Universiti Teknologi MARA

SmartZikr: Sign Language Augmented Reality (AR) Application

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ABSTRACT

The religious practice in everyday life is part of the manifestation of religion and belief of every human being. All Muslims, including the deaf, need to perform their religious obligations within their abilities. However, not much attention is given to people with disability, such as the deaf, with regards to observing their religious practices and in understanding the related problems that they face. Therefore, this project is intended to teach the deaf students in a Zikr Sign Language that usually are recited after every prayer. The objectives of this project are to identify the requirements of the SmartZikr application for deaf students, to design and develop SmartZikr application for the students by following the Mobile Application Development Life Cycle (MADLC) methodology during the development process that will use Unity software and C# as the coding language. The scope of this project consists of target user which is the deaf children, android mobile platform, the content which are Zikr Fatimah, sign language in Arabic and translation in Malay and the development phases that will be developed only until the testing phase. In recent years, there has been an increasing interest in applying Augmented Reality (AR) to create unique educational settings. So, an AR of 3D model will be made to gesture the sign language to make this application to be more interesting. A marker based detection technology, which are flash cards are used in this project to show the AR. Besides, this project will benefit several parties such as the deaf children as this application will help them to learn interactively. Besides, the AR designers and developers will also bring benefits as they are developing an application that beneficial to the community. For future recommendations, SmartZikr application may contain various Zikr that are generally used and available among the deaf communities. This can be done by adding extra menu buttons for users to choose other Zikr and adding 3D model that gesture other sign language. Lastly, SmartZikr application should be made available in iOS platform.

Keywords: deaf students, Zikr Sign Language, marker based technique, 3D model, mobile learning, MADLC, UNITY, C#

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CHAPTER ONE

INTRODUCTION

This chapter discussed on the research background for this project. Thus, this chapter provides the project background, problem statement, objectives, scope, and significance of the project.

1.1 Project Background

In Malaysia, OKU (Orang Kurang Upaya), or the disabled, is defined as an individual with long term physical, mental, intellectual or sensory disabilities when interacting with various challenges that may hinder full and effective social participation. The deaf is one community of OKU (Orang Kurang Upaya or Disabled), who endure disability of the auditory senses (Mohad, Aiza, & Mokhtar, 2018). Partially deaf people can often use hearing aids to aid their hearing. As a means of communication, deaf people use sign language. There are hundreds of sign languages in use all over the globe. Despite the prevalent misconception that sign languages are not "real languages," sign languages are as rich and complicated as any oral language (Disabled World, 2019).

Sign language is a language that "falls mainly at the level of imagery" as "more pictorial, less symbolic" than spoken language. Sign languages "lack precision, subtlety, and flexibility" when being compared with verbal symbol systems (Goldin-Meadow & Brentari, 2017). Malaysia has three sign languages, namely Malaysian Sign Language or "Kod Tangan Bahasa Malaysia" (KTBM), Penang Sign Language, and, according to the ethnologist, Kuala Lumpur Sign Language, an extensive list of the world's languages. KTBM is a sign language combined with some ASL (American Sign Language) borrowed local symbols. It is used to teach Malay, the national language, to deaf learners (Hurlbut, 2003). Although the deaf students communicate using sign language, there are other language that they are not aware of such as Zikr