

The Adoption of variation theory in the classroom: effect on students' algebraic achievement and motivation to learn

ABSTRACT

Introduction. Analysis of lessons held in East Asia regions that perform well in Trends in International Mathematics and Science Studies such as; South Korea, Hong Kong and Japan, demonstrated teachers in mathematics classroom enacted features of the content systematically with consideration of variation within students' capabilities. Recent studies found that integration of variation theory in classroom instruction improve students' performance significantly. Considering the prior successes in integration of variation theory in classroom in other countries, it is imperative to examine the effect of variation theory based strategy in the teaching and learning of the algebra in schools in Malaysia. Method. The study used quasi-experimental non-equivalent control group research design and involved 58 Form Two (Grade 8th) students in two classes (30 in experimental group, 28 in control group) in Malaysia The first class of students went through algebra class taught with Variation Theory Based Strategy (VTBS) while the class of students experienced Conventional Teaching Strategy (CTS). The instruments used for the study were a 24-item Algebra Test and 46-item Instructional Materials Motivation Interest Survey. Results. Result from Analysis of Covariance indicated that experimental group students achieved significantly better test scores than control group. However, result of Multivariate Analysis of Variance did not show evidence of significant effect of VTBS on experimental group students' overall motivation in all the five subscales; attention, relevance, confidence, satisfaction, and interest. Discussion and Conclusion. These results suggested the adoption of VTBS in the algebra classroom is effective on students' algebraic performance but not on students' motivation to learn. Futher investigations of the impact of VTBS on students' affective outcomes are recommended.

Keyword: Algebraic performance; Motivation; Urban; Variation theory