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# Mapping University Mathematics Assessment Practices

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*Edited by*

Paola Iannone  
University of East Anglia

Adrian Simpson  
Durham University



## Chapter 6

# Group Projects

**Abstract** This case study presents an example of the introduction of a group project in a first year applied mathematics module. The coursework consists of two presentations of the solution of an open-ended problem set by the lecturer and an individual written report. Marks are accrued for the mathematical content as well as the style of the presentations and the use of the typesetting software  $\LaTeX$ .

### 6.1 Background and rationale

In this institution students seemed not to engage with applied mathematics modules as well as they did with pure mathematics, hence staff decided to design a new coursework component consisting of a group project. A group project would give students the opportunity to engage more creatively with the material while at the same time develop some transferable skills such as communication, teamwork and IT skills.

### 6.2 Implementation

The new assessment and structure of the module, which has only been offered for the past year, differs from the standard way modules had been taught previously in this institution. Its central idea is the group project, which includes two presentations and a report. Groups can choose between five different projects. Titles of the projects include: “Traffic lights” and “Drug concentration”. The assessment of the group project consists of:

- Presentation of the simple model (followed by feedback)
- Improvement of the model and written report
- Presentation of the improved model
- Managing the group work.

Each presentation lasts six minutes and is assessed on mathematical content, quality of explanation, structure and organisation, use of visual aids, and students’ understanding of the material. Students are required to use a wiki or Moodle to write the report on the improved model and have to use  $\LaTeX$  to include mathematical expressions. Students are also required to keep a record of their group work in a wiki, e.g.

group minutes, software and literature use. Detailed guidelines on the assessment of this coursework component are posted on the institution's VLE.

Key advantages of this assessment component include the perception that by engaging with an open-ended problem, students gain insight into the creative process of doing mathematics. The presentation and group work aspect of this assessment also allow students to practise transferable skills such as group work and oral communication. However, there is an increased workload for the lecturer and, given the variability of the commitment and abilities in the class as a whole, there is likely to be some influence from the composition of the groups.

### 6.3 Assessment

Stage	No. of students	Assessment pattern
Year 1	170	90% closed book exam 10% coursework (5% written report; 5% presentations)

### 6.4 Discussion, learning and impact

The lecturer believes there is more engagement and enthusiasm among students. He also welcomes the opportunity to engage the students in a less formulaic and repetitive approach to applied mathematics by setting open-ended problems for the group projects. Students' feedback provided at the end of the semester shows their satisfaction with the new assessment. However, the lecturer does not consider that changes in students' performances can be measured in terms of grades for this module, as the syllabus and assessment have changed radically from previous years and a direct comparison is not possible. The drawback of this type of assessment is that it is time consuming for the lecturers involved, but in light of students' satisfaction and engagement the department will offer the module in this format again.

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