

The Effects of Using Graphic Calculators in Teaching and Learning of Mathematics

¹Nor'ain Mohd. Tajudin, ²Rohani Ahmad Tarmizi,

¹Wan Zah Wan Ali & ²Mohd. Majid Konting

*¹Faculty of Science and Technology, Universiti Pendidikan Sultan Idris,
35900 Tanjong Malim, Perak, Malaysia*

*²Institute for Mathematical Research, Universiti Putra Malaysia,
43400 Serdang, Selangor, Malaysia*

E-mail: norain@upsi.edu.my

ABSTRACT

Although graphic calculators have been developed in mathematics education for nearly two decades, research on the technology's use is not robust. Its use in secondary schools (for example, in Great Britain, France, Sweden, New Zealand, Netherlands, and United States) is not well understood, universally accepted, nor well-documented. In Malaysia, research on the usage of graphic calculators is still in its infancy and therefore its use has yet to be explored. Thus, there is a need to further research in this area especially in the context of teaching and learning of mathematics at secondary school level in Malaysia. This study employs a quasi-experimental with non equivalent control group design. The main objective of the study was to investigate the effects of the use of graphic calculators on Form four secondary school students' mathematics achievement and metacognitive awareness in the learning area of Relation and Function. Students' views about their experiences benefits and difficulties experienced in using graphic calculators in learning of mathematics were sought. Preliminary findings of this study provided pedagogical impact of the use of graphic calculators as a tool in teaching and learning of mathematics in Malaysia.

Keywords: Graphic calculators, mathematics achievement, metacognitive awareness, cognitive load theory, and distributed cognition theory