

Evaluating the Success of an Intervention Course in a South African Engineering Programme

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Abstract : In South Africa, only 23% of engineering students attain their degrees in the minimum time of 4 years. This begs the question: Why is the 4-year throughput rate so low? Improving the throughput rate is crucial in assisting students to the shortest possible path to completion. The Electrical Engineering programme has a fixed curriculum and students must pass all courses in order to graduate. In South Africa, as is the case in several other countries, many students rely on external funding such as bursaries from companies in industry. If students fail a course, they often lose their bursaries, and most might not be able to fund their 'repeating year' fees. It is thus important to improve the throughput rate, since for many students, graduating from university is a way out of poverty for an entire family. In Electrical Engineering, it has been found that the Software Development I course (an introduction to C++ programming) is a significant hurdle course for students and has been found to have a low pass rate. It has been well-documented that students struggle with this type of course as it introduces a number of new threshold concepts that can be challenging to grasp in a short time frame. In an attempt to mitigate this situation, a part-time night-school for Software Development I was introduced in 2015 as an intervention measure. The course includes all the course material from the Software Development I module and allows students who failed the course in first semester a second chance by repeating the course through taking the night-school course. The purpose of this study is to determine whether the introduction of this intervention course could be considered a success. The success of the intervention is assessed in two ways. The study will first look at whether the night-school course contributed to improving the pass rate of the Software Development I course. Secondly, the study will examine whether the intervention contributed to improving the overall throughput from the 2nd year to the 3rd year of study at a South African University. Second year academic results for a sample of 1216 students have been collected from 2010-2017. Preliminary results show that the lowest pass rate for Software Development I was found to be in 2017 with a pass rate of 34.9%. Since the intervention course's inception, the pass rate for Software Development I has increased each year from 2015-2017 by 13.75%, 25.53% and 25.81% respectively. To conclude, the preliminary results show that the intervention course is a success in improving the pass rate of Software Development I.

Keywords : academic performance, electrical engineering, engineering education, intervention course, low pass rate, software development course, throughput

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