Development and evaluation of a CAI courseware 'G-Reflect' on students' achievement and motivation in learning mathematics

ABSTRACT

The focus of this study was to develop and evaluate a CAI courseware 'G-Reflect' on students' achievement and motivation in learning Mathematics. The 'G-Reflect' was developed based on the ADDIE instructional system design model and using the Geometer's Sketchpad (GSP) software. Three types of instruments were employed: Courseware Evaluation Checklist, Instructional Materials Motivation Survey (IMMS) questionnaire and Diagnostic Test which were validated by a panel of subject matter and instructional design experts. The reliability for 'G-Reflect' evaluation checklist was 0.793 and 0.723 for the IMMS. Quasi-experimental design was used to gather data related to the impact of 'G-Reflect' on students' achievement and motivation in learning Mathematics. Samples for the quasi-experimental design consisted of 34 students of Form 2DR (treatment group) and 34 students of Form 2GD (control group). Data were analyzed descriptively and inferentially using SPSS v.14. Based on the Courseware Evaluation Checklist, the 'G-Reflect' courseware was assessed as a good courseware to teach the topic on Reflections. Results from the Diagnostic Test showed that there was a significant difference in the mean scores obtained (t (67) = 10.162, p≤0.05). The treatment group was found to perform better in the test compared to the control group. In terms of motivation, results from the IMMS questionnaire showed that the students from the treatment group were highly motivated in learning Mathematics.