
Mapping University Mathematics Assessment Practices

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Chapter 16

Assessment in a Moore Method Module

Abstract This case study presents the assessment of a year one module taught with the Moore Method and entirely based on problem solving. Assessment is divided between participation in class activities and written work.

16.1 Background and rationale

There was a feeling amongst staff that students were not engaging in “doing” mathematics, but that they were passive and learned in a very procedural way. This module was introduced about 7 years ago to address this problem. The change in the teaching method led to a different assessment regime.

16.2 Implementation

The course follows some of the general principles of the Moore Method: the lecturer does not impose solutions; rather students have to find answers to given problems without the help of supporting material such as books. It forms half of a module (along with a semester on the impact of mathematics). The module runs with relatively small numbers: it began capped at 20 students, but is now two groups of 20. The group size allows for a more discursive and interactive form of teaching. It is an optional module in the first year and can be taken by students from other departments. Examples of the problems given during the module are:

A ladder stands on the floor and against a wall. It slides along the floor and down the wall. If a cat is sitting in the middle of the ladder, what curve does it move along?

A circle and a point A inside it are given. Points B and D lie on the circle. Find the set of vertices of the rectangles ABCD.

Students are expected to work independently to solve the problems and present their solutions in class; the solution is then subject to discussion in the seminar sessions. The lecturer assesses the presentation of the solution to the seminar as well. These presentations are videoed and assessed later. The hand-written proofs submitted as part of this module are also assessed. These proofs are relatively strictly marked: the emphasis is on correctness and students receive marks only if the proof

is perfectly correct. On the other hand, students are permitted to rewrite their solutions as often as they like.

The key advantage of this assessment is that students gain insight into the process of doing mathematics independently and in an active way. They also practise proof writing. The course can be quite intensive and some students do not rise to the challenges set by putting in sufficient effort. Some students can find presenting their solutions in front of their peers daunting and the lecturer admits that he sets high expectations about how prepared they need to be for each session. The module is also quite resource heavy in terms of teaching.

16.3 Assessment

Stage	No. of students	Assessment pattern
Year 1	40	50% contribution in class 50% submitted solutions to problems

16.4 Discussion, learning and impact

The lecturer enjoys this method of teaching as it provides the opportunity to get to know the students, and to see their engagement with, and understanding of, mathematics growing throughout the term. While it is very demanding to write the problems for this module each year, the lecturer sees this as a very satisfying challenge. During this module students come to realise how much time it takes to solve a problem and they get a good sense of what mathematics is about. Many also become quite competitive and much more motivated when they present in front of their peers. The lecturer notes that this module seems to attract students who subsequently pursue postgraduate studies in mathematics, and this is again very satisfying for staff involved.

Part III

Assessment Projects

The final part of the book looks deeper at the evaluation of some alternative assessment methods. Academics were asked to bid for resources from the MU-MAP Project to either trial a new assessment method or to evaluate the impact of an existing one. In some cases, people chose to focus on students' views of the assessment. Some chose to look at the perception of lecturers who are using particular methods. Still others looked at the practicalities of implementing an alternative assessment system and evaluate the advantages and disadvantages compared to the methods they replaced.

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