Chapter 11
The Development of an Educational Mobile Application for Malaysian Sign Language

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ABSTRACT

In an increasingly connected world, the development of technology has been instrumental in breaking down barriers and fostering communication between diverse groups. One such group that has benefited from technological advancement is the Deaf and hard-of-hearing (D/HH) community, which communicates using sign language. Sign language, a rich and expressive form of communication, communicates visually using the hands, arms, face, and upper body to produce signs. However, there is a lack of teaching and learning resources to assist the deaf community and those interested in learning sign language with the learning process. Therefore, this chapter investigates the development of a mobile application for sign language focusing on Malaysian Sign Language (MSL). The user-friendly interfaces for this application make learning and using sign language more intuitive and accessible to individuals with hearing impairments and those without. This application also provides users with a platform to learn, practice, and improve their sign language knowledge.

INTRODUCTION

Sign language is a communication tool used to interact with hearing-impaired individuals in daily life, replacing oral language by employing the hands, arms, face, as well as the upper body for production and the eyes for comprehension (Mann et al., 2015). Sign language involves hand movements accompanied by facial expressions and communicates through hand gestures, body movements, and signs (Davi & Cleber, 2018; Karpov et al., 2016). Instead of speech, hand, body, and lip movements convey information and the speaker's thoughts. According to Amira Fatin, Wan Shazlina, and Dahlan (2016), sign language utilizes hand shapes, orientation, hand and arm movements, body language, facial expressions, and lip patterns to visually convey word meanings, without relying on acoustic sound patterns. There are numerous sign languages worldwide, each with its vocabulary and signs. The vocabulary and grammatical structures of sign languages are independent and distinct from those of spoken languages.

Sign language is used to express and communicate using manual and non-manual signs. Manual signs encompass gestures that use hand and arm movements to convey meaning, while non-manual signals encompass features beyond the hands and arms, such as head movements, facial expressions, body shifts, and others. Hearing-impaired individuals predominantly use sign language for communication (Siong et al., 2021). Sign language is also a communication system that relies on visually interpreted gestures. Many individuals in Deaf communities, including both Deaf and hearing people, communicate through sign language worldwide and consider it their primary mode of communication (Shamsul Anuar & Siti Mashitah, 2015). Wilbur (2013) suggests that sign language encourages users to think visually because the transmission pattern is predominantly visual, and communication relies on the use of the eyes. People with hearing loss or deafness may encounter difficulties in learning to communicate because they cannot hear the sounds around them, including their own voices.

According to the World Health Organization (WHO, 2023; WHO 2021), nearly 430 million people, which accounts for 5% of the world's population, experience some form of hearing loss, ranging from mild to profound, and struggle with communication on a daily basis. They may also require rehabilitation to address their hearing disabilities, which includes 432 million adults and 34 million children. Projections indicate that by 2050, more than 700 million people, or one in every ten individuals, will have some form of hearing impairment. For individuals with hearing disabilities, especially those with mild to severe impairments, sign languages often become the primary means of communication, allowing for manual or gestural communication to convey meaning (Davi & Cleber, 2018).

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