



Formative Assessment for Progress Tests of Applied Medical Knowledge; The Role of the Student.

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OVERVIEW

Traditionally the emphasis on 'summative assessment' or 'assessment for measurement' has necessitated excluding the student from the writing of assessment items. The advantages of student involvement in areas of the undergraduate curriculum that are traditionally the domain of the faculty or 'experts' has been described in the literature Duffy, & O'Neill (2003), Rudkin et al (1999). 'Formative assessment' 'sustainable assessment' and 'assessment for learning' open up exciting opportunities for involving the student in the development of assessment items and the removal of 'artificial performance ceilings' Sadler, R. (1989).

Much of the literature on formative assessment focuses on the role of the teacher. This project places the student at the centre of the assessment process, it focuses on the role of the student in assessment and the opportunities this provides for the development of higher level cognitive skills associated with lifelong learning.

INFORMATION ABOUT THE CLASS, MODULE OR PROGRAMME

Focus; Formative assessment of Applied Medical Knowledge
Duration; 5 years
Discipline; Bachelor of Medicine, Bachelor of Surgery
Context; UK, The Peninsula College of Medicine and Dentistry, Peninsula Medical School.
Enquiry Based Learning
Learners; Undergraduate level. 214 students per year.

DESCRIPTION OF THE CASE

The Progress Test of Applied Medical Knowledge

Progress testing of medical knowledge is a method of assessment in which all cohorts of students sit the same test, set at the standard expected of a newly qualified doctor. At Peninsula Medical School each test consists of 125 best-of-5 multiple choice items. Each item consists of a clinical vignette, a question, 5 options and a don't know option. Tests are sat 4 times per year with each test being a structured sample from a large item bank.

Students are able to see their knowledge grow over the course of their studies, and patterns of student scores over time can be used to identify variables of interest to the student and to the faculty. Progress tests are intended to assess deep learning because each item is designed to engage the student in clinical reasoning and functional knowledge rather than recall of isolated facts, and because each test exposes the student to a structured sample



of the whole domain of applied medical knowledge appropriate to that of a newly qualified doctor.

The Formative Assessment of Applied Medical Knowledge

The Formative Assessment of Applied Medical Knowledge is designed to include students in important parts of the assessment cycle and to provide opportunities to develop higher order cognitive skills.

Small groups of students were employed to write items with response contingent feedback. The item writing environment (organisational procedures, quality control procedures, software systems) were developed through an iterative process Barab & Squire (2004).

Tests are delivered online with QuestionMark Perception software. Tests are released at the end of each case unit and assess topics relevant to the current case and any previous case. Data about student use of the tests is routinely collected, exported into Excel and SPSS and analysed to provide information about how many students use the tests, how often the tests are used, when they are used, and how well the students perform on the tests. This information is compared to performance in the progress test to provide information about learning strategies and knowledge acquisition.

RATIONALE IN TERMS OF EDUCATIONAL IDEAS

Drivers for the use of this assessment design and implementation include The Peninsula Medical School assessment strategy which emphasises the importance of formative assessment, and the GMC document 'Tomorrows Doctors' which emphasises the development of undergraduate lifelong learning skills.

Item writing involves high level cognitive skills. The creation of an authentic vignette and the focus of the item onto an important topic require reflective reference to experiential learning and an understanding of the curriculum. The item writer has to relate the specific item to the whole from which it is drawn and engages in a deep approach to learning. Choice of feasible distracters that encourage clinical reasoning requires an understanding of the common areas of misunderstanding and important discriminatory factors. The writing of 'feedforward' requires high level teaching skills and excellent communication skills. Item writers work in teams and this inevitably requires team, interpersonal and communication skills. Also item writers need to be fluent with the item writing environment - how to access a wide range of resources, how to use IT software and access expert colleagues for advice.

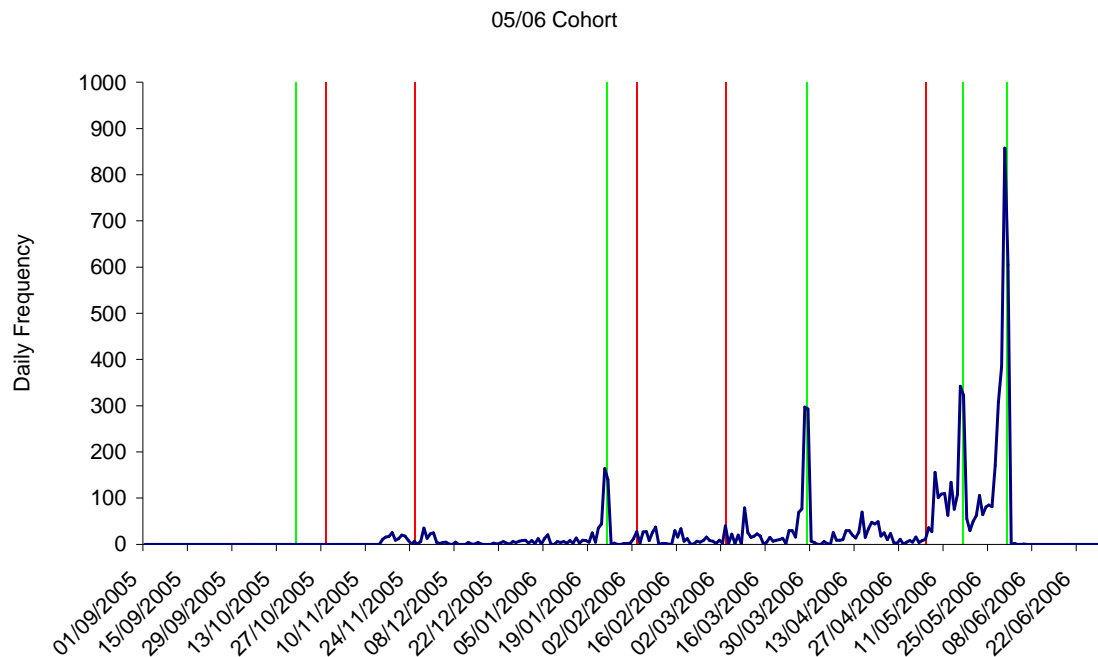
For students to be given the opportunity to develop the attributes of an 'expert' they need to be involved in all stages of the assessment cycle, including standard setting. As the students construct their content and assessment skills, they develop less reliance on the tutors, and use the higher order skills associated with the reflective professional practice of experts.

EVALUATION

Use of the tests is very high. In year 1 for example, only 1 student never used the tests, on average each student used each test 4 times. Interestingly the tests were used as a preparation tool for the progress test rather than as intended as a test to evaluate learning up to that point in the course (see table 1). This unintended outcome is being used in the redesign of the learning environment to encourage deep rather than superficial learning strategies.



Table 1. Release Dates and Daily Use Frequencies of Tests



Green; release date of the Progress tests

Red; release date of the Formative tests

Plot; daily frequency of use of the Formative tests

Students found the task of item writing to be an excellent learning environment. It helped them to develop breadth and depth in content expertise and the requirement to write precise feedback fostered precise cognitive, linguistic and pedagogic skills. Item writing is a high level cognitive activity and requires training. A careful review process is required not only to provide quality control but also to serve as the vehicle for learning. A cross over model was designed so that students review and provide feedback on each others items so that they can be improved and 'signed off' before they are submitted to the database.

We are currently considering formally integrating the item writing task into the curriculum of the first 2 years of the course thereby providing the item writing opportunity to all students.

The theory of formative assessment should be developed to include the student in all parts of the assessment process. This would align an intended learning outcome of lifelong learning skills with the learning environment and the assessment design. Future work will concentrate on investigating the epistemological and ontological rationale for involving students in all parts of the assessment process and identifying the factors that contribute to making formative assessment a more effective learning environment.



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