

CHANGING ENGINEERING STUDENTS ATTITUDES IN CALCULUS

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This presentation will give the preliminary results of an on-going research on changing students' attitudes towards Calculus. The main objectives of the research were to identify suitable approaches to encourage students to use their mathematical thinking powers and develop materials to further support these activities. The research was conducted on a group of first year engineering undergraduates taking Basic Calculus.

This research was motivated by the main findings from research conducted on mainly engineering undergraduates in Universiti Teknologi Malaysia (UTM) which found that these students had difficulties in coordinating procedures and manipulating concepts (Liew Su Tim & Wan Muhamad Saridan, 1991; Tall & Razali, 1993) and that they could not organise known facts effectively as well as master the mathematical language and symbols (Mohd. Yusof & Tall, 1994; Khyasudeen, et al, 1995). Furthermore, Yudariah (1995) found that the lecturers in UTM had little confidence in their students' abilities to cope with a formal mathematics course and designed their teaching accordingly. Students were encouraged to learn procedurally and given routine tasks to ensure success in examinations. However, they felt that there was a need to develop students' mathematical thinking and problem solving abilities.

The study adopts suitable qualitative research methods that studies the learning situation in context, in particular, an action research perspective of "practitioner as researcher".

Here we will report on some of the findings which includes changes in the teaching methods to invoke students' mathematical thinking powers such as specialising and generalising, the use of symbolic and multiple notations, technical terms and unfamiliar examples and expressing mathematical ideas. Difficulties encountered in the research implementation will also be discussed.

REFERENCES

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