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(Re)Writing Better Exam Questions

Shifting to the online environment

The shift to online exams means that the traditional exams we had planned just aren't going to work in the online setting. Many of us will need to adapt our 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, we need to utilize more conceptual or applied questions, and require students to reference information specific to their previous work in the subject.

Open-book exams can have several educational benefits. If designed well, they discourage students from providing responses that focus on memorisation and rote learning of discrete facts or formulae. Depending on the time limit, open-book exams can replicate realistic professional workplace tasks that require information from various sources to be interpreted and synthesised.

Well-designed open-book exams encourage application of knowledge, skills and conceptual understanding through more complex tasks.

Suggestions for Creating Open-Book Exams

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 subject.

Step 2: With these materials in mind, review and revise your questions to assess higher order thinking or application. Bloom's Taxonomy can assist with guiding our questions:

Type or level of question	Students are asked to ...	Example questions and starters
Knowing and remembering	recall knowledge of subject matter relevant to the discussion.	• What, where, who, when, where …? • How many …? • List … • Describe … • Define …
Understanding	demonstrate understanding by constructing meaning from information.	• In your own words, … • Explain how … • What did X mean when …? • Give an example of …
Applying	apply knowledge and understanding to a particular task or problem.	• How would you use …? • What examples can you find to …? • How would you solve ___ using what you've learned? • What would happen if …?
Analysing	examine different concepts and make distinctions between them.	• What are the parts or features of …? • What are the competing arguments within …? • Why is X different to Y? • Compare and contrast … • What is the relationship between A and B?
Evaluating	make judgements about concepts or ideas.	• What is most important/effective? • Which method is best? • Which is the strongest argument?

Creating	develop new ideas from what they know and understand.	• How would you design a …? • What alternatives are there to …? • What changes would you make? • What would happen if …? • Suppose you could ___ what would you do? • How would you evaluate …? • Can you formulate a theory for …?

Step 3: Incorporate requirements for students to utilise subject materials, subject-specific learning experiences, previous assessment tasks, and feedback previously received. This will assist with academic integrity 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 Subject 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 subject;
- they are unambiguous, so students will know exactly what is required;
- they are logically sequenced

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.

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."

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.

Pros and Cons of the Two Approaches to Open-Book Examinations

Open-book exams	Benefits	Drawbacks
With strict time limits	• models a seated examination and therefore may provide a more familiar approach to examination. • an easier adaptation for subject teams using timed, seated examinations. • can reduce (but not eliminate) the opportunity for plagiarism, collusion or other forms of cheating (e.g. someone else taking the exam).	• can be difficult to maintain exam security and may require additional steps like identity verification or a verification viva. These steps require additional planning, time and resources. • in an online environment, unforeseen technical difficulties can limit or prevent students' access to the exam and ability to submit during the examination time. • if students are in different time zones, requires consideration of exam security and logistics.
With broad time limits	• allows for more complex, reflective responses. • can reflect realistic professional workplace tasks where employees are required to use and synthesise information from various sources to respond to a question or complete a task. • may accommodate many requirements (e.g. screen-readers) without requiring significant changes to the assessment task design. • allows for technical issues to be addressed without affecting the examination period.	• represents a significant shift from seated, timed examinations and therefore requires more transitional preparation and thinking on the part of the subject team. • can raise concerns about plagiarism, collusion or cheating. • creates significant marking workload for academic staff in large cohorts.

Academic Integrity

Many believe that invigilated exams are the best way to ensure assessment integrity, because they involve an explicit process for verifying students' identities (ie. checking ID cards). Research shows this is not the case (see https://cheatingandassessment.edu.au/).

Things we can do to encourage academic integrity:

- Build relationships and trust with our students through online teacher presence and communication
- Reconsider assessment design to reduce opportunities for students to cheat
- Integrate discussion of academic integrity into classroom and assessments

Top Tips for (Re)Writing Better Exam Questions

1. If you allow student-generated materials (e.g notes) in the exam, consider devoting some class time to preparing these, or build it into a **reflective learning activity** in your subject. Students could also work on producing these together and discuss ways they might apply the content to different scenarios (see Newcastle University for useful templates).
2. Open-book questions typically take longer to answer, so make sure the **time allocated is realistic**, even by testing it out yourself. Minimise the time students will waste working out what they need to do by wording your questions very clearly.
3. Make sure you remind students that your exam is open-book. **Explain expectations** and purpose clearly and ensure that you link the expectations of students to subject learning outcomes
4. Draw on the expertise and support at the University. Consult with teaching and learning **experts from DLT** for technical guidance and support in using online exams.

Take Home Message

Build an open-book exam around questions that scaffold students to *use and apply* the facts and information that they have learnt and have access to in their notes, textbooks or other available resources.

Need Help? SRS Request

https://online.csu.edu.au/de/dewsrsc.sqt?run=TopicRequest

Adapted From:

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