

USING JOURNAL ARTICLES TO BUILD AND ASSESS COMMUNICATION SKILLS IN UNDERGRADUATE MATHEMATICS

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PROBLEM

Communication is one of the threshold learning outcomes for undergraduate mathematics; in particular, the “appropriate interpretation of information communicated in mathematical and statistical form” and the “appropriate presentation of information, reasoning and conclusions in a variety of modes, to diverse audiences (expert and non-expert).” However, apart from honours or talented student projects or specific units on the logical structure of proofs, most undergraduate mathematics students do not get to think about or practice their communication skills.

PLAN

Before students attempt their own communication they review some mathematics written by more experienced peers. Journal articles written by other undergraduates were chosen as an authentic source to design an activity that requires students to analyse an article and connect it both to their own existing conceptual framework and the content of the unit they are currently studying.

ACTION AND OUTCOMES

About 700 students in a first year life-science service unit on mathematical modelling were asked to choose a topic they felt was interesting or relevant to them from a list of about 20 undergraduate journal articles. They were required to identify how the methods used matched the topics in the unit they were studying and to choose one result, graph or table from the article and explain it in their own words. This assignment was submitted close to the end of the semester. The majority of students engaged appropriately with the task, though a small proportion copied content from the article without showing any understanding.

About 120 students in a third year normal level mathematical modelling unit were given a journal article to read at the start of the semester. They were asked to identify all the concepts and techniques that were familiar to them but were also asked to identify what was unfamiliar and what they expected to become accessible as they completed the unit. Two subsequent assignments in the unit revisited the same journal article as more of its content and concepts could be grasped. A consequence was that students developed a global image of this unit and so asked me more in-depth and interesting questions during semester.

REFLECTION

Feedback from the Mathematics Learning Centre revealed that even some struggling first year students really enjoyed the activity. Last year, tutors who marked the first year assignments were invited to complete and discuss the assignment with other tutors; however, this was insufficient and compulsory and more explicit training on how to assess such an assignment will be used next time. Exemplars at different levels (pass, credit, etc.) will be provided to both students and tutors.

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