THE DEVELOPMENT, EFFECTIVENESS AND USABILITY STUDY FOR LOCI IN TWO DIMENSIONS COURSEWARE: Li2D

by

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ABSTRACT

The advancement of information technology (IT) and communications has given new impetus to the use of computers in education. Through multimedia technology, various courseware can be developed with the integration of various media such as text, graphics, audio and animation and interactivity capabilities in teaching and learning process. The use of multimedia courseware can also help to solve problems related to teaching and learning process. This study primarily is conducted to achieve three main objectives: to design a conceptual framework to be used in multimedia courseware; to develop a multimedia courseware known as Li2D for enhancing the visualization capabilities in learning Loci in Two Dimensions and to assess the effectiveness and usability of the developed courseware. The development of multimedia courseware Li2D takes into account components such as Van Hiele model, Learning theory, ARCS Motivational Model, Game Based Learning, Pedagogical Agent and the integration of multimedia elements in a digital environment to enable students to gain insight into Loci in Two Dimensions. For the Instructional Design model, ADDIE methodology has been adopted into the life cycle of Li2D. Li2D is developed using Macromedia Flash, Adobe Illustrator and SoundForge. Furthermore, this courseware involves four modules including Lesson, Do it, Tutorial, and Quiz module. The content is structured according to the first four levels of the Van Hiele model to help students to master the topics of geometry, and Loci in Two Dimension. Based on Quasi-experimental, the sample study consists of 64 students Form Two from a secondary school in Perak. Various instruments such as sets of pre-test and post-test, direct observation, questionnaires and interview have been designed to measure the effectiveness and usability of the multimedia courseware. The effectiveness and usability of Li2D are evaluated based on quantitative and qualitative analysis using SPSS software. Overall, the results of studies have shown that multimedia courseware, Li2D is effective for learning geometry topics, Loci in Two Dimensions.