

HOW USING CRITERIA SHEETS IN A FIRST YEAR MATHEMATICS COURSE HAS LED TO AN IMPROVEMENT IN THE STUDENTS' ABILITY TO COMMUNICATE MATHEMATICS

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KEYWORDS: criteria sheets, assessment, mathematical communication

BACKGROUND

For Queensland secondary students criteria sheets are an integral part of the assessment process. For senior mathematics the criteria include three categories, each of equal value, called 'Communication and Justification', 'Knowledge and Procedures' and 'Modelling and Problem Solving'. The first category develops the students' ability to convincingly explain why they have reached the particular mathematical solutions they came up with. At university the communication aspect of the first category is not obviously valued according to Christina Varsavsky, Dean of Science, Monash University, who argues that university mathematics is procedural driven (Johnson, 2013), that is, students are expected to learn formulae and apply them without necessarily understanding them.

AIMS

This project aims to determine whether the use of criteria sheets within mathematics assessment supports students to know what is expected of them.

DESCRIPTION OF INTERVENTION

This presentation reports on part of the Maths Assess project that analyses how teaching staff in a first year university mathematics course used criteria sheets to assess students' communication skills in addition to other criteria. The criteria sheets were developed using aspects of a comprehensive set of criteria for all assessment in maths that has been developed by the Maths Assess project. The first year teaching team then fine-tuned the criteria for use in a mathematics assignment as well as a mid-semester and end-of-semester exam. Each criteria sheet and the task itself were discussed with students during lectures prior to their assessments, and placed on the course Blackboard site, so that all students were familiar with the expectations. The overall course was designed for students who required only one mathematics course as part of their science degree. Students had limited maths background, that is, very few students had completed Maths B (Maths Methods) at school and many were mature entry students.

DESIGN AND METHODS

Data was collected using a survey, two focus group interviews (one with students and one with teaching staff) and a critical reflective journal kept by the lecturer/course co-ordinator. Student papers were moderated so that all teachers applied the criteria consistently.

RESULTS

Analysis of the initial data indicates that there has been an improvement in the standard of communication, that is, in the students' own ability to explain themselves in the assignment and the exams and in the readability of the exams and presentation of the assignments.

CONCLUSIONS

The initial results from this project have demonstrated improved mathematical communication of their thinking by the students. Tutors have reported that it is easier to mark exam papers due to improved explanations by the students.

REFERENCES

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