EDITH COWAN UNIVERSITY

Centre for Learning and Teaching

Write questions that require the application of knowledge and higher order thinking skills

Designing open-book questions for an exam alternative

If your invigilated on-campus exam is being replaced by an online alternative, you will need to adapt your questions for an 'open book' environment. This means avoiding questions that students can answer with a simple Google search or by asking a friend. Instead, you need to write questions that require the application of knowledge and higher order thinking skills and require students to reference information specific to the unit and their previous work in it.

Converting existing exam questions to open book

Step 1: Decide what materials you will allow students to utilise in the assessment, e.g. anything they can find online, only Library databases, or only materials from the unit.

Step 2: With these materials in mind, review and revise your questions to assess higher order thinking or application (see table on p. 2).

Step 3: Incorporate requirements for students to utilise unit materials, unit-specific learning experiences, previous assessment tasks, and feedback previously received. This will assist with Student Identity Verification and, if students know this will be a requirement, will focus students on their assessment preparation.

Step 4: Incorporate requirements for students to reference any sources they use.

Step 5: Determine the relative weighting for each question type by referring to your Unit Learning Outcomes. For example, you may have more outcomes starting with 'apply' than 'evaluate', so 'apply' should be more heavily weighted.

Step 6: Ask a colleague to review your questions to ensure:

- they align with learning outcomes and standards for the unit;

- they are unambiguous, so students will know exactly what is required;

- they are logically sequenced:

    o start with broader questions before moving into specific/more probing questions to build confidence for different levels of ability; and

    o consider the knowledge that would need to be established by the first question in order to set the scene for the next one.

Types of open book questions

There are two broad categories of questions suitable for open-book environments:

1. **Higher-order thinking questions**
   Use verbs such as interpret, synthesise, compare/contrast and evaluate to assess higher-order thinking, and avoid lower-order verbs such as describe, list or identify.

2. **Applied knowledge questions**
   Create real-world scenarios or case studies accompanied by a series of contextualised questions. Alternatively, set a scenario or task that requires the application of theory.

The following table provides examples that also incorporate the advice above.

Instead of …	Higher order question	Application question
Describe vaccination	Summarise the competing arguments about vaccination covered in week 3 and use authoritative references from PubMed to evaluate their validity.	In the above scenario, the mother is clearly unsure about vaccination. What would your recommendation be? Justify your recommendation with reference to relevant theory.
Define cultural appropriation	Using semiological analysis, unpack the connotations and symbols alluding to power and privilege in one of the texts you have studied this semester.	Referring to the advertising image above, discuss the intertextual allusions that point to cultural myths around animal life, the 'survival of the fittest', and competition between individuals.
What is concatenation?	What are some differences between how concatenation is implemented in different programming languages? Provide at least three examples.	Write Python code that concatenates an integer variable named "total" to the end of a string of "The total is."

Instead of …	Higher order question	Application question
List the stages of the Engineering Design Process	Explain what role morphological analysis and synectics play in concept generation. Provide real-world examples of these.	Referring to the flow chart above, make at least five recommendations as to how the design process could be streamlined. Include a feasibility study to justify your recommendations.
What is the maximum strength of the material shown on the graph?	Three tests are performed on a given material, with the maximum tensile strengths of each test shown in the graph. What tensile strength can be assumed for the material?	How could the tensile strength of a material be determined experimentally? Refer to the diagram above to explain your answer.

Advice about platforms and where to get help

If written responses are required (e.g. short answers, essays) use a standard submission approach through Turnitin (timed or untimed).

Canvas quizzes does allow short answer questions, but they cannot be passed through Turnitin to check their originality.

For ideas on test and question design that aligns with Unit Learning Outcomes, contact your School's Senior Learning Designer. For training or support in creating Canvas Tests or using Turnitin, contact eLearning Training & Support: elearningtraining@ecu.edu.au or 6304 2255.