Enhancing Malaysia’s human capital: A study of students’ preference and usage level of graphs in solving applied derivative problems

Haliza Abd Hamid¹, Noraini Idris²

¹INTEC Education College, Shah Alam, Selangor, Malaysia, ²Universiti Malaya, Kuala Lumpur, Malaysia & Universiti Pendidikan Sultan Idris, Perak, Malaysia

Correspondence: Noraini Idris (email: noridris@um.edu.my; noridris@upsi.edu.my)

Abstract

Developing countries such as Malaysia need to cultivate and harness the problem solving skills of their potential workforce in order to be economically competitive. Cartesian graphs are known to be effective tools for solving derivative problems. Although ‘sketching a graph’ is advocated as a useful strategy, generating an appropriate graph may pose difficulties and consequently cause the students to reluctantly employ them. This study examined the Malaysian students’ preference and usage levels of graphs in solving applied derivative problems. A 16-item Likert-scale questionnaire consisting of four categories and two tasks on the application of derivative were distributed to 194 pre-university students in Selangor. The results showed a negative relationship between the students’ actual preference method and their usage level of graphs in solving derivative problems. This implied that teachers should be encouraged to motivate students to practically utilize graphs in their learning of mathematical concepts by increasing the use of graphs creatively. The design of the instructional materials and the questioning and examination tasks should gear towards the promoting of information displayed graphically. It was also recommended that the variations in the types and functions of graphs be highlighted so as to seek students’ skills and ability to sketch graphs and to read and interpret graphs efficiently and effectively.

Keywords: applied derivative problems, graphs, instructional materials, mathematics education, problem solving skills, students’ preference