

EDUCATIONAL GAMIFICATION MOBILE APP FOR DEAF CHILDREN

Amugoda Arachchige Dharshi Madurangi Gunawaradana

A dissertation submitted in partial fulfilment of the requirement for
Bachelor of Engineering (Honours) degree in Software Engineering

**Department of Computing
Informatics Institute of Technology, Sri Lanka
In collaboration with
University of Westminster, UK**

2021

Abstract

Children with hearing impairment have a challenge in learning and progressing socially. According to research, annually, three out of every 1000 infants are born deaf globally, with the majority of cases being diagnosed between the ages of two and five. Since its beginnings, deaf education has progressed significantly. Auditory/oral, Bilingual-cultural, and full speech are among the most popular educational methods for deaf children. It is in this context that the current research is attempted. The entry point to them is through their usual sign language, secondly is through a visual communication, and thirdly to design integrate the assistive listening by the aid of an audio system. Additionally, deploy them in writing through the app and familiarize the clients with words related to the letters of the English Alphabet. This research project focuses on the use of Augmented Reality and a developing gaming mobile app that can enhance the current deaf education framework for deaf children in the category of (grade 1-3), ages between 6 to 8 years, proposing the app to expose them to gradual reading, writing, and communication. Through this app, deaf children will be able to learn and acquaint themselves with the sign language alongside the designed mobile app that can enhance the even traditional educational approaches currently in use. The use of Augmented Reality in methods of education is a plays a significant role particularly in the primary education of deaf children and adapting new gamification methods that could support more memory-based learning tasks which is a major input in this research. Augmented Reality allows for the incorporation of simulated objects into real-world worlds, allowing for real-time connectivity. User-centred architecture and execution of two virtual environments with two dimensional (2D) and three dimensional (3D), as well as user-centred assessment which involves the creation of user assignments, expert panel-based evaluation, and formative evaluation, are being also suggested as part of the further expansion of the app.

Key words: Deafness, Deaf Primary Education, Educational programs, Gamification, Augmented Reality, Mobile App, Skilling IT