The Influence of Using Chatbot towards Junior High School Students' Vocabulary Mastery

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Abstract

This research aimed to determine the influence of using chatbot on students' vocabulary mastery in class VII SMPN 13 Cirebon. This research used quantitative research method by implementing quasi-experimental research design. The participants in this study were 48 students from two classes. VII E served as experimental class and VII D control class. This research used purposive cluster sampling as the sampling technique. This research used a test as an instrument and is analyzed by using IBM SPSS 25. The research finding showed that the post-test mean score in experimental class was higher than control class (70,00 > 68,96). This result means students' vocabulary mastery improving in experiment class was better than control class. Furthermore, the t-test result showed that sig (2-tailed) was less than 0,05 (0,029 < 0,050). This result meant null hypothesis (H_0) was rejected and alternative hypothesis (H_a) was accepted. In addition, there is low effect in using Chatbot towards junior high school students' vocabulary mastery. Therefore, this indicated that there was an influence of using chatbot on seventh-grade students' vocabulary mastery at SMPN 13 Cirebon.

Keywords: Chatbot, vocabulary mastery

Introduction

Vocabulary is a language component that must be mastered. According to Ghifford in Vasu & Dhanavel (2015), Vocabulary learning is central to acquiring a language, whether any language is learned. In addition, vocabulary is one of the most crucial aspects of a foreign language. Richards & Rodgers (2002) also stated that students should have enough vocabulary knowledge because of the significance of vocabulary in acquiring a language.

However, many students in junior high school have difficulty mastering vocabulary. Based on the preliminary observation that the researcher had done on SMPN 13 Cirebon, the researcher found that students have difficulty doing tasks because of their lack of vocabulary, especially on the Merdeka curriculum that contains project tasks on the learning process.

According to the interview conducted with the English teacher of SMPN 13 Cirebon, Students in junior high school lack vocabulary because a pandemic affected learning in elementary school, and most elementary schools in Cirebon do not have English in the curriculum, so students in junior high school lack vocabulary. In addition, some of them can also not identify the meaning of words when the teacher teaches them in class. Some students did not identify the kind of word, so they could not

use it properly. In conclusion, there is some problem with students' vocabulary mastery.

Because of the critical vocabulary in the learning process, the problem should be solved. One way of solving problems is by using technology. The use of technology is in line with the Merdeka curriculum currently applied to the 7th grade of SMPN 13 Cirebon.

Nowadays, technology can be used rapidly in the learning process. English teachers have increasingly used it to help students improve their language skills. (Miranty et al., 2023). In addition, Miranty (2023) also stated that students have many ways to learn a language outside of school due to advances in information and the fast growth of technology.

Smartphones and computers are often used in learning and using technology. They are two conventional technologies considered beneficial in improving students' English language skills. (Juniardi et al., 2020). Computers and smartphone technology are primarily used in English learning, so the methods or applications should be accessed on at least the computers and smartphone platforms.

One of many technologies that can be used is a chatbot. The chatbot is an application or software that automatically responds to questions based on keywords. This app or software can introduce basic vocabulary, especially to 7th grade students.

A chatbot is successfully used by some teachers and lecturers in English learning, especially vocabulary learning. Some researchers have shown positive results in using a chatbot. Those researches are about using Elbot chatbot and its influence on vocabulary mastery by Kim, (2018) and by Alsadoon (2021). In Indonesia, research about using chatbot in vocabulary learning in school has been conducted by Oktadela et al., (2023) also shown positive result in using chatbot. However, this research has difference with research conducted by Kim, Alsadoon, and . This research was conducted in junior high school and the previous research conducted in university students, so researcher interested to investigate the influence of using chatbot towards junior high school students' vocabulary mastery because there is still few research about using chatbot in junior high school learning.

In addition, the application that used in this research used Andy English Chatbot while the previous research used ELZA Chatbot. In addition, it is also proven Hakim and Rima (2022) research that Andy English Chatbot has more positive reception than others chatbot application.

In addition, chatbots are used because they can be accessed on computers and smartphones. A chatbot is easy for the teacher because the teacher does not need to know about programming to create a chatbot. (Huang et al., 2022).

Based on the problem background, this research can be formulated as "Is there any influence of using chatbots on students'

vocabulary mastery in the seventh grade of SMPN 13 Cirebon?". As the formulation of problem stated, the purpose of this research is to determine influence of using chatbot on the vocabulary mastery of seventh-grade students at SMPN 13 Cirebon.

Based on the introduction that has been stated, the hypothesis in this research can be stated as two hypotheses: null hypothesis (H_0) and alternative hypothesis (H_a). Null hypothesis (H_0) in this research is: There is no influence of using a chatbot on seventh-grade students' vocabulary mastery at SMPN 13 CIREBON, and alternative hypothesis (H_a) in this research is: There is an influence on seventh-grade students' vocabulary mastery at SMPN 13 Cirebon.

Theoretical Review

Vocabulary

Vocabulary serves as a crucial component in mastering English as a second language. Some international students still believe that English is difficult to learn and acquire. The reason for the difficulty is that English is not the official language in their country, so students have difficulties learning many vocabularies because it is rarely used in their country. Because of that, students cannot speak and write well and understand what they hear. So, this section explains the general concept of vocabulary.

There are some definitions of vocabulary from any expert. Webb & Nation (2017) stated that vocabulary is the building block of language and is a key to communicating effectively. Based on the definition that has been explained, researchers conclude that vocabulary is a word that should be known to help communicate effectively.

Vocabulary needs to be mastered when learning English. The reason is that vocabulary is fundamental in English and teaching, and students cannot express their ideas and understand others if they do not have sufficient vocabulary (Suardi & Sakti, 2019).

Furthermore, students need vocabulary mastery because it is more than grammar for communication functions, especially when students are interested in learning the essential words in the early stage. It is impossible to master all language skills without learning vocabulary. (Viomeika et al., 2022) In addition, Groot, as cited in Bueno-Alastuey & Nemeth (2020), also stated that without enough vocabulary, second language learners would not be able to take part in development activities of language skills because vocabulary mastery is required for mastering four language skills such as listening, reading, speaking, and writing. It means that students should first master vocabulary if they want to master the English language. Furthermore, Fatmawati et al., (2022) stated that vocabulary needs to be taught by the teacher first because vocabulary plays a crucial role in learning a foreign

language; students can learn a foreign language quickly by mastering vocabulary.

Mastery is not only about recognizing certain words' meanings. According to Ur, as cited in Lelawati et al., (2018), It will be called mastery of vocabulary if the learner recognizes the word and the meaning and understands and can identify form, grammar, collocation, meaning, and word formation. So, students should know the components of the word itself, not only recognize it.

The principles of teaching and learning vocabulary

Some principles should be applied in the learning process of teaching and learning vocabulary. Wallace, cited in Hernawati, (2015), stated about principles of teaching and learning vocabulary are aims of learning, quantity of learning, need of learning, situation presentation, meaningful presentation, presenting in context, learning vocabulary in the mother language and target language, inference procedure in vocabulary learning, and frequent exposure and repetition.

Chatbot

A chatbot is a program that automatically responds to questions. Based on Lin et al., (2023) statement, a chatbot or chatter robot is a computer program that can carry out conversations by analyzing the input text received from humans and replying with the output text like humans. It is typically used to provide information or assist with various tasks, often in a conversational manner. Chatbots can be voice or text-based interactions and allow for integration into websites, instant messenger applications, and virtual assistants.

The chatbot was first introduced in 1964. Chatbots became famous in 2016 when various social media and instant messaging platforms provided services for creating chatbots through their platforms. Because of that, anyone could easily create, release, and develop chatbots that could be customed to the needs of developers (Jones, 2018).

Based on the definition, the researcher concludes that a chatbot is a program that can automatically respond to a question based on the input text and be integrated into websites, instant messenger applications, and virtual assistants.

There are some types of chatbot. Chatbots can be classified into two types. There are smart chatbots and simple chatbots. Smart chatbot refers to chatbot which is operated by artificial intelligence or automation based while simple chatbot refers to chatbot which is operated by some triggers or flow based (Kadasah, 2023).

In this research, researchers chose a chatbot called Andy English Chatbot as an instrument of research. Andy English Chatbot is a dump chatbot or simple chatbot that responds based on the keyword submitted by the user. The researcher chose the dump chatbot as an instrument because the chatbot responds more accurately than the smart chatbot, which still has weaknesses in

the chatbot's response. In addition, using a dump chatbot has a better perception than a smart chatbot. According to research by Hakim & Rima (2022), there is no negative perception of using Andy English Chatbot as a dump chatbot, while there is a 43% negative response to using Elisa as a smart chatbot. The Andy English chatbot also got 84% positive responses when used by students.

Chatbot in teaching vocabulary

Chatbot has many benefits in teaching vocabulary. Chatbot can assist students' language learning, can simulating environment to be suitable in target language, can deliver contents prepared, can provide students with information, and can provide recommendation to students. Furthermore, a chatbot can be used by students to teach vocabulary because the characteristics of a chatbot are timeliness which is provided real time situation, ease of use, and personalization which chatbot can be customized based on students' preferences (Huang et al., 2022).

Based on the explanation, a chatbot benefits students and teachers. The benefits that can be afforded are being a good interlocutor, simulating an authentic environment language, transmitting information, and providing recommendations in learning. The characteristics of a chatbot that can be personalized and accessible anytime and anywhere will help students achieve the knowledge they need.

Method

This research used quantitative research as the chosen research methodology for this study. Quantitative research tests theories by inspecting variables measured in numerical data and analyzing them using statistical processes (Creswell, 2014). As stated by Creswell, the researcher used this design because the research required specific numerical data to define whether the chatbot affects vocabulary mastery.

This research implemented a quasi-experimental design method in this research. A quasi-experimental research design involves conducting field experimentation. It is often used in educational research that the researcher cannot do a true experiment in classrooms or schools, which is quite impracticable. (Cohen et al., 2018). The reason for using this design method is because the research was done in schools. It was not easy to do true experiment research using random sampling. Instead of doing true experimental research, researchers chose quasi-experimental for this research.

Based on the explanation, the researcher used a pre-test and post-test non-equivalent group design. This design was chosen because it is a quasi-experiment research design with characteristics similar to pure experiment research. The difference between the design and pure experiment design was in choosing the sample. In pure experiment design, the sample was chosen by random cluster sampling, while this design

was chosen based on specific purposes and researchers' judgment. The sample was chosen as the class or cluster.

Furthermore, the research was conducted at SMPN 13 Cirebon. The participants of the study were 7th-grade students of SMPN 13 Cirebon. This research was conducted in the first semester of the 2023/2024 academic year. The population of this study was the seventh grade of SMPN 13 Cirebon, and all students used the Indonesian language as their communication language. There were five classes. Five classes labeled VIIA, VIIB, VIIC, VIID, and VIIE. The researcher chose two classes as cluster samples. One class was experimental, and another was a control class. The writer used a purposive sampling technique to require a sample for this study. Purposive sampling was choosing samples based on specific purposes and researchers' judgment. The writer discussed what experimental and control classes were with the English teacher. In this case, VII E served as an experiment class and VII D served as a control class. Each class had 24 students as participants in this research.

In this research, a test is used as an instrument for collecting data. The tests that were used were pre-test and post-test. Each test was employed to get data on students" vocabulary depth knowledge before and after the treatment. Multiple-choice was used as the type of test in this research. Each test consists of twenty (20) items. Each item contained four answer options (a, b, c, and d). which tested and fulfilled the validity and reliability of the items. Each correct answer was given 5 (four) in scoring. The maximum score that students got was 100 (one hundred).

In this research, the data analyzed in statistical analysis. The researcher used SPSS 25 as a tool in analyzing data. A T-test is a statistical test used to determine the acceptance or rejection of a hypothesis based on collected data. The researcher employed the independent sample T-test, which utilizes a two-tailed significance test, to compare the data from the experiment and control classes in this study.

T-test needs indicator to test whether the influence of using chatbot towards students' vocabulary mastery. The statistical hypothesis that used in t-test is a follow:

H_0 = sig. 2 tailed > 0,05 and H_a = sig. 2 tailed < 0,05 (Muijs, 2004).

Before t-test is conducted, the data should be homogenous and normal before analyzing it to determine the significance of using chatbots toward students' vocabulary mastery. So, the data was analyzed using the normality and homogeneity tests to ensure that the data was normal and homogenous before the hypothesis test.

Furthermore, the influence and effect of using chatbot towards students' vocabulary mastery was measured by effect size calculation. The effect size was employed to measure the effect of treatment

that has been done. This research used Cohen's formula to measure the effect size of the treatment (Cohen, 1988; Muijs, 2004).

To measure and determine the effect size of the treatment, there are some levels of effect size based on the calculation by using Cohen's effect size formula. According to Muijs (2004), there are some levels of effect size. There are 0,00 to 0,20 means low effect, 0,21 to 0,50 means modest effect, 0,51 to 1,00 means moderate effect, and more than 1,00 means strong effect. It is based on the influence of treatment which is calculated by Cohen's effect size formula.

Result

This research was aimed to determine the influence of using chatbot toward students' vocabulary mastery on seventh-grade students at SMPN 13 Cirebon. This research was conducted on seventh grade of SMPN 13 Cirebon and was carried out at two meetings of each class.

In processing of the research, researcher did pre-test for experiment class and control class before doing treatment in order to know how students were mastering vocabulary before doing the research. This data was also used in analyzing data to determine the influence of using chatbot towards students' vocabulary mastery. Then, researcher did post-test after doing treatment in order to know how influence and improvement the treatment affected to students' vocabulary mastery.

In order to analyze data, the data was examined for normality and homogeneity. For normality test, researcher used Shapiro-wilk test to examine the normality of the data because the sample of research was less than 50 data of each class.

Table 1. Normality Test Result

Class	Test	Shapiro-wilk		
		Statistics	df	Sig.
Experiment	Pre-test	,947	24	,229
	Post-test	,963	24	,510
Control	Pre-test	,959	24	,427
	Post-test	,931	24	,105

According to the Shapiro-Wilk table output, all of the data in question were found to be normally distributed. This conclusion is based on the significance value (Sig) greater than 0.05. The pre-test score in the experiment class was 0.229, while the post-test score was 0.51. In the control class, the pre-test score was 0.427, and the post-test score was 0.105. This means that the data is distributed normally and can be analyzed statistically.

Table 2. Homogeneity Test Result

Result	Levene Statistics	df 1	df2	Sig.
Based on Mean	2,396	3	92	,073
Based on Median	1,844	3	92	,145
Based on Median and with Adjusted df	1,844	3	78,82	,146
Based on trimmed mean	2,456	3	92	,068

According to homogeneity test result, the homogeneity test of variance table output

indicates that the significance value (Sig) for the mean was 0.073, greater than 0.05. The post-test data variance in the experiment and control classes can be deemed similar or homogeneous and can be analyzed statistically.

To determine the influence of using chatbot towards students' vocabulary mastery, a t-test with SPSS 25 was used. In statistical calculation, the researcher used "α=0,05" as a significant degree. This test tested the hypothesis between the null and alternative hypotheses. In other words, the test proved that using a chatbot in the learning process can boost students' vocabulary mastery, especially seventh-grade students.

There are two hypotheses in this research. The hypothesis testing are as follows:

H_0: There is no influence of using a chatbot on seventh-grade students' vocabulary mastery at SMPN 13 Cirebon, if sig. (2 tailed) > 0.05.

H_a: There is an influence on seventh-grade students' vocabulary mastery at SMPN 13 Cirebon, if sig. (2 tailed) < 0.05.

Table 3. T-test Result

Data (N)	t	df	sig. (2 tailed)
48	2,259	46	0,029

Based on the t-test result, it showed that .sig (2-tailed) was 0,029. According to hypothesis criteria that explained by (Muijs (2004), H_0 is rejected if sig. (2 tailed) was less than 0,05. Based on the independent t-test result using SPSS 25, it means that H_0 is rejected, and H_a is accepted. So, it concluded that there was an influence of using a chatbot on seventh-grade students' vocabulary mastery at SMPN 13 Cirebon.

Table 4. Effect Size

Experimental Class Mean	Control Class Mean	SD1	SD2	Size Effect
70	68,5	15,525	10,242	0,11

According to the data above, it shown that the size effect of using chatbot towards students' vocabulary mastery was 0,11. It means that the effect of using chatbot towards junior high school students' vocabulary mastery was low effect. According to Cohen (1988), the factors that affects effect size are sample size, variability in the data, the nature of the research question, measurement instrument sensitivity, and restriction in the range of variable. According to Cohen's statement, this research got low effect size because of the variability in the data. The data has higher variability or in any words has larger standard deviation. Based on the statistical description, the standard deviation in experimental class is 15,525 and in control class is 10,424. Because of the larger standard deviation, it can lead to smaller effect size.

Based on data analysis explanation above, it indicates that there is an influence using chatbot towards junior high school

students' vocabulary mastery. This is presented by pre-test mean score in experimental class was 60,21, and post-test mean score was 70,00. It indicates that students had difficulty to master vocabulary, but their vocabulary mastery improved after they used chatbot as a learning media. It implies that chatbot can improve students' vocabulary mastery as proven by Kim (2018) and Alsadoon (2021) which those research also have result that there is an influence of using chatbot as learning media in vocabulary. In addition, it is also proven Hakim and Rima (2022) research that Andy English Chatbot has more positive reception than others chatbot application.

In the learning process, it also shown that students in experiment class are more attractive than control class. Students really enjoyed learning new vocabulary by trying some trigger words on chatbot. Students also understood new vocabulary faster when using chatbot. It clearly stated that chatbot can engage students' interest in learning vocabulary process.

Based on these finding, it implies that using chatbot in vocabulary learning on junior high school can increase students' vocabulary mastery. Using chatbot in vocabulary learning on junior high school can increase students' interest in vocabulary learning. Also, students are more attracted to learning vocabulary without feeling pressured.

Conclusion

After evaluating the data, researcher implies that there is an influence of using chatbot towards' junior high school students' vocabulary mastery. It presented by mean score in experimental class was higher than mean score in control class (70 > 68,96). In addition, t-test result that .sig (2-tailed) was less than 0,05 (0,029 < 0,05), which H_0 was rejected and H_a was accepted, also implied that there was any influence of using chatbot as vocabulary learning media in junior high school. Based on effect size data, the influence of using chatbot towards junior high school students' vocabulary mastery was low effect because of large standard deviation of both classes. In addition, using chatbot in vocabulary learning also increases students' engagement in learning vocabulary which is implied with students in experiment class are more attractive than control class. Further research can be conducted in different education level to know the effectiveness in using chatbot for vocabulary learning in school. In addition, further research should be conducted by using qualitative method to know students' reception and perception in using chatbot for vocabulary learning. Finally, it can imply that using chatbot can improve students' vocabulary mastery.

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