Universiti Teknologi MARA

LearnBIM: Learning Malaysian Sign Language Using A Gamified Approach

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ABSTRACT

According to the World Health Organization (WHO), over 466 million people with hearing impairments rely on sign language as a main communication tool, making it one of the most important languages in the world. However, despite it is commonly used among deaf individuals, sign language remains unfamiliar to hearing individuals due limited accessible resources and awareness, which results in a communication gap between them. Addressing this issue, LearnBIM system aims to develop an engaging and interactive mobile application that promotes sign language learning for both hearing and non-hearing individuals. The existing sign language learning tools frequently use static content, which can be uninteresting and demotivating for users to learn sign language. Thus, it is important to develop a mobile application that integrates gamification features such as badges, progress tracking, and challenges to create an immersive and enjoyable learning experience. To develop LearnBIM system, the Feature-Driven Development (FDD) model is chosen as the software development methodology, ensuring an iterative approach for developing high quality educational system. This method encourages continuous development through focused and manageable iterations. To cater to iterative features during the development process, the phases include developing an overall model, building a features list, planning by feature, design by feature and build by feature. The completion of LearnBIM system is expected to give a major positive impact on promoting sign language as an accessible communication tool. Usability testing using the System Usability Scale (SUS) revealed highly positive feedback from users, with over 80% strongly agreeing that the system is easy to use, well-integrated, not complex, and boosts confidence in usage. These results confirm that LearnBIM is intuitive, user-friendly, and effective in supporting both new and experienced learners.

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CHAPTER 1

INTRODUCTION

This chapter describes the overview of the research topic and the foundation for the study. It includes a detailed description of the project's background, the problem statement, research objectives, research questions, and expected outcomes. Additionally, this chapter highlights the importance of the research and defines the project scope, emphasizing its importance and potential impact. Section 1.1 describes the background study which provides the context and justification for the project by highlighting the global and local significance of sign language learning.

1.1 Background of Study

According to the World Federation of the Deaf, there are over 300 recognized sign languages around the world, which are currently being used by 70 million deaf individuals as their primary means of communication (Rastgoo et al., 2021). Each of them is unique and culturally different according to their geographical areas and specific needs of the communities. Unlike other languages, sign language does not have a standard writing form and is different from spoken language (Bragg et al., 2019). This is because sign language depends on visual gestures like hand shapes, body movements, facial expressions, and spatial orientation. Hence, it is more challenging to represent them in written form as they are not based on alphabetical. However, although the deaf and speech-impaired community relies on sign language as the tool for everyday communication, it is still not widely used and poorly understood by the hearing community (Cheok et al., 2019). As a result, this communication gap between the deaf and hearing communities often results in social isolation, mainly among the deaf.