The Tagoras Collection

Writing Effective Multiple-Choice Questions

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Assessment is a critical part of learning. We know that formative evaluation helps learners consolidate knowledge as they're taking it in, and summative evaluation gives instructors, learners, and other interested parties (associations, accrediting bodies, employers, etc.) a stick by which to measure mastery of concepts.

But how do you write effective assessments, to ensure you and your learners reap the full benefits? Read on for some general tips on assessment writing, as well as a more detailed look at the pervasive multiple-choice question type.

The Critical Tie to the Learning Objectives

Assessments, first and foremost, must be appropriate. To ensure relevancy, derive your questions from your learning objectives. Just as your learning objectives fit Bloom's taxonomy, so too should your assessment questions.

When writing assessment questions, keep in mind the cognitive level at which you should test your learners, and choose your question verbs appropriately. The table that follows categorizes question verbs according to Bloom's taxonomy.[1]

The table by no means provides a complete list of question verbs. Note too that a verb does not always fit squarely in one level— for example, *describe* may be used for knowledge or comprehension questions— but such crossover verbs are usually found in neighboring levels, not at opposite ends of the taxonomy.

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[1] The table is based on information available on the University of Victoria's Web site at http://www.coun.uvic.ca/learning/exams/blooms-taxonomy.html, which in turn is based on Benjamin S. Bloom's seminal *Taxonomy of Educational Objectives*, originally published in 1956.

Bloom's Level	Question Verbs
Knowledge	List, define, tell, describe, identify, show, label, collect, examine, tabulate, quote, name
Comprehension	Summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend
Application	Apply, demonstrate, calculate, complete, illustrate, show, solve, examine, modify, relate, change, classify, experiment, discover
Analysis	Analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer
Synthesis	Combine, integrate, modify, rearrange, substitute, plan, create, design, invent, compose, formulate, prepare, generalize, rewrite
Evaluation	Assess, decide, rank, grade, test, measure, recommend, convince, select, judge, explain, discriminate, support, conclude, compare, summarize

Overarching Assessment-Writing Tips

Below are some general tips to help you in writing your assessment questions.

1. **Write questions that test above the knowledge and comprehension level.**
   While it may be appropriate to ask some lower-level questions, keep in mind that adult learners tend to get the most out of education when it is clear how to apply the learning to specific tasks or problems is clear. This means questions targeted at the application level and higher are more likely to be an effective measure of the learning.

2. **Write as you go.**
   Writing good assessments is hard, especially when you focus on higher-level questions. Spread the work out by writing questions and the feedback as you develop the educational program. After you prepare the content for a learning objective, stop and write as many questions as you can. Later, preferably after a day or more, you can decide which questions are for review and which for the final examination—and you can shelve questions that seem unclear, give the answer away, or are otherwise inappropriate.

3. **Focus on what's important.**
   Don't try to be tricky or make things hard for the sake of difficulty. Remember assessments are meant to reinforce and measure learning, so focus on the learning objectives, not random bits of information.

Tips for Effective Multiple-Choice Questions

For online self-study, multiple-choice questions are the mainstay of assessments. The following tips speak specifically to this question type.

1. **Make use of tried-and-true techniques.**
   Familiarize yourself with common techniques and use them as the framework for your own questions.
   a. **Premise/consequence questions** ask learners to identify the outcome of a given circumstance.
   b. **Analogies** require learners to map relationships between items in a different context.
   c. **Case studies** provide real-world examples and can supply content on which to base a series of questions.
   d. With **incomplete scenarios**, learners have to supply what's missing.
   e. **Problem/solution evaluations** engage learners at the top of Bloom's hierarchy, asking them to evaluate proposed solutions to a problem.[2]

2. **Write the stem clearly and succinctly.**
   Make it easy for learners to understand the question. Keep the question short—wordy stems can bury the question and confuse students. Avoid "not" questions (e.g., "Which of the following is not true?"), which can easily be misread. Instead, ask "Which of the following is/are true? (Check all that apply)." Emphasize key words. For example, if two questions are similarly worded but one asks about a *summative* assessment and the next asks about *formative* assessment, use boldface or italics (as done here) to highlight the important difference.

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[2] These question frameworks are taken from "Techniques for Writing Multiple-Choice Items that Demand Critical Thinking," available at http://tep.uoregon.edu/resources/assessment/multiplechoicequestions/sometechniques.html, where examples of each question framework are provided.

3. **Keep the answer options clear and succinct too.**
   Put repeated words and phrases in the stem to avoid duplicating them in each answer option.

4. **Don't give the answer away.**
   Avoid using the exact phrases used in the presentation of the content—that lowers the question to the pure recall level. Write the correct answer first; then, make the distracters, or incorrect answer options, about the same length and parallel in structure—you don't want grammar to give the answer away. Make your distracters plausible by using words that should be familiar to the learners. Use categorical and vague words sparingly, if at all; *always* and *never* usually indicate a wrong answer, while *usually* and *typically* often indicate a correct answer. Avoid "all of the above"—if a student can rule out just one answer option, then she can also rule out "all of the above."

5. **Aim for a minimum of three questions per learning objective and two to four distracters.**
   Assuming all your learning objectives are equally important, ask the same number of questions per learning objective—if you ask five questions about the first learning objective, and only one about the second, you're giving the first more weight. Research shows that questions with three answer options are about as effective as four-option questions. You should not provide more than five answer options—the question is not more valid, and there's no reason to make your assessment writing harder.[3]

6. **Provide feedback.**
   Review questions constitute *formative* evaluation (versus *summative* evaluation, like that of a final exam) and provide students an opportunity to learn from their mistakes and solidify their understanding. Be sure to provide meaningful, relevant feedback. Explain why the correct answer is right, and explain why each distracter is wrong. The feedback for each distracter should be different and speak specifically to why that answer option is incorrect. If you are developing formative review questions and a final, summative evaluation, avoid repeating review questions in the final test—you want to gauge learning, not recall.

On the following page, you will find a simple worksheet to help you develop multiple-choice questions.

Assessment is critical to learning, and we can better serve our learners by ratcheting up skills—and, of course, learn something in the process ourselves. ∎

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[3] Several of these tips are based on information in "Practical Suggestions for Writing Multiple-Choice Questions," available at http://tep.uoregon.edu/resources/assessment/multiplechoicequestions/practicalsuggestions.html.

Multiple-Choice Question Worksheet

Assessments should measure learning objectives. As a first step toward writing a multiple-choice question, state the learning objective you're assessing.

Learning objective:

Now write three or more questions for the learning objective. Write the stem and then the correct answer. Write at least two and no more than four distracters—keep them about the same length as the correct answer, and keep the structure of all options parallel to avoid giving the answer away. Provide unique feedback for each distracter.

Duplicate the boxes on the worksheet to accommodate all your questions on all your learning objectives and the appropriate number of distracters.

Question #1

Stem:

Correct answer:

Correct answer feedback:

Distracter #1:

Distracter #1 feedback:

Distracter #2:

Distracter #2 feedback:

References

"Bloom's Taxonomy," University of Victoria, accessed April 13, 2012, http://www.coun.uvic.ca/learning/exams/blooms-taxonomy.html.

"Practical Suggestions for Writing Multiple-Choice Questions," Teaching Effectiveness Program, Teaching and Learning Center, University of Oregon, accessed April 13, 2012, http://tep.uoregon.edu/resources/assessment/multiplechoicequestions/practicalsuggestions. html.

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About the Author

Celisa Steele has led the development of successful online education sites with smaller groups like the Frameworks Institute and the Alliance of Chicago Community Health Services and large national and multinational organizations like the American Red Cross, the American College of Radiology, the Society for Human Resource Management, and WebJunction, an initiative of the Bill & Melinda Gates Foundation.

Celisa is a managing director at Tagoras, where she serves as editor-in-chief of the company's research publications. She was cofounder and COO of Isoph, one of the leading providers of e-learning services to the nonprofit sector. Prior to Isoph, she worked in creative services at Quisic, a developer of high-end online course content for major universities and Global 2000 companies. Before joining Quisic, Celisa worked in curriculum development for the not-for-profit Family and Children's Resource Program (FCRP), part of the Jordan Institute for Families at the School of Social Work at the University of North Carolina at Chapel Hill.

A veteran of the e-learning world, Celisa has served on the research committee of the eLearning Guild and, multiple times, as a judge in Brandon Hall's annual e-learning awards. She currently serves on ASAE's Professional Development Section Council.

Celisa is also a published poet (www.celisasteele.com).

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