World Academy of Science, Engineering and Technology
International Journal of Educational and Pedagogical Sciences
Vol:8, No:10, 2014

Development of Tutorial Courseware on Selected Topics in Mathematics, Science and the English Language

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Abstract : The main purpose of this study was to develop, evaluate and validate courseware on Selected Topics in Mathematics, Science, and the English Language. Specifically, it aimed to: 1. Identify the appropriate Instructional Systems Design (ISD) model in the development of the courseware material; 2. Assess the courseware material according to its: a. Content Characteristics; b. Instructional Characteristics; and c. Technical Characteristics 3. Find out if there is a significant difference in the performance of students before and after using the tutorial CAI. This research is developmental as well as a one group pretest-posttest design. The study had two phases. Phase I includes the needs analysis, writing of lessons and storyboard by the respective experts in each field. Phase II includes the digitization or the actual development of the courseware by the faculty of the ICT department. In this phase it adapted an instructional systems design (ISD) model which is the ADDIE model. ADDIE stands for Analysis, Design, Development, Implementation and Evaluation. Formative evaluation was conducted simultaneously with the different phases to detect and remedy any bugs in the courseware along the areas of content, instructional and technical characteristics. The expected output are the digitized lessons in Algebra, Biology, Chemistry, Physics and Communication Arts in English. Students and some IT experts validated the CAI material using the Evaluation Form by Wong & Wong. They validated the CAI materials as Highly Acceptable with an overall mean rating of 4.527and standard deviation of 0 which means that they were one in the ratings they have given the CAI materials. A mean gain was recorded and computing the t-test for dependent samples it showed that there were significant differences in the mean achievement of the students before and after the treatment (using CAI). The identified ISD model used in the development of the tutorial courseware was the ADDIE model. The quantitative analyses of data based on ratings given by the respondents' shows that the tutorial courseware possess the characteristics and or qualities of a very good computer-based courseware. The ratings given by the different evaluators with regard to content, instructional, and technical aspects of the Tutorial Courseware are in conformity towards being excellent. Students performed better in mathematics, biology chemistry, physics and the English Communication Arts after they were exposed to the tutorial courseware.

Keywords : CAI, tutorial courseware, Instructional Systems Design (ISD) Model, education
Conference Title : ICEHE 2014 : International Conference on Education and Higher Education
Conference Location : Osaka, Japan
Conference Dates : October 12-13, 2014