

Improvement of a teaching model by means of constraints analysis

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Universities in South Africa have experienced a growth spurt in student numbers since the change in political dispensation after 1994, giving access to a wider spectrum of students. Simultaneously research pressure on universities has increased. In addition, the under preparedness of students entering university has become a problematic issue over recent years, a phenomenon that has been experienced internationally, but especially in South Africa where the gap between secondary school and university is perceived to be increasing. Yet there is political pressure for optimal pass rates. These are factors, amongst others, that impact on the success of teaching models on departmental level at universities.

This paper reports on a constraints analysis, often used for business improvement, for analyzing the current model of teaching. The goal of the particular calculus model was formulated as delivering students that are skilled in mathematical thinking and problem solving appropriate for transition to the next level, as well as to cultivate mathematical maturity in terms of independent learning and for students taking responsibility for their own learning. A current reality tree was constructed through critical thinking from which the core problem was identified. Thus the process of on-going improvement of the model was set in motion. The project is an example of collaboration with industry to find a solution to a problem set in the academic milieu and should be of value to the wider academic community.