manipulate<br>Modify<br>Operate<br>Practice<br>Predict <sup>3</sup><br>Produce<br>Relate<br>Schedule<br>Show<br>Sketch<br>Solve<br>Use | Analyze<br>Breakdown<br>Categorize<br>Compare <sup>4</sup><br>Contrast <sup>4</sup><br>Criticize<br>Diagram<br>Differentiate<br>Discriminate<br>Distinguish<br>Examine<br>Experiment<br>Illustrate<br>Infer <sup>4</sup><br>Model<br>Outline<br>Question<br>Relate<br>Separate<br>Subdivide<br>Test | Arrange<br>Assemble<br>Collect<br>Combine<br>Comply<br>Compose<br>Construct<br>Create<br>Design<br>Develop<br>Devise<br>Formulate<br>Generate<br>Plan<br>Prepare<br>Rearrange<br>Reconstruct<br>Reorganize<br>Revise<br>Rewrite<br>Set up<br>Summarize<br>Synthesize | Appraise<br>Argue<br>Assess<br>Choose<br>Conclude<br>Defend<br>Discriminate<br>Evaluate<br>Judge<br>Justify<br>Predict <sup>4</sup><br>Rate<br>Select<br>Summarize<br>Support<br>Value |

<sup>1</sup> Something seen before;

<sup>2</sup> Something new

<sup>3</sup> Few items

<sup>4</sup> Multiple items

## Summary of Bloom's Taxonomy

### **Knowledge**

Answers to knowledge questions indicate if a student knows and can recall specific information. Examples of questions that assess knowledge are some types of multiple-choice questions, true/false questions, definitions, matching questions, or lists. Questions that ask students to define, identify, list, or name are often "knowledge" questions.

### **Comprehension**

Responses to comprehension questions report information or observations. Students must possess some basic knowledge of the subject to correctly answer comprehension questions. Comprehension questions can fall into several categories and may require that students convert, summarize, classify, infer, compare, or explain information.

### **Application**

Application often involves applying rules or principles to new situations, using known procedures to solve problems or demonstrating how to do something. Questions that ask students to solve a problem using a known equation or to select a procedure to complete a new task would be considered application questions.

### **Analysis**

Answers to analysis questions may give directions, scrutinize data, explain how something works, or distinguish fact from opinion. Analysis requires that students break information into component parts to identify its organization. Students are expected to find links between data and interpretations and to discover which material is relevant to a task and which is extraneous. Analysis questions ask students to diagram, illustrate, outline or subdivide information.

### **Synthesis**

Synthesis combines a series of parts into a greater whole. Good answers to synthesis questions may predict the outcome for a particular event and may involve making generalizations and developing a "big picture" view of a phenomenon or feature. Questions that ask students to combine, compile, create, devise, plan, or organize are often considered synthesis questions. Questions may ask students to create multiple hypotheses to explain a phenomenon, to develop a plan to solve a problem or to devise a procedure to accomplish a task.

### **Evaluation**

Responses to evaluation questions make judgments about facts, data, opinions or research results using evidence and scientific reasoning. Good answers require students to analyze and synthesize information and clarify ideas. Evaluation questions might ask a student to appraise, criticize, justify, or support an idea or concept.

## Lesson Design Rubric

This rubric is designed to guide instructors as they redesign their lessons. In this context a lesson may represent a single class meeting or a series of meetings on a common topic. The rubric is divided into five sections: 1) Learning objectives; 2) Assessment and measurement; 3) Resources and materials; 4) Instructional strategies; and, 5) Alignment. The sections have a total of 10 elements that are equally weighted at 3 points each and are evaluated using the following scoring scheme:

- **3 points:** rubric element explicitly and/or pervasively addressed in lesson's materials
- **2 points:** rubric element addressed in majority of the lesson's materials
- **1 points:** rubric element addressed in some of the lesson's materials
- **0 points:** rubric element not addressed in the lesson's materials

The goal for each redesigned lesson is to earn a minimum score of 25/30 using the rubric.

### Learning objectives

- 1 **Learning objectives are measurable:** Learning objectives are clear statements that describe what students should know or be able to do at the conclusion of the lesson. Learning objectives represent specific competencies, skills and/or knowledge that students are to master or demonstrate. Learning objectives should avoid jargon and technical language unless specific vocabulary terms are required.

### Assessment and Measurement

- 2 **Assessments measure the learning objectives:** Formative and summative assessments (e.g., in class activities, quizzes, home works, exam questions) will provide opportunities to determine the extent to which students have met the learning objectives.
- 3 **Assessments are sequenced, varied and appropriate to the content:** The sequence and schedule of the assessments match the content. Where possible, assessments should vary in type and duration and build on previously acquired knowledge within the course or in prerequisite courses.
- 4 **Assessments address goals at successively higher cognitive levels:** If appropriate, assessments progress from lower level knowledge recall to higher order application of knowledge and/or knowledge creation. Feedback from these assessments informs the student of their level of learning.

## Resources and Materials

- 5 **Instructional materials should be sufficiently diverse and contribute to the stated learning objectives:** Course materials (e.g., textbooks, lecture notes, multimedia, web sites) should directly support core concepts reflected in learning objectives and course goals. The level of detail in supporting materials is appropriate for the level of the course, and provides sufficient depth for students to achieve the learning goals.

## Instructional Strategies

- 6 **Learning strategies and activities support stated learning objectives and goals:** The learning activities promote the achievement of the stated learning objectives and goals. Students should engage with the course content using different types of activities. Activities should be designed to support reinforcement and mastery of concepts in multiple ways.
- 7 **Learning strategies and activities promote student engagement with the materials:** Where possible, activities should connect to personal experiences of students, motivate and engage students, connect to real world experiences, or build on what students know and address their initial beliefs.
- 8 **Instructional strategies should encourage student interactions:** Activities should provide multiple opportunities to foster interactions that facilitate students' understanding and mastery of the learning objectives and goals. Activities should foster instructor-student and student-student interactions (e.g., working in small groups) where appropriate.
- 9 **Learning activities encourage student metacognition:** The activities should provide opportunities for students to reflect on and assess how their understanding of concepts changes as they learn. Activities should include an opportunities for reflection, discussion, and synthesis. Students should be able to assess their own learning and confirm they are on the right track.

## Alignment

- 10 **Teaching materials, assessments, resources and learning activities align with one another:** A constructive alignment approach suggests that goals, learning activities and assessments within each section of the course align with one another and directly with stated learning objectives and goals. A curriculum map that identifies core skills and content, learning strategies and resources can be used as an effective way to ensure alignment.