Using the Moodle quiz for assessment Mechanical Engineering

Design materials & manufacturing
350 students, Year 1 Compulsory unit
Assessment
10% e-assessment
30 % Portfolio
15% Artefact
45% Exam - Manufacturing

Background context

Rod Valentine explains how he introduced an e-assessment for a first year design unit. Although the cohort has strong analytical skills, most students have no design experience. In Semester 1, the fundamentals of engineering drawing are taught to give students *awareness* of engineering terminology, *knowledge* of design methods and standards and *practice* of producing technical design drawings. The students' drawing *skills* are assessed by a portfolio of technical drawings, created in an open tutorial environment to encourage a teamwork ethos, which is an essential employability skill in the discipline. Previously another coursework assessment was used at the end of the semester to test students' awareness of engineering terminology. Instead, the e-assessment now includes questions on engineering terminology, which allowed that coursework assessment to be removed. The e-assessment occurs halfway through the semester and provides earlier indicative feedback compared to the previous coursework submission.

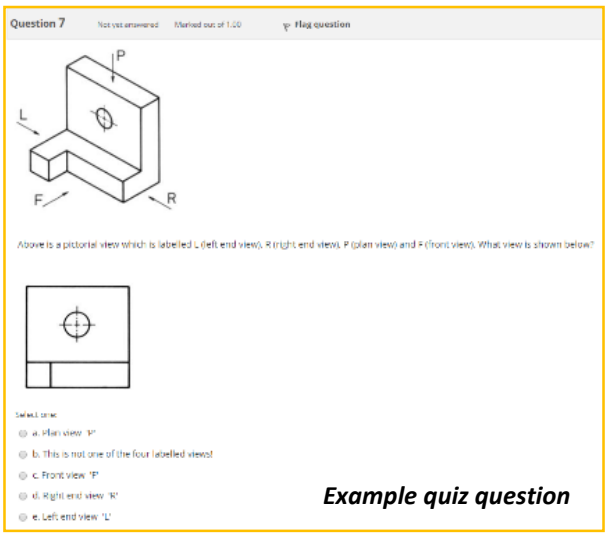
Purpose

The introduction of the Moodle quiz allows understanding of key concepts to be assessed at an earlier stage. It provides a suitable assessment method for the core knowledge introduced as a foundation in Semester 1. Separately assessing knowledge of key concepts via the Moodle quiz means that the assessment criteria for the portfolio could be refined and focussed. The quiz enables knowledge which wasn't previously assessed within the portfolio to be assessed.

Approach

The Moodle quiz provides a useful way to assess understanding of key concepts on this Year 1 unit. Firstly, formative assessment during lectures, via an Audience Response System, was considered. However, the Moodle quiz provided students with a three day assessment period so they could work at their own speed, at a time to suit them.

Students receive feedback immediately after completing the quiz, in the form of an overall mark. This gives them a timely indication of progress part way through their studies. Students can then ask for additional support and receive formative feedback through tutorials. Further feedback is provided in a feedback lecture for the whole cohort. This draws on common issues from both the portfolio and Moodle quiz statistics, and allows students to build their knowledge and skills as they progress to Semester 2.



Example quiz question

Technology Enhanced Learning – Case Study
Faculty of Engineering and Design

Students complete a password protected Moodle quiz. They review drawings and answer questions of different types (e.g. MCQs, Numerical, One-word answers)

The assessment takes place over three days under open book conditions. Students have one hour to complete the exam

More time can be allocated for students who have alternative exam arrangements in place

Students can work from their chosen location (on or off campus)

Students can see their mark immediately. They can seek advice via tutorials

Outcomes

Pros

- The overall assessment load is now better balanced for students. The quiz assessment takes place earlier in the semester, to give students an indication of progress
- The quiz assessment helps students to break down and identify key concepts. They can recognise such concepts as they arise in subsequent lectures
- The quiz provides flexible question types which allows concepts to be assessed in variety of ways
- It's easy to add extra time for students who have agreed alternative arrangements for exams
- You can build up question banks and randomise the order of questions
- Students can complete the assessment at the time and place which works for them
- Teaching staff spend time facilitating learning, instead of marking

It takes time to learn how to set up the quiz, and apply the appropriate key settings, **the first time**. Subsequently the quiz can be reused very quickly.

Once the quiz has been created, it saves staff time for marking during semester, when there are numerous coursework assessments taking place.

Cons

- The quiz is very flexible with many options, but it can take time to become familiar with which settings to choose

Recommendations

1. The Moodle quiz has in-depth statistical reports. Use these to identify patterns so you can address tricky concepts with students and provide more personalised feedback
2. This type of assessment could be broken down into stages with more opportunities for formative feedback e.g. into categories by topic
3. The quiz is intuitive to use, and features inbuilt help, but support can be found from the Technology Enhanced Learning team on choosing appropriate quiz settings

Further reading:

Valentine R. (2018) An e-Assessment for Engineering Drawing, International Conference on Engineering and Product Design Education 7-8 September 2018, Dyson School of Design Engineering, Imperial College, London, UK

David Nicol (2007) E-assessment by design: using multiple-choice tests to good effect, Journal of Further and Higher Education, 31:1, 53-64. Available from: https://doi.org/10.1080/030987706011679