

TEACHING ELEMENTS: ASSESSING ONLINE STUDENTS

ONLINE MULTIPLE CHOICE TEST STRATEGIES

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While multiple choice tests are not always the optimal assessment tool for all learning objectives, they can be very useful in an online environment to help assess whether students are keeping up with the content and to provide multiple low-stakes assessment points. Also, by using features like publisher-generated test banks and automatic grading in myCourses, instructors can take advantage of multiple choice quizzes as one tool while reserving time to review and grade more complex assessments.

Creating multiple choice questions

Multiple-choice questions have three basic parts:

- **The stem:** the question
- **The keyed response:** the correct choice(s)
- **The distractors:** the incorrect choices

THE STEM

- Be clear in instructions: are students looking for the *correct* answer? The *best* answer?
- Avoid negative stems, e.g., “Which would you *not* expect to see in a nuclear reaction?”
- Avoid absolute terms like “all,” “always,” and “never.”
- Make sure the stem contains all the information needed to answer the question.
- To simplify complex answers, consider writing *multiple select* questions, e.g., “Which *two* of these elements are gases at room temperature?”
- When possible, write the stem as a question rather than an incomplete statement.

THE KEYED RESPONSE

- Make sure that the correct answer is brief and clear.
- Do not make the correct answer longer or more detailed than the distractors.
- Avoid “none of the above” or “all of the above” as answers.

THE DISTRACTORS

- Make sure all distractors are worded similarly and are grammatically consistent with the stem.
- Keep distractors plausible.
- Avoid humorous or jokey distractors.

Multiple choice tests in myCourses

[myCourses](#) provides options to simplify the administration of multiple-choice tests, reduce opportunities for cheating, and streamline the online testing process. Some of these include:

- **Creating question libraries** that pull questions from a central pool for inclusion in multiple quizzes and multiple courses
- **Time limitations** that make tests available to the class only at a certain time (for example, over a 24-hour period) or for a certain duration (e.g., 30 minutes)
- **Randomizing questions** that appear on individual students' tests, so they can't easily share answers

In addition, myCourses can include auto-corrected short-answer fill-in-the-blank questions. This allows instructors to ask about key names or terms and drive home the importance of spelling them correctly (since students won't get credit otherwise).

Multiple-choice strategies

More important than these technical administration aspects of a test is creating multiple choice tests and quizzes that are fair, effective, and go beyond simple recall. By designing some exams to be open textbook or open notebook, you can signal this to your students.

Questions requiring analysis, not just recall may use stems such as:

- Of these true statements, which is the primary reason...?
- Which of these true statements best explains...?
- Which two of these observations illustrate...?

Other strategies for more challenging multiple choice questions include basing them on a case study or other reading, or using a two-tiered question. For example (Lawson 2000):

1. Suppose you have two clay balls of equal size, shape, and weight. You flatten one ball into a pancake-shaped piece. Which of these statements is correct?
 - a. The pancake-shaped piece weighs more than the ball
 - b. The two pieces still weigh the same
 - c. The ball weighs more than the pancake-shaped piece
2. This is true because:
 - a. the flattened piece covers a larger area.
 - b. the ball pushes down more on one spot.
 - c. when something is flattened it loses weight.
 - d. clay has not been added or taken away.
 - e. when something is flattened it gains weight.

Resources and references

Green, K. [Sample multiple choice questions that test higher order thinking and application](#). Washington State University. Office of Assessment of Teaching and Learning.

Kominski, C. [Designing Multiple Choice Tests to Measure Higher Order Thinking](#), University of North Texas Health Science Center, 2012.

Lawson, A.E. 1978. Development and validation of the classroom test of formal reasoning. *Journal of Research in Science Teaching*, 15(1): 11-24.

Weimer, M. [Tips for Writing Good Multiple Choice Questions](#). *Faculty Focus*. March 5, 2014.