E-Module for CLIL with Augmented Reality in Dynamic Assessment to Increase EFL Writing Skill

Virgiawan Adi Kristianto[1]

virgiawanadikristianto@mail.unnes.ac.id

Harijadi Gunawan Buntoro[2]

hariyadi@mail.unnes.ac.id

Sri Handayani[3]

handayani@mail.unnes.ac.id

[1,2,3]Universitas Negeri Semarang

Abstract

Online learning becomes more challenging during pandemic as it requires instructional media or module which enable students to learn by themselves at home. Therefore, this study is aimed at investigating the effect of e-module with augmented reality used during dynamic assessment to improve students' writing skills in content and language integrated learning class. This study employed quasi experimental approach with non – equivalent control group design. 66 students of Civil Engineering Department were involved as the samples of this study. Total sampling was used in this study. The students' writings were then assessed using ESL composition profile rubric from Jacobs by two independent raters. The data from the raters were then analyzed using SPSS. The results t-test showed that there was significant difference on the average score of the post-test data on both groups and that between the average score of pretest and post – test scores on the experimental group.

Keywords: online learning, e – module, instructional media, EFL writing skills,

INTRODUCTION

Online learning and training are rapidly being utilized throughout the world to alleviate the time and space constraints associated with traditional forms of education (Panigrahi et al, 2018). Because of its ability to use various teaching techniques, strategies, and learning styles, online learning can be an excellent means for learning languages. (Perveen, 2016). There are two types of online learning: synchronous and asynchronous settings (Jolliffe, Ritter, & Stevens, 2012). Both techniques provide several benefits. Synchronous mode instills a sense of community through collaborative learning (Teng, Chen, Kinshuk & Leo, 2012; Asoodar, Atai, Vaezi & Marandi, 2014). Due to the instructor and classmate presence, synchronous classes can generate high levels of motivation to continue participating in online activities (Yamagata-Lynch, 2014).

The key advantages of the asynchronous mode are the opportunity to access educational resources at any time and from any location (Pullen & Snow, 2007). Online learning becomes more challenging during pandemic as it requires instructional media or module which enable students to learn by themselves at home. Therefore, this study is aimed at investigating the effect of e-module with augmented reality used during dynamic assessment to improve students' writing skills in content and language integrated learning class.

DYNAMIC ASSESSMENT

According to Vyghotsky (1978), individual development takes place as a result of involvement in a task that is beyond the learner's current abilities, not because the learning process waits for the learner to be ready for it. Therefore, when education and assessment are integrated, learners receive mediation or other forms of assistance to better understand and demonstrate their abilities. According to Grigorenko (2002), the type of mediation provided by dynamic assessment is an intervention or treatment given to learners after the pre-test and before the post-test.

Ability is considered as something dynamic, not innate (Lidz & Gindiz, 2003). This means that ability cannot be considered as something that is static and stable and easy to measure. However, rather because of individual interactions in various activities, we can acquire certain abilities (Poehner, 2008). Thus, the goal of dynamic assessment is to comprehend the development of individual cognitive functions through interventions that necessitate a rethinking of the assessor's role. The collaborative nature of the assessor and the assessed is emphasized in dynamic assessment. Because this collaboration is critical for directing and monitoring the development of the individual being evaluated.

CONTENT AND LANGUANGE INTEGRATED LEARNING

Coyle et al. (2010) proposed Content and Language Integrated Learning (CLIL) in the 1990s to characterize a type of learning that integrates learning a second or foreign language with non-language materials such as economics and business, mathematics, engineering, and others. Marsh and Martin, 2012). CLIL has two characteristics that set it apart from other types of learning, such as immersion or dual language classes (Gajo, 2007, Lasagabaster, 2009, Coyle 2007).

The first distinguishing feature is the integration of language and non-language material content. Although they are implemented differently in the field, these two features are integrated and have a balanced portion in CLIL. Because the primary goal of CLIL is to gain skills in these two sections (Eurydice, 2005), it is more than just teaching non-language content in a foreign language, as is performed in language classes. The second characteristic is that CLIL is adaptable to different contexts and locations. CLIL learning modules can be organized according to the discipline of the learner.

Coyle et al. (2010) propose content, communication, cognition, and culture as the theoretical foundation for the versatility of Content and Language Integrated Learning (4C). The 4C model is defined by the following principles:

1. Content: The goal of content and language integrated learning is for students to be able to independently construct knowledge and develop skills.

2. Cognition: that content is cognizable. The linguistic demands of the content must first be analyzed before learners can construct knowledge.

3. The language learned must be contextual, capable of facilitating the process of learning content through language, and capable of serving as suggestions for constructing content and related cognitive processes.

4. Interaction is vital in the context of learning.

5. CLIL is based primarily on intercultural awareness.

WRITING IN EFL

Writing in a second language necessitates knowledge of both the written material and the

linguistics of the second language itself. Writing in English necessitates excellent grammar skills, imagination and ideas, determining the main idea and supporting it, and editing (Kareem, 2014). According to Younes and Albalawi (2015), writing involves practice in terms of paragraph structure, language use, and mechanical skills. According to Gathumbi and Masembe (2005), writing skills are classified into two types: basic and advanced. Writing involves vocabulary, spelling, and punctuation as basic skills.

Meanwhile, advanced levels necessitate idea connectivity in writing, structure, and communication content originality. As a result, learning English as a second language is difficult due to a lack of linguistic knowledge and content to create meaning (Saville-Troike, 2006).

Students face a variety of issues when learning to write in English, including a lack of vocabulary, lack of experience writing in English, and difficulties describing their ideas (Shih & Huang, 2020). According to Hyland (2003), writing in English as a foreign language imposes two learning burdens at once: expressing ideas in writing and using English. As a result, grammatical errors are common. According to Rahmatunisa (2014), there are three most common issues that students face when writing in English are linguistic, cognitive, and psychological. Younes and Albalawi (2015) identified the primary writing issues as grammatical, punctuation, and spelling. Difficulties in using English could be caused by a lack of use of English in everyday situations (Salma, 2015)

METHODOLOGY

This study employed quasi experimental approach with non – equivalent control group design. 66 students of Civil Engineering Department were involved as the samples of this study. Total sampling was used in this study. The students were divided into experimental and control group. 39 students were included in the control group and 27 in the experimental group.

The students were enrolled in English for Civil Engineering Class at Civil Engineering Department in which dynamic assessment was used in lieu of formal assessment for the final test. The format of the dynamic used in the class was the sandwich format based on Poehner (2008). The sandwich format of dynamic assessment consists of pre – test, treatment, and post – test. However, the e – module was only given to the experimental group. The classical instructional material was given to the control group. Therefore, this study was aimed at investigating the effect of e-module with augmented reality used during the dynamic assessment used to improve the English writing skill of the Civil Engineering Department. The students were tasked to write a discussion text with the green construction technology as the main topic. The students' writings were then assessed using ESL composition profile rubric from Jacobs (1981) by two independent raters. The data from the raters were then analyzed using SPSS.

The average score from both raters were then analyzed for its normality and homogeneity using SPSS version 23 to determine whether parametric test can be applied to analyze the data. T – test was used to analyze the data to see the difference between the score on the control and experimental group.

RESULT AND DISCUSSION

E – module development

The e – module only was developed by using online.flipbuilder.com to create an e – module which can mimic the movement of a real book when it is flipped. The result can be seen on this following link: https://bit.ly/EnglishforCE. Below is the cover of the e – module.

Figure 1. E – Module cover

3-D augmented reality application for the e – module was developed using Unity version 2019.1.3f1. 3-D models created using Sketchup version 2018. The barcode on the e – module must be scanned using the application to see the 3D image. The 3D image can be seen below.

Figure 1. 3D image from the barcode

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his e – module was only distributed to the experimental group.

The effect of the E – module

The scores of the pre – test from the two independent raters were analyzed using SPSS version 23 for the normality. The results of the normality test using Kolmogorov – Smirnov test can be seen below.

Table 1. The result of normality test on the pre – test scores

No	Control	Experimental
Asymp. Sig. (2-tailed)	.174	.200

the control class has a p-value = 0.174 and the experimental class has a p-value = 0.200. Both p-values are > 0.05. Therefore, the scores in both groups are normally distributed. The data were then analyzed for the homogeneity test using Levene statistics. The result can be seen on the table below.

Table 2. The result of homogeneity test on the pre – test scores

Levene Statistic	df1	df2	Sig.
2.203	1	64	.143

p-value = 0.143>0.05, then the two scores from the two groups have the same variance or are homogeneous.

The normality test was also conducted for the post – test score. The result can be seen below.

Table 3. The result of normality test on the post – test scores

No	Control	Experimental
Asymp. Sig. (2-tailed)	.200	.200

p-values for both classes are 0.200. Both p-values are > 0.05. Therefore, the scores in both groups are normally distributed.

Independent samples t – test was used to analyze the post – test data on both control and experimental groups. The result of the independent samples t – test can be seen on the table below.

Table 4. The result of t - test on the post – test scores

	Group	N	Mean	Std. Deviation	Std. Error Mean
Class	control	39	64.64	9.516	1.524
	experiment	27	74.33	6.294	1.211

No	T – test for Equality of Means		
Equal variances assumed	t	df	Sig. (2-tailed)
	-4.632	64	.000

Based on the table above, $t_{statistics}$ = -4.632 with the degree of freedom = 64, $t_{critical}$ = -1.99773. The p – value = 0.000 < 0.000 and the $t_{statistics}$ > $t_{critical}$, Therefore, there was a significant difference between the average score of post – test on both control and experimental group. The mean value for the control group = 64.64, whereas the mean value for the experimental group = 74.33. The mean value was higher on the experimental group. It shows that the experimental group with e – module as treatment had higher score compared to the control group.

Paired samples t – test was conducted on the pre – test and post – test scores for experimental group to see the effect of e – module. The results of the paired samples t – test can be seen below.

Table 5. The result of t - test on the pre and post – test scores

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	post	74.3333	27	6.29408	1.21130
	pre	64.7778	27	11.52367	2.21773

No	Paired samples test		
Equal variances assumed	t	df	Sig. (2-tailed)
	5.771	26	.000

Based on the table above, $t_{statistics}$ = 5.771 with the degree of freedom = 26, $t_{critical}$ = -2.05553. The p – value = 0.000 < 0.000 and the $t_{statistics}$ > $t_{critical}$, Therefore, there was a difference between the average score of pre – test and post – test on the experimental group. The mean value for the post – test on the experimental group = 74.3333, whereas the mean value for pre – test on the experimental group = 64.7778. The mean value was higher on the post – test for the experimental group. It shows that there was a difference on pretest and post-test scores on the experimental group due to the distribution of e – module as the treatment.

CONCLUSION

The e – module with augmented reality which was used as treatment on the experimental group has been able to increase the scores during the pretest and post – test on the experimental group as shown on the paired samples t – test results. When compared to the control group, the post – test score on the experimental group was higher. The independent samples t – test showed that there was significant difference between the average score of post – test on both control and experimental group.

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