UNIVERSITI TEKNOLOGI MARA

SCIENCEVERSE: A DIGITAL SCIENCE LEARNING COURSEWARE FOR YEAR 1 USING GAGNE'S NINE EVENTS OF INSTRUCTION

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ABSTRACT

The integration of digital technology in education has created opportunities to enhance the teaching and learning process through interactive learning materials. However, Year 1 Science learning continues to rely on textbook-based instruction and conventional teaching approaches, with limited integration of interactive digital learning materials. Consequently, pupils may experience reduced engagement, shorter attention spans, and fewer opportunities to actively participate during Science lessons. Therefore, this project targeted to identify the requirements for the ScienceVerse, to design and develop the courseware, and evaluate its functionality and usability. The courseware was developed using the Analysis, Design, Development, Implementation and Evaluation (ADDIE) model. Gagné's Nine Events of Instruction was adopted as the instructional design framework because it provides a systematic sequence of learning activities that enhances pupils' attention, engagement, understanding, and knowledge retention. ScienceVerse consists of six Year 1 Science topics and incorporates multimedia elements, educational videos, interactive learning activities, quizzes, and immediate feedback to create an engaging and meaningful learning experience. The completed courseware was evaluated through functionality testing, expert evaluation, and user acceptance testing. The expert evaluation used a structured evaluation checklist based on Gagné's Nine Events of Instruction to assess instructional design, interface design, content organisation, multimedia elements, navigation, feedback, and learning process. User acceptance testing involved 30 respondents using the System Usability Scale (SUS). Functionality testing confirmed that all functional requirements operated successfully according to the specified requirements. The expert evaluation indicated that the courseware successfully implemented Gagné's Nine Events of Instruction and received positive feedback across all evaluation aspects, while several recommendations were provided for future improvement. User acceptance testing achieved an average SUS score of 81.17, corresponding to Grade A, an Acceptable acceptability rating, and an Excellent adjective rating, indicating a high level of usability. Overall, the findings suggest that ScienceVerse is an effective, engaging, and user-friendly digital Science learning courseware that supports structured learning experiences for Year 1 pupils. Future work may focus on expanding the learning content, enhancing interactive features, and evaluating the courseware with a larger group of primary school pupils.