Pedagoggles: Exploring Teaching Practice - Vol. 2 No. 4

Writing Effective Multiple Choice Questions

For all Pedagoggles: http://staff.georgianc.on.ca/ctl/pub/pedagoggles.htm

Lens on Learning Theory

Multiple Choice Questions (MCQs) may be used in both summative and formative tests, as well as for diagnosis of student learning problems. MCQs have a reputation for being easy; this misconception suggests that they can only test recall but not the higher levels of learning indicated by Bloom's taxonomy. As with any assessment mechanism, the key is in creating questions that test the required skills at the appropriate level. Increasing student numbers and greater assessment burdens may make use of MCQs particularly attractive, especially if marking and provision of feedback can be automated (for example online).

> *"I had previously thought that higher-level MC questions would require a lot more work than they do. I also enjoy being more creative as I cast the topic into a unique setting that requires my students not only to recall but also to apply concepts. However, what has surprised me most is how much more my students 'enjoy' higher level assessment questions than recall questions."*
>
> *Anonymous Faculty Member*

Reflection on Practice

- How can I write MCQ test questions that prevent overall scores from being unrealistically high?
- How do students guess correct answers, and how can I defeat this?
- How can I use MCQs and still measure higher level thinking?
- Is there a way to provide feedback when using MCQs?

Expanding Your Teaching Toolkit

Stem	The stem is the introductory question or incomplete statement at the beginning of each test item.
Options	The options consist of the answer. This includes the correct option and the distractors.

1. Write distractors (wrong-response options) that are plausible

- Do not write distractors that are obviously wrong or nonsense words and unreasonable
- Write the options so they are homogeneous in content
- Employ as distractors answers from previous open-ended exams to provide plausible answers

2. Use a question format

- MCQs should be ideally be prepared as questions (rather than incomplete statements)

Incomplete Statement Format: Jack Sprat could eat no _____ .
Direct Question Format: What food does Jack Sprat **NOT** eat?

3. Emphasize critical thinking and higher level cognitive skills beyond simple recall

- Use *memory-plus application* questions.
- Memory-plus application questions place the concept in a life situation or context that requires the student to first recall the facts and then apply or transfer the application of those facts into a situation.

4. Keep Option Lengths Similar - Avoid making your correct answer the long or short answer.

5. Balance the Placement of the Correct Answer - Correct answers are usually the second and third option, use the other positions.

6. Be grammatically correct - Use simple, precise and unambiguous wording. Grammatical errors hint at the right answer.

7. Do not write clues that hint at the correct answer – You might answer one question in a test by giving the answer in the stem of another question.

8. Avoid negative questions and questions that use the words *never, always*, and *only* - Students may be able to use these to find an incorrect answer without knowing the correct answer.

9. Use only one correct option (ensure that none of the distracters might be argued as correct)

- The distracters should include one and only one correct or clearly best answer.
- With one correct answer, alternatives should be mutually exclusive and not overlapping.
- Using MC with questions containing more than one right answer results in arguments over grades.

10. Give clear instructions – explain the purpose and aim of the questions.

11. Use a single, clearly-defined problem and include the main idea in the stem - Students should understand the problem without having to read the response options.

12. Avoid the "All the Above" & "None of the Above" options - Students only need to recognize two correct options to get the answer correct and you will not determine if students know the correct answer.

13. Don't use MCQs when other types are more appropriate.

14. Remember that tests are for measuring learning, not teaching - Avoid devising questions that are really teaching moments. For example, many teachers develop TF questions where the majority of the answers are true.

Blackboard MC Tests & Feedback

MCQs are easily constructed using Blackboard's built in test engine. (Respondus 2.0 is also available free for faculty to rapidly develop online MC quizzes). In addition to the advantages available when using Bb's testing tools, you have the option to develop instant feedback for each question. Effective feedback explains why a student may have answered wrong. Using plausible distracters based on common student mistakes is particularly useful in communicating to students the gaps in their knowledge or understanding. The following are useful pointers for developing feedback:

- Compose your feedback as you write the questions. Notes to yourself about why you are using particular distracters based on common mistakes will help you write effective feedback.
- Make your feedback detailed - 'no' or 'wrong' does not help students identify the reason for their mistake.
- Direct students to the resources that can help them to correct their understanding - rather than simply giving them the correct answer.
- Provide encouraging feedback for students who have answered questions correctly or who have got something 'nearly right' by choosing a particularly plausible distracter.

Guides to Designing MCQs:

Carneson J, Delpierre G and Masters K *Designing and managing multiple choice questions* <http://www.le.ac.uk/castle/resources> (explores different types of question and Bloom's taxonomy)

McKenna C and Bull J (1999) *Designing effective objective test questions: an introductory workshop* <http://caacentre.lboro.ac.uk/dldocs/otghdout.pdf> (useful guide to question design, with examples of tested questions demonstrating alternative formats)

Bush M (1999) *Alternative marking schemes for online multiple choice tests* <http://caacentre.lboro.ac.uk/dldocs/BUSHMARK.pdf>