

Using Blackboard quizzes for assessment

Blackboard's Quiz tool has a rich feature set that enables you to create and deliver sophisticated online assessments. This guide aims to help you create effective assessments using the Quiz tool.

How to write good questions

Multiple-choice questions (MCQs) are often criticised for their inability to test more than recall of facts, but this is a misconception and well-designed questions can effectively test higher-order learning outcomes. You should start by reading this paper:

Scully, Darina (2017) [Constructing Multiple-Choice Items to Measure Higher-Order Thinking](#), *Practical Assessment, Research, and Evaluation*: Vol. 22 , Article 4.

It uses the revised version of Bloom's taxonomy of learning objectives as a framework to list the verbs associated with each and shows how those can be used as keywords when writing questions.

Knowledge	Comprehension	Application	Analysis	Synthesis *	Evaluation *
Identify	Describe	Apply	Analyse	Compose	Appraise
Define	Differentiate	Calculate	Categorize	Construct	Assess
Know	Discuss	Classify	Compare	Create	Evaluate
List	Explain	Develop	Contrast	Design	Judge
Name	Rephrase	Examine	Distinguish	Formulate	
Recognize	Restate	Solve	Determine	Modify	
State	Reword	Use	Investigate	Plan	

* Note that it is very difficult to create questions that test Synthesis or Evaluation.

It goes on to outline four techniques that can be used to write good questions on this foundation:

1. **Manipulation of verbs** that assess higher-level outcomes by replacing them with their noun derivative and preceding them with a knowledge-level verb.
e.g. 'explain' can be replaced with 'Identify the most accurate explanation'
2. **Item flipping** presents a specific instance of a concept in the question stem and asks the student to identify the correct concept. The key, as usual, is to have effective distracters (incorrect answers) that are plausible but similar concepts.
3. **Use of high quality distracters** that require strong understanding of the topic. One option is to require students to identify the 'best answer' where all the answers are true to some degree. It is vital that the academic authors agree on the 'best answer'.
4. **Tapping 'multiple neurons'** is an approach to creating questions that require an understanding of the interconnections between knowledge. It is recommended that all questions should be designed as 'two-neuron' items.

The paper clearly explains all these techniques in detail and includes illustrative examples of each. The author concludes with a useful discussion of issues around validity i.e. whether questions effectively test the desired learning outcomes.

If you are unfamiliar with Anderson and Krathwohl's (2001) revision of Bloom's taxonomy (Bloom & Krathwohl, 1956), we highly recommend this 3-page guide and especially the graphic on page 3 which plots Bloom's cognitive processes against four knowledge domains (factual, conceptual, procedural and metacognitive) and provides simple examples at each level.

[A Model of Learning Objectives](#) – based on *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives* by Rex Heer, Center for Excellence in Learning and Teaching, Iowa State University

- Bonus resource: [50 ways to use Bloom's taxonomy in class](#) with extra 'digital learning' verbs.

How to avoid writing bad questions

Inexperienced question authors often start by writing poor-quality questions with avoidable faults:

- Unclear or ambiguous questions
- Easy-to-guess or 'test-wise' answers
- Poor-quality distracters that can be easily spotted
- Errors and mistakes

Instead of paraphrasing existing good advice, we direct you to read this excellent guide:

[Writing Good Multiple-Choice Exams](#)

by Dawn Zimmaro of the Faculty Innovation Centre at the University of Texas.

Note the use of a Test Blueprint (p10) to ensure you cover the topics required at the appropriate level.

Page 13 lists helpful hints to consider when writing questions, and these are complemented by the advice on 'preparing your students for taking multiple-choice tests' (p20). There are plenty of examples to help you recognise both good and poor question design.

The guide ends with an introduction to the analysis of MCQ responses and presents the maths used to test the **discrimination** of each question i.e. does it enable you to distinguish between high- and low-performing students? Blackboard provides [automated item analysis](#) to simplify this process, but of course it can only be done after the students have taken the exam.

Optional additional reading: [Constructing Written Test Questions For the Basic and Clinical Sciences](#) by the US National Board of Medical Examiners is the most authoritative guidance on writing good questions. It provides excellent advice based on decades of high-stakes examinations but naturally focuses on medical topics. That said, there is much that is equally applicable to other disciplines with some imagination.

Things to think about

- Creating an online MCQ exam takes a lot of time and effort. The questions need to be written, checked by colleagues, implemented in Blackboard and tested. Ideally this process needs to be completed at least a week before the exam in case of last-minute problems.
- The time and effort required to create the exam is balanced by the time saved afterwards through automated marking. With very large cohorts there may even be an overall time saving, but for small cohorts the up-front effort greatly outweighs any savings.
- Note that some additional effort will be needed in future years to review and update the exam. Questions with low discrimination should be discarded and new questions written as required.
- You should work with colleagues to write and check your questions – it is a bad idea to consider this an individual task. Initially you should write three or four questions and get those checked quickly. Don't write all the questions and then discover that most of them need re-writing! This process will become easier as you gain experience.
- We recommend you write your questions as a document that can be collaboratively edited in Box or Microsoft Teams. Share that document with your colleague(s) and have an online meeting where you review and edit the questions together. That way you will all be able to share ideas, expertise and learn together how to write good questions.
- Once agreed and finalised, your questions must be implemented in Blackboard. The TEL team will be able to advise and support, but are very unlikely to have the capacity to implement the questions for you. Ask two or three colleagues to check and test the questions. It is much easier to catch typos and other errors now than correct grades after the exam has run.
- Finally, it is important to emphasise that creating online MCQ exams must be a team effort; you can't and shouldn't "do it all by yourself". Help your colleagues by checking their questions and involve the TEL team early to take advantage of their MCQ experience across many disciplines.