

## Self-regulated learning, students' understanding and performance in engineering statics

### Abstract

Findings from previous researches on engineering students showed that students' understanding of fundamental engineering concepts are not necessarily reflected by their good academic performance. Many students find Statics a difficult to understand fundamental engineering course. This difficulty has often affected their performance in the course and other follow on courses, which consequently disheartened them from pursuing engineering as a career. Apart from the universal issues such as the hard to learn concepts, the local culture and students' work habit contribute to this continual problem. In an earlier survey and interviews conducted by the first author most students' attributed their performance in Statics to their own effort in learning and self-efficacy. This supports Bandura's claim in suggesting that students' motivation, including their self-efficacy, is related to the use of learning strategies that influence their academic achievement. This is consistent with the shift from behaviourism to cognitivism in educational psychology, where students are perceived to have more responsibility for their own learning. Therefore, this study investigates through statistical data analysis how Self-Regulated Learning (SRL) affects students' understanding of Statics concepts and performance in the course. SRL is described as a constructive process, where students are active participants in the learning process. The findings of this research will provide a useful insight into students' learning of this fundamental engineering course. A curriculum that could enhance understanding and performance of engineering students and retain them in the programme could be designed. Suggestions for future research are also offered.