

## Multiple Choice Questions: Best Practices

### Introduction to Multiple Choice Questions

#### **Advantages**

1. Easy and quick to grade
2. Reduce some of the burden of large classes
3. Can assess all levels of Bloom's Taxonomy – knowledge, understanding, application, analysis, synthesis, and evaluation
4. Useful as a diagnostic tool because wrong choices can indicate weaknesses and misconceptions
5. Familiar to students

#### **Disadvantages**

6. Difficult and time-consuming to construct quality questions
7. Can be ambiguous to students
8. Encourages students to find the correct answer by process of elimination
9. Limited creativity
10. Good test takers can guess
11. Not applicable for all course objectives

#### **Anatomy of a Multiple Choice Question**

12. Stem = the sentence-like portion of the question
13. Alternatives = all the possible choices in the question
14. Distractor = the wrong answers

#### **Purpose of Guidelines**

15. Use of the guidelines will help you write quality questions
16. Quality questions...
  - foil good test takers
  - don't hinder poor test takers
  - discriminate those who know from those who don't

### Developing Multiple Choice Questions

#### **Guidelines**

##### *17. Stem Specific Guidelines*

- The stem should be clear, brief (but comprehensive), and easy to read.
- Do not include irrelevant information in the stem.
- The stem should pose a problem
- Include repeated or redundant phrases in the stem instead of the alternatives.
- State the stem in positive form avoiding words like except, but, and not.
- Write the stem in a complete sentence

18. *Alternative Specific Guidelines*

- Make sure the grammar and syntax in the stem and alternatives is the same.
- Your alternatives should be worded in a similar way avoiding clues and key words.
- Whether a question asks for the correct alternative or best response, there should be only one clear answer. If you are looking for the best responses, you should explain that clearly in the directions.
- All alternative should be plausible.
- Keep alternatives parallel in form and length so that the answer does not stand out from the distractors.
- Avoid the use of specific determiners like always, never, and only in the alternatives.
- Alternatives "all of the above" and "none of the above" should be avoided because they reduce the effectiveness of a question.
- The alternatives should be presented in a logical order like alphabetically or numerically.

19. *Distractor Specific Guidelines*

- Use as many functional distractors as possible – functional distractors are those chosen by students that have not achieved the objective or concept.
- Use plausible distractors.
- Use familiar, yet incorrect phrases as distractors.
- Avoid the use of humor when developing distractors.

20. *General Guidelines*

- You should avoid using textbook, verbatim phrasing.
- The position of each correct answer in the list of alternatives should be as random as possible. If possible, have each position be the correct answer and equal number of times.
- The layout of the multiple choice questions should be done in a clear and consistent manner.
- Use proper grammar, spelling, and punctuation.
- Avoid using unnecessarily difficult vocabulary.
- Analyze the effectiveness of each question after each administration of a test. A well-constructed test contains only a few questions that more than 90 percent or less than 30 percent of students answer correctly. Difficult items are those that about 50-75 percent answer correctly and moderately difficult questions fall between 70-85 percent (Davis 1993, 269).
- You should expect each question to take approximately 1 minute to answer.
- Have a colleague review your test before you give it to students.
- In order to produce a well-constructed test, you should begin writing questions in advance of the day before the test.
- Directions should be stated clearly at the beginning of each section of the test.

21. *Resources*

- Davis, B. *Tools for Teaching*, San Francisco: Jossey-Bass Publishers, 1993.

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- The Virginia Commonwealth University Center for Teaching Excellence has several resources on their website found at: [http://www.vcu.edu/cte/resources/nfrg/12\\_03\\_writing\\_MCQs.htm](http://www.vcu.edu/cte/resources/nfrg/12_03_writing_MCQs.htm).
- Burton, S., Merrill, P., Sudweeks, R., Wood, B. *How to Prepare Better Multiple Choice Test Items: Guidelines for University Faculty*, Provo: Brigham Young University Testing Services and The Department of Instructional Science, 1991. A PDF can be found at: <http://testing.byu.edu/info/handbooks/betteritems.pdf>.
- Vanderbilt University Center for Teaching "Writing Good Multiple Choice Test Questions" found at: <http://cft.vanderbilt.edu/teaching-guides/assessment/writing-good-multiple-choice-test-questions/>.

### **Critical Thinking & Multiple Choice Questions**

Though writing higher-order thinking multiple choice questions is difficult, it is possible when using Bloom's taxonomy.

22. **Knowledge** – questions written at this level ask students to remember factual knowledge. The outcome is for students to identify the meaning of a term or the order of events. Examples questions are:

- What is...?
- Who were the main...? Can you list three?
- Which one...?
- Why did...?
- Can you select...?

23. **Understanding** (Comprehension) – question written at this level require students to do more than memorize information to answer correctly. This level asks for basic knowledge and its use in context. The outcome is for students to identify an example of a term, concept, and principles or to interpret the meaning of an idea. Example questions are:

- Which of the following is an example of...?
- What is the main idea of...?
- How can you summarize...?
- If A happens, then \_\_\_\_ happens.
- Which is the best answer?

24. **Application** - questions written at this level require students to recognize a problem or discrepancy. The outcome is for students to distinguish between two items or identify how concepts and principles are related. Example questions are:

- What can result if...?
- How can you organize \_\_ to show \_\_?
- How can you use...?
- What is the best approach to...?

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25. **Analysis** – questions written at this level requires students to break down material into its component parts including identifying the parts, relationships between them, and the principles involved. The outcome is for students to recognize unstated assumptions or determine whether a word fits with an accepted definition or principle. Example questions are:

- How is \_\_\_ related to \_\_\_?
- What conclusions can be drawn from...?
- What is the distinction between \_\_\_ and \_\_\_?
- What ideas justify...?
- What is the function of...?

26. **Synthesis** – questions written at this level require students to create new connections, generalizations, patterns, or perspectives. The outcome is for students to originate, integrate, or combine ideas into a product, plan, or proposal. Example questions are:

- What can be done to minimize/maximize...?
- How can you test...?
- How can you adapt \_\_\_ to create a different...?
- Which of the following can you combine to improve/change...?

27. **Evaluation** – questions written at this level require students to appraise, assess, or critique on the basis of specific standards. The outcome is for students to judge the value of material for a given purpose. Example questions are:

- How can you prove/disprove...?
- What data was used to make the conclusion...?
- Which of the following support the view...?
- How can you asses the value or importance of...?
- Which of the following can you cite to defend the actions of...?

**28. Resources**

- The University of Arizona has a handout with example multiple choice questions at each level found at:  
<http://omse.medicine.arizona.edu/sites/omse.medicine.arizona.edu/files/images/Blooms.pdf>.
- University of Texas Instructional Assessment Resources has example questions at:  
<http://omse.medicine.arizona.edu/sites/omse.medicine.arizona.edu/files/images/Blooms.pdf>