

UNIVERSITI TEKNOLOGI MARA

LEARNING MAKHRAJ WITH 3D VISUALIZATION

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**Learning Makraj with 3D Visualization**

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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## **ABSTRACT**

Makhrāj is the articulation point of a hijayyah letters. Being able to recite the letters correctly is the foundation of tajweed, and this is achieved by knowing where the sound originates. It is found that children have difficulties in learning how to pronounce the proper Makhrāj. A proper technique and tools might help student in learning Makhrāj better. Thus, this study is focused on developing a multimedia courseware that could assist learners to learn the correct pronunciation for the Makhrāj of the hijayyah letters using the multimedia elements especially the 3D graphics. For this project the target user are children aged between 7-12 years old. They will be trained with the correct of Makhrāj for letters in the 7 verses from surah al-Fatihah. This courseware fully developed in Malay language. This study is to determine whether the application module can really enhance student performances in learning the pronunciation with the correct Makhrāj so that their pronunciation improved. The application has been tested on six children and the results showed that they are able to understand the Makhrāj better and also enjoyed the 3D approach of learning.

**Keywords:** Makhrāj, 3D Visualization, Pronunciation, Multimedia Courseware, Children.