Designing an MCQ/Short answer exam in Learn.UQ

Multiple Choice Question (MCQ) and short answer tests have traditionally been criticised for only being able to assess lower order or unistructural thinking skills, but they can be used to assess higher order or multistructural thinking skills as well.

Exam design considerations

Your multiple choice and/or short answer exam questions should be designed to enable students to demonstrate the learning verbs listed in your course learning outcomes (e.g. define, classify, apply, analyse, predict, evaluate, justify).

A useful way to check that your questions do this is to ask, *"How do I make that learning verb visible?"* This will give you assurance that you are setting the right kinds of questions (or mix of questions) for your exam.

Learning verb	Question options
define	• An MCQ where students have to select the correct definition. • A 'fill in the blanks' question where students have to select the correct alternative from a drop down list to complete the definition. • A short answer question where students have to write out the definition.
classify or sequence	• A 'matching' question where students have to classify symptoms and match them with their associated ailments. • A 'matching' question where students have to match the step in the sequence to the correct number.
apply	• A series of multiple choice or short answer questions in relation to a short (60–100 words) scenario or other stimulus material (e.g. an image or a quote). • A short answer problem-based question.
interpret and analyse	• An MCQ or short answer question in relation to a data set or other stimulus.
predict, extrapolate, hypothesise	• Follow up the analysis question* and ask students to predict what might happen next, or in a different set of circumstances, or to a person with different characteristics. • Provide an incomplete diagram/graph/data set and ask an MCQ where students have to select which option would accurately complete the diagram/graph/data set requiring them to identify trends/patterns, perform calculations, extrapolate. • Follow this up with a short answer question* asking students to explain their answer. This makes the thinking behind the selection more visible.
evaluate	• Ask an MCQ that directly asks students to judge something (an assertion or a choice or a decision). **Avoid** phrasing the distractors as simple binary options e.g. the assertion is 'wrong' or 'right' or 'valid' or 'invalid'. • Provide a short scenario (60–100 words). Ask a multiple choice question with a question like *Which one of the following actions is the most appropriate in the circumstances?* Students have to exercise judgement to select the right option.
justify	• Follow the evaluative MCQ* with a short answer question asking students to justify why they selected that answer and not the others.

* *If you are using MCQ and short answer questions in combination to get at higher order thinking skills,* ***do not*** *randomise the order of those questions.*

Writing effective MCQs

Writing effective MCQ questions and tests takes considerable time and care. This is particularly important when preparing tests for high-stakes assessments. If you are new to writing MCQs, the following may be helpful:

- Write 1–2 questions each week from what was taught and discussed. It is much easier to do this progressively than to try to put together a series of questions towards exam time.
- As above, set a mix of questions to cover all the learning outcomes in your course. Be particularly aware of this if there are multiple academics that contribute questions to an exam, and make sure they are not all recall based.
- Ask colleagues to peer review the questions and refine if necessary.

Writing the question stem

- For simple questions, use clear straightforward language, avoiding negatives (e.g. it is FALSE that...).
- Avoid unnecessary information or words, particularly if you are providing a short scenario. If using stimulus material (data set, quote, image etc.) always check the capability of Blackboard first.
- Put as much of the question in the stem as possible, rather than duplicating words in each option.

Writing the answer options

- Write the correct answer first to ensure you have a clear and defendable correct answer.
- MCQs should contain four or five answer options (i.e. correct answer plus at least 3 or 4 distractors). Fewer options increase the statistical probability of students accurately guessing the correct answer thereby reducing the reliability of the exam.
- Distractors must be incorrect, but should be plausible. To make them more plausible, you can use words students should be familiar with, or include common misconceptions/mistakes.
- Avoid providing ‘cues’. If you use a significant word in the correct answer, make sure you use it in the distractors as well so as not to immediately exclude or direct attention to particular options.
- Check combinations – make sure that multiple use of the same words across distractors does not give the answer away.
- Answer options should be about the same length. Too much detail or different grammatical structure can give the answer away.
- Avoid using “all of the above”. Eliminating one distractor immediately eliminates this option as well.

Support

For exam or assessment task design support, please email italis12020@@uq.edu.au with your course code and name and brief details of what you would like assistance with.

Alternatively, book a time at picktime.com/italiteachingconsultations2020 for a direct consultation.