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Rationale for collaborative learning in first year engineering mathematics.

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Research into tertiary students' first year experience in Australia has focused on the extent to which students adapt to university and their levels of satisfaction, how students adjust to the larger social setting, and issues of transition from school to university, especially approaches to learning. The development of performance indicators has involved the widespread introduction of direct measures of student evaluation of the quality of teaching. Few students have addressed the relationship between the effectiveness of the learning experience and the broader factors that contribute to student satisfaction or to learning outcomes. The learning of mathematics is often viewed as an isolated, individualistic matter where one sits alone and struggles to understand the material and concepts at hand. This process can often be lonely and frustrating. Small-group collaborative learning can provide an alternative to both traditional whole-class expository instruction and individual instruction systems. This paper will provide a rationale for the integration of collaborative learning into first year engineering mathematics learning and instruction based on a review of international and Australian literature. It is argued that despite an overwhelming acceptance of collaborative learning among researchers and educational organisations, this strategy is not very frequently adopted and used at tertiary level in mathematics. We believe that collaborative learning is an ideal way to help with the transition to engineering mathematics at university from both a social and academic view. It could reduce the large attrition rate in these courses and improve attitudes to engineering teaching and learning. (Authors' abstract)

Classification: D45