Integration of autograph technology for learning algebra

ABSTRACT

Numerous studies have shown the positive impact of integrating technological tool in the teaching and learning process of mathematics in the classroom. The teaching and learning of algebra utilizing dynamic softwares have been explicitly indicated in the Malaysian secondary school Mathematics syllabus (Ministry of Education, Malaysia, 2004). Teachers were recommended to utilize technological software and one such dynamic software just introduced in the Malaysian schools is the Autograph software. In this study, the effects of integrating the Autograph with computer algebraic system in teaching were explored. Specifically, the effects on mathematical performance in secondary mathematics and measures of mental load based on the cognitive load theory were investigated. The mean overall test performance for the Autograph group was 10.72 (SD = 3.47) and the mean overall test performance for conventional group was 13.03 (SD = 3.65). The independent ttest showed that there was a significant difference in mean test performance between the Autograph group and conventional group. Further, planned comparison test showed that mean overall test performance of Autograph group was significantly lower from those of the conventional group. This finding indicated that the conventional strategy group had performed better than the Autograph group. Findings in favor of the conventional strategy in teaching Quadratic Function implied several limitations and considerations that need to be further examined. Several factors that may lead to these findings are time constraints, lack of focus on the students' part during the teaching and learning activity, teachers' factor, and improved learning module for the students. In addition, these findings provide evidences of limited and deficient use of the technology, specifically in the teaching of mathematics at the secondary level.

Keyword: Autograph software, mathematical performance, mental load, instructional efficiency