APPLICATION OF AUGMENTED REALITY (AR) IN TEACHING THE NAMES OF 25 PROPHETS IN SIGN LANGUAGE

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Abstract: Augmented reality technology is already popular for its ability to bridge the gap between real and digital world. At present, the AR technology is now bridging the gap that exists due to learners' diversity. In this study, AR was used to create active learning experiences for the hearing-impaired students in learning the names of 25 prophets in sign language. The signs were introduced by the Global Deaf Muslim on 13 September 2017. Thus, as an effort to introduce these new signs to the hearing-impaired students, an innovation using augmented reality application was developed to assist teaching and learning for the students with hearing impairment. With AR, flashcards which contain a video overlay that shows how to sign the names were used. This augmented reality app is a particularly effective as it makes learning experience dynamic and better from something static to interactive by animating it. Pedagogically, the used of AR is effective in assisting the learning among the hearing-impaired students.

Keywords: augmented reality; innovation in teaching and learning; sign language; hearingimpaired.

INTRODUCTION

New possibilities for teaching and learning provided by Augmented Reality have been increasingly recognized by educational researchers (Wu et al., 2013). Augmented reality technology is already popular for its ability to bridge the gap between real and digital world. Augmented reality (AR) is an emerging form of experience in which the real world is enhanced by computer-generated content which is tied to specific locations and/or activities (Yuen et al., 2011). At present, the AR technology is now bridging the gap that exists due to learners’ diversity. Research has also indicated that AR systems and environments could help learners develop skills and knowledge that can be learned in a more effective way (El Sayed et al., 2011).

There are several benefits of AR in education; which are seamless integration with reality, increased motivation and attention, information accessibility, and creativity (Parton et al., 2010). For the hearing-impaired students, these benefits are very significant in creating an active learning environment. The AR interactive learning environment can assist the hearing-impaired students to better contextualize and reinforce their learning in school and in other settings where they learn (e.g. at home). According to Burik and Kelly (20013), active learning has long been considered a proven method for increasing attention, motivation, and retention of concepts especially among the hearing-impaired students. For the hearingimpaired students, there are many barriers when they begin to learn a new concept. These barriers include unfamiliar vocabulary, misunderstanding new concepts, not hearing the important information, not knowing which information is important and struggling to pay attention (Perigoe & Goldberg, 2005). Thus, AR is seen as a new solution for students with learning difficulties such as for the hearing-impaired students as it has potential to engage, stimulate, and motivate students to explore learning materials (Kerawalla et al., 2006).
Given the exciting developments and potential of AR as an improved user interface technology, researchers believe that AR has vast potential implications and numerous benefits for the augmentation of teaching and learning environments among the hearing-impaired students. In this study, AR was used to create active learning experiences for the hearing-impaired students in learning the names of 25 prophets in sign language. The signs were introduced by the Global Deaf Muslim on 13 September 2017. Thus, in order to introduce these new signs to the hearing-impaired students, an innovation using augmented reality application was developed to assist teaching and learning for the students with hearing impairment. With AR, flashcards which contain a video overlay that shows how to sign the names were used.

**METHODOLOGY**

In this study, a pilot set of AR flashcards was developed for the purpose of teaching the names of 25 prophets in sign language with digital content. Videos of how to sign the names of the 25 prophets were recorded (Figure 1) and were overlaid with images which contain the name of the prophets (Figure 2).

![Figure 1: An example of videos of how to sign the names of the 25 prophets](image)

![Figure 2: An image which contains the name of the prophet](image)

The AR flashcards were then tested among the hearing-impaired students at a special education centre located in Kuala Lumpur. The students were given a brief introduction of the flashcards especially the interface and how to flash the overlaid digital contents using mobile device. The flashcards were prepared in various types; word cards and puzzles. This is to encourage active learning among the hearing-impaired students. The students were given chances to view each flashcard (Figure 3) and learn from the digital content (Figure 4).
After the session, the researchers obtained feedback from the students and the teacher. A semi-structured interview was conducted and recorded. Simple questions on how they perceived the use of AR flashcards were asked.

RESULTS AND DISCUSSION

Based on the students’ responses, it could be concluded that the use of AR flashcards allow students to engage in learning. One of the students commented that they may repeatedly check the answer whenever they have forgotten how to sign the name of the prophets. The students also stated that they found the use of the AR flashcards was fun and something different than how they learn every day. The students were all very keen to find out how it worked and to experience it for themselves. These findings support the claim made by El Sayed et al. (2011) that AR could help learners develop skills and knowledge that can be learned in a more effective way.

As for the teacher, he was particularly impressed by how AR flashcards can make teaching and learning interesting among the hearing-impaired students. He personally believed that the use of AR flashcards was suitable for their needs. This is because the approach used was more interactive and the students were engaged in the learning. The use of visual information and digital content are effective in reinforcing auditory information. The teacher also mentioned that if the students were engaged in what they were doing, they will be more interested in learning the material, thus increase motivation. It is also shown that the use of AR could increase students’ motivation and attention (Parton, Hancock, & Dawson, 2010). The teacher also commented that the use of AR eases the teacher.
CONCLUSION

The findings of this study showed that the application of AR offers new opportunities for teaching and education specifically for hearing-impaired students. Many technologies designed for mainstream use can be successfully repurposed to teach students with disabilities. The use of AR could be seen as an effective approach to engage learning and allow repeated practice. As a conclusion, Augmented Reality (AR) has the potential to engage and motivate learners to explore material from a variety of perspectives, and has been shown to be particularly useful for teaching students with hearing-impairment.

REFERENCES


