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Design and implementation of a cognitive mediated intervention programme with first year metallurgy students

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2008-08-07T07:29:42Z
http://hdl.handle.net/10539/5274

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ABSTRACT

This study was conducted as part of an ongoing research programme to evaluate and implement change in the School of Process and Materials Engineering (PRME) 1002 course curriculum to effect positive results in academic achievement, thus increasing throughput rates of first-year Chemical and Metallurgical engineering students. This study designed and implemented a cognitive mediated intervention programme adapted by Professor Skuy (2003) from Feuerstein's Instrumental Enrichment (1980) programme. The aim was to see if an extended programme period of time, 12 weeks as opposed to 5 weeks implemented in an earlier study by Viviers (2004), would significantly improve the academic performance of the sample of 20 first-year Metallurgy students as measured by the mid-year and end-of-year examination results. The study also aimed to find out if the cognitive mediation intervention programme would significantly improve the intellectual functioning of the Metallurgy students. The results show that mediating cognitive functions significantly improved the intellectual functioning of the sample of 20 students as measured by the pre- and post-test scores of the Cognitive Assessment System (Das & Naglieri, 1993). However, no significant improvement was found in the academic achievement of the students as measured by the examination results. Accordingly it was concluded that the extended period of time (12 weeks), was sufficient time to improve intellectual functioning of Metallurgy students, but insufficient time for this to transfer into academic achievement for the Metallurgy students. The study highlighted the difficulty of transfer in the engineering context, as well as the continued problem that first-year students have with the complex conceptual nature and demands of the PRME (1002) course.

KEY WORDS

Underpreparedness
Mediation
Transfer
Learning Approaches
Cognitive Modifiability
Constructivism
Higher Education