

The Use of Multimedia Courseware in Teaching Sign Language to Hearing Impaired Students

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Abstract

This quasi-experimental study was aimed to see the effect of using interactive multimedia software in teaching the Kod Tangan Bahasa Melayu (KTBM) to students with hearing impairments. In this study two types of software developed by the researcher have been used as teaching materials. The built-in multimedia is called Koswer Multimedia Interaktif Bahasa Melayu (KoMIBM) and Koswer Multimedia Bahasa Melayu (KoMBM). The respondents of the study consisted 60 students of year three and four from Sekolah Kebangsaan Pendidikan Khas program for hearing impairment in Malaysia. The data were collected through pre and posttest and analyzed using MANCOVA statistics. The results of the data analysis show that there is a significant difference in the correct hand code usage score between experimental group and control group. The MANCOVA analysis results show the following results [$F(1, 49) = 5.996, p < 0.05$]. The findings show that students using KoMIBM demonstrate better score than students who use KoMBM in proper use of the KTBM. Based on the findings of this study, it can be concluded that the use of interactive multimedia software can increase the mastery of KTBM among the hearing impairment students.

Keywords: Interactive Multimedia, Multimedia Software, Kod Tangan Bahasa Melayu, Students with Hearing Impairments.

Introduction

Sign language is the main language of communication used by students with hearing impairments. Sign language is used as the first language learned and acquired by them (Muma & Perigoe, 2010; Goh & Teh, 1993). There are two main types of sign language used in Malaysia, namely Kod Tangan Bahasa Melayu (KTBM) and Bahasa Isyarat Malaysia (BIM). KTBM is a sign language used in schools under the Ministry of Education Malaysia (MOE). While BIM is a pure language that is the mother tongue of the deaf in Malaysia. Now, BIM has been recognized as the official sign language of the deaf in Malaysia through the Persons with Disabilities Act 2008 (Yusof, 2014). For students with hearing impairment, they are often associated with poor academic achievement (Yassin, 2005). This is due to the confusion factor by mixing the use of Kod Tangan Bahasa Melayu (KTBM) and Bahasa Isyarat Malaysia (BIM) when communicating and in writing. According to (Mahamod, 2007), changing the code when communicating will affect students' language skills less auditory ability in comprehending sentences read and answering comprehension questions. In addition, factors such as late

learning of sign language can also contribute to misunderstanding of oral and written language teaching (Beal- Alvarez, 2014). Thus, this study looked at the extent to which the effectiveness of the use of interactive multimedia courseware developed by researchers can improve the skills of using hand codes among students with hearing impairments.

Methodology

This study is a quasi -experimental study that uses pretest and posttest to collect information regarding the effect of the use of interactive multimedia courseware on the achievement of accurate hand code use. Instruments used as independent variables in this study are Koswer Multimedia Interaktif Bahasa Melayu (KoMIBM) and Koswer Multimedia Bahasa Melayu (KoMBM). Both instruments of this study were constructed by the researcher. There are 8 KoMIBM courseware and 8 KoMBM courseware developed by the researcher for the purpose of this study.

The sample of this study consisted of 60 hearing impaired students from four Sekolah Kebangsaan Pendidikan Khas (SKPK) hearing impairment programs in four states. The four schools selected were based on the characteristics of the study sample that met the needs of this study. The study population consisted of students who were in years 3 and 4. The age of the students involved in this study was 9 to 11 years. For the purpose of data collection of the study, pretest and posttest were implemented. The instrument for this pre and posttest was a set of comprehension questions. The division of the comprehension questions is shown in Table 2 below:

Table 1.

Pre And Posttest Comprehension Questions

Questions	Questions No.	Marks
Proper use of hand codes	1 – 10 (Section B)	10 (Correct = 1 Mark) (Wrong = 0 Mark)

Based on Table 1 above, Section B contains 10 questions based on the hand code video projection shown by the teacher. The selection of hand codes to be tested was randomly selected by the researcher based on eight constructed reading texts. Pupils have to rewrite the hand code answers shown in the video. The total marks in this section B is 10 marks. The total time allocated for students to answer all the questions is for 45 minutes (Part A and Part B).

Findings and Discussion

The collected data were analyzed using MANCOVA statistics which took into account the findings of ANOVA test as well as descriptive analysis. Research analysis was conducted to answer the following research questions:

- i) Are there differences in scores in terms of the use of accurate hand codes in learning environments using KoMIBM and KoMBM?

Findings from the ANOVA analysis are shown in Table 2 below:

Table 2.

Anova Results For Hand Code Achievement Between Experimental Group And Control Group

Source	Dependent variables	df	Mean squared	F	*Sig
Courseware	PKT	1	22.388	5.996	0.018

The ANOVA analysis shown in Table 2 gave results [$F(1, 49) = 5.996, p < 0.05$]. Based on the results of this study, there is a significant difference for hand code achievement score between KoMIBM group and KoMBM group. Descriptive analysis showed that the mean of the group using KoMIBM ($\bar{X} = 1.63$) was higher than the KoMBM group ($\bar{X} = 1.20$). The results of the data analysis that have been conducted show that there is a significant difference in terms of achievement scores of the use of accurate hand code between the group that uses KoMBM with the group that receives KoMIBM. The group that used KoMIBM obtained an achievement score of using accurate hand code better than the group that received KoMBM. The results of this study are similar to some of the findings of previous studies (Nikolaraizi & Vekiri, 2012; & Holmer et al., 2017). Nikolaraizi and Vekiri (2012) have studied about the effectiveness of the use of multimedia courseware in teaching Greek sign language to students with hearing impairment. Based on the study, it was found that students who use multimedia courseware (video and words) can improve the understanding of students with hearing impairments in learning Greek sign language even if they are not proficient in using sign language.

The results of this study are also similar to the study by (Holmer et al., 2017). Holmer et al (2017) have studied about the effectiveness of the use of English sign language videos to teach hearing-impaired children who are in primary schools. The results of the study found that children with hearing impairment can improve their sign language skills, however, there is no significant effect of the use of this computer in improving reading comprehension. According to Holmer et al. (2017), the use of computers to teach sign language to hearing impaired children can help them use sign language correctly but not in improving reading comprehension. This is due to the lack of skills in using sign language among children with hearing impairment.

Summary

This study has shown that there is a significant effect of the use of interactive multimedia courseware on improving the skills of using hand codes among students with hearing impairment. Based on the findings of the study, the conclusion that can be made is that the learning approach using multimedia materials is able to improve the sign language skills of students with hearing impairments. It also helps them to master the Malay language, especially in reading and writing skills. Therefore, the researcher hopes that the use of teaching aids in the form of interactive multimedia is expanded and used in teaching students with hearing impairment in schools in Malaysia.

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