

THE IMPACT OF ASSEMBLR EDU AR ON EFL VOCABULARY DEVELOPMENT IN HIGH SCHOOL LEARNERS

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Abstract

This study aimed to discover the average difference in Assemblr Edu augmented reality students' learning results in developing vocabulary mastery. The subjects of this research were 25 students from grade 11 of SMA Negeri Jatinangor in the academic year 2023/2024. This research used the quantitative approach with a pre-experimental design. The instruments were a vocabulary test in the pretest and posttest to measure students' achievement in the learning process during treatments. The hypothesis was tested using a non-parametric statistic test with the Wilcoxon test. The test showed that the average student score in the pretest was 46.44 and the average score in the posttest was 72.16. The results show the posttest score was higher than the pretest score. It indicated that there was a significant difference in the student's vocabulary mastery at the pretest and posttest. Other than that, the value of N-Gains in both the pre-test and post-test showed 0.30 is categorized as moderate. In addition, the Wilcoxon statistic test results showed that the Sig. two-tailed (0.000) is smaller than (0.05). Based on the test results, the researchers concluded that the use of Assemblr Edu augmented reality media was proven to be effective in developing students' vocabulary comprehension.

Keywords: *Assemblr Edu, Augmented Reality, Vocabulary Mastery*

INTRODUCTION

Learning vocabulary is becoming more engaging and meaningful due to the growing popularity of technology in the classroom. Teachers frequently employ technology in the classroom, including mobile apps, PowerPoint, and other digital tools. This demonstrates how vital technology utilization is. According to Wang and Young (2014), learning vocabulary in English can be made more motivating for students by utilizing technology. This study aims to ascertain how high school students' comprehension of vocabulary mastery can be improved through the use of augmented reality technology based on the Assemblr Edu application.

To support the mastery of English skills, it is essential to learn vocabulary. Lewis and Hill (1997) emphasize the importance of mastering vocabulary for students, as a lack of it can lead to ineffective communication and a preference for the native language. To help students with a limited vocabulary, interactive learning resources can be used, and teachers must identify learning media as a crucial component of education.

The majority of learners have inadequate vocabulary mastery. Based on my own observation, students have trouble saying the words correctly, spelling or writing, and accurately assembling. Furthermore, the students are unable to recall a major portion of the new language introduced in the classroom. In addition, they find difficulties because of the learning media that they use. The researcher looks for practical ways to enhance the

student's language competence to address such issues. In other research, techniques like word walls, scrabble games, comic strips, songs, word mapping, etc. are frequently employed (Natalia & Fitriawati, 2022). The optimal user experience was achieved in this study through the use of Assemblr Edu augmented reality media. This study believes that a more engaging classroom learning environment can result from using Assemblr Edu augmented reality media in teaching vocabulary.

Assemblr Edu is one of the augmented reality media that can be used for learning vocabulary. Vedadi, Abdullah, and Cheok (2019) discovered that AR can enhance vocabulary learning and motivation in an ESL environment. AR is an effective tool to help EFL students acquire English vocabulary efficiently. Based on this reason, researchers used Assemblr Edu augmented reality media to see the development of students' vocabulary mastery.

Several appropriate studies investigate the application of AR in learning vocabulary. Hafidah, Yusuf, and Subagya (2022) use augmented reality flashcards to help children, ages 4 to 5, to become more proficient with English vocabulary. Tin-Chang, Daniel-Liao, and Hsun-Hui (2023) investigate how AR technology can enhance learning. Tsai (2020) compares the effectiveness of traditional lecturing with the augmented reality technique in terms of students' learning of English vocabulary and their motivation to learn from the instructional materials. According to these three studies, utilizing augmented reality as a learning tool improves students' vocabulary comprehension.

The current study differs from other investigations. Only the effects and improvements before and after vocabulary learning with augmented reality have been the subject of prior research. This study looks into the process of teaching vocabulary with augmented reality as well as the vocabulary growth of the students. The research focuses on the significant development of students' vocabulary mastery using Assemblr Edu augmented reality. In short, this research aims to determine the effectiveness of using Assemblr EDU augmented reality media in improving students' vocabulary mastery.

METHOD

This study uses quantitative research as a research approach to investigate the effectiveness of using Assemblr Edu augmented reality media in developing students' vocabulary mastery. Creswell (2012) stated that quantitative research is an inquiry approach useful for understanding a phenomenon. This research used a pre-experimental with a one-group pre-test and post-test design. By using a pre-experimental, there is no comparison group to compare the data. The pre-experimental method is practical and can be implemented in the classroom. The one-group pre-test and post-test design includes pre-test measurements, treatments, and post-tests for one group. To evaluate the effectiveness of the experimental treatment, the results before and after the test were compared.

Table 1 Pre-Experimental Design

Participant	Pre-Test	Treatment	Post-Test
Ex	O ₁	X	O ₂

This study is carried out in SMAN Jatinangor, located in Jl. Ir. Soekarno KM. 22, Hegarmanah, Jatinangor, Sumedang, Jawa Barat. There is one class of eleventh-grade students at this school who are going to be participants in this research. This class is going

to be an experimental group. This group will be given treatment when learning using Assemblr Edu augmented reality media to develop vocabulary mastery. Before being given a treatment, this group will receive a pretest to measure the student's initial abilities. After doing the pretest, treatment will be given to the group. After receiving treatment, this group will receive a post-test to see and compare the results obtained of their vocabulary mastery.

Data are gathered using a vocabulary test, including pre- and post-tests. The purpose of the test is to assess the students' expanding vocabulary through the use of augmented reality materials based on the Assemblr EDU application. Before using the Assemblr Edu augmented reality application, students' vocabulary is evaluated using a pre-test, and the post-test is used to evaluate the application's effectiveness. Both the post-test and the pre-test are inventory assessments. In this instance, the vocabulary test was applied. Multiple-choice and fill-in-the-blank questions are on the test. There will be thirty items on the test. It takes sixteen questions to complete the gaps and fourteen items for multiple-choice questions.

The research data are collected directly from the students' pre-test and post-test results in the experimental class. The data of this study is the students of SMAN Jatinangor. The population of this study is all of the students in the 11th grade students in SMAN Jatinangor. In this investigation, non-probability (non-random) sampling was employed. In nonprobability sampling, each member of the population does not have an equal chance of being included in the sample (Burns, 2010). One class of senior high school students in the eleventh-grade students during the academic year 2023–2024 served as the sample for this study. In this case, class XI IPS 4 was the class used for doing the research. This class was taught using Assemblr Edu augmented reality media.

The researcher will employ the comparative technique to analyze the data in this study. The experimental group's score was assessed and compared by the researcher. This technique is intended to demonstrate statistically whether there are any significant variations in scores before and after receiving treatment in the experimental class. There are three steps involved in the data analysis process. These include the hypothesis test, the normality test, and the index N-gain calculation.

To ascertain whether or not the assessed data had a normal data distribution, the normality test is employed. To ascertain the test's normalcy in this investigation, the researcher uses SPSS (Statistical Package for the Social Sciences) to compute statistical data. To ascertain normalcy, the Shapiro-Wilk and Kolmogorov-Smirnov test is employed. The Shapiro-Wilk test is used because the respondents of the research are less than fifty respondents (Mishra, Pandey, Singh, Gupta, Sahu, & Keshri, 2019). If the data is not normally distributed when tested using the Shapiro-Wilk test, the Kolmogorov-Smirnov test is used to compare the data. The test compares the mean score of sample data to that of a normal distribution with a similar standard deviation. Based on the statistical count regarding the normalcy test with $\alpha = 0.05$ belief.

The efficacy of augmented reality media in enhancing students' vocabulary mastery is assessed using the hypothesis test. If the data is regularly distributed, a paired sample t-test is used for the parametric statistic test. If the data is not regularly distributed, a Wilcoxon test is used for the non-parametric statistic test (Imam, Usman, & Chiawa, 2014). The pre-test score and the post-test score were compared to the independent variable. This study also uses the N-Gain test. The N-Gain test value between the pre-test and post-

test data in the experiment must be computed to demonstrate the substantial difference in student scores before and after students received the treatment using Assemblr Edu augmented reality media.

RESULTS AND DISCUSSION

Findings

The findings present a report of data collected to answer research questions about students' vocabulary mastery and the use of Assemblr Edu augmented reality media. As a result, the outcome of the student's test is described in detail. The sample of this research was the eleventh-grade students of SMAN Jatinangor. The experiment was started on April 22nd until May 17th. This research conducted the data through the pre-test, treatment, and post-test. This section elaborated on the pre-test and post-test results, treatments, and the notable differences in the student's vocabulary mastery before using Assemblr Edu augmented reality media and after using Assemblr Edu augmented reality media.

Students' Vocabulary Mastery Before Using Assemblr Edu Augmented Reality Media

In this research, the pre-test was conducted with 25 students. The researcher gave thirty questions consisting fourteen of multiple-choice questions and sixteen gap-filling questions. The pre-test is used to know the students' vocabulary mastery before they use the Assemblr Edu augmented reality media. The pre-test of the students in the experimental class is presented in the following table.

Table 2. Students' Pre-test Result of Experimental Class

No	Name	Scores	No	Name	Scores
1	S1	80	14	S14	73
2	S2	66	15	S15	16
3	S3	13	16	S16	26
4	S4	66	17	S17	16
5	S5	66	18	S18	10
6	S6	43	19	S19	33
7	S7	36	20	S20	70
8	S8	86	21	S21	26
9	S9	10	22	S22	70
10	S10	70	23	S23	50
11	S11	90	24	S24	20
12	S12	23	25	S25	36
13	S13	66			

This study processes the pre-test results before the treatment is given. Table 3.1 shows the pre-test scores of 25 students in the experimental class. Each student had a different set of results on the pre-test, as can be seen in the data table above. The researcher put the pre-test score data into the criterion table to view the pre-test score distribution based on this difference. The distribution table of the pre-test results is presented in Table 3.

Table 3. Distribution of Students' Vocabulary Mastery in Pre-test

Score	Value	Frequency of Students	Percentage of Pre-test
96 – 100	Excellent	0	0
86 – 95	Very Good	2	8%
76 – 85	Good	1	4%
66 – 75	Fairly Enough	8	32%
56 – 65	Fair	0	0
46 – 55	Poor	1	4%
0 - 46	Very Poor	13	52%
Total		25	100%

According to the table, there are thirteen students with scores ranging from 0 to 46. Thirteen students meet the very poor threshold based on this. Based on the percentage, the student group is quite poor, with only 13 individuals obtaining a 52% rate. Based on the provided data, it is evident that over 50% of the students in the experimental class still had low vocabulary mastery ratings. Aside from that, the table indicates that one student, accounting for 4% of the total, has a poor category score between 46 and 55. Additionally, eight students in the fair group had scores in the range of 66 to 75. In terms of proportion, 32% of students fell into the category of those who attained a fair enough. According to the table, one student received a percentage of 4% and was placed in the good group with a score between 76 and 85. Lastly, the table indicates that two students scored in the range of 86 to 95. The very good category was awarded to these two students. The proportion of these two students has received an 8% percentage.

Based on the result of the distribution table, the research indicated that students need to spend more time practicing their vocabulary mastery to improve their ability. Additionally, the researcher used SPSS 25 to tabulate the scores into descriptive statistics. The SPSS 25 generates the minimum score, maximum score, mean, and standard deviation of the pre-test score before students receive treatment by using Assemblr Edu augmented reality media in the experimental class. The descriptive statistic of the pre-test is shown in Table 4.

Table 4. Descriptive Statistic of Pre-test Experimental Class Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Experiment	25	10	90	46.44	26.319
Valid N (listwise)	25				

The figure of descriptive statistics above indicates that the calculation of the pre-test. According to the table, the highest score of students' pre-test in the experimental class before using Assemblr Edu augmented reality media is 90, and the lowest score is 10. The mean of the pre-test is 46.44, and the standard deviation is 26.319. It can be identified that students generally have difficulty with vocabulary mastery. Many students find it challenging to answer the vocabulary mastery question due to their lack of familiarity with the language, both in theory and practice. Additionally, limited opportunities for practice in everyday life and the classroom can further hinder progress.

Students' Vocabulary Mastery After Using Assemblr Edu Augmented Reality Media

The post-test was carried out after the classes received the learning using Assemblr Edu augmented reality media. Students were asked to answer multiple-choice and gap-filling questions for this post-test. 25 students participated to answer 30 questions in this post-test. The post-test assesses students' vocabulary mastery after they receive treatment through Assemblr Edu augmented reality media. The post-test results of students in the experimental class are shown in Table 5.

Table 5. Students' Post-test Results of Experimental Class

No	Name	Scores	No	Name	Scores
1	S1	76	14	S14	80
2	S2	53	15	S15	60
3	S3	60	16	S16	73
4	S4	80	17	S17	73
5	S5	76	18	S18	60
6	S6	90	19	S19	73
7	S7	53	20	S20	73
8	S8	73	21	S21	63
9	S9	60	22	S22	80
10	S10	73	23	S23	90
11	S11	76	24	S24	73
12	S12	76	25	S25	80
13	S13	80			

After the students received the treatment, the researcher put the pre-test score data into the criterion table to view the post-test score distribution. The distribution table of the post-test results is presented in Table 6.

Table 6. Distribution of Students' Vocabulary Mastery in Post-test

Score	Value	Frequency of Students	Percentage of Pre-test
96 – 100	Excellent	0	0
86 – 95	Very Good	2	8%
76 – 85	Good	9	36%
66 – 75	Fairly Enough	7	28%
56 – 65	Fair	5	20%
46 – 55	Poor	2	8%
0 - 46	Very Poor	0	0
Total		25	100%

There are two students whose scores fall between 46 and 55, according to the table. This indicates that two of the students have poor criteria. In terms of percentage, the weak student category—which consisted of two individuals—achieved an 8% percentage. This data indicates a considerable drop in the number of students in the weak group between the pre-and post-tests. In addition, seven kids in the fair group had scores in the range of 66 to 75. In terms of percentage, 28% of students fell into the category of those who

attained a reasonably sufficient level. Nine students with scores in the excellent range (76–85) and a 36% proportion are also shown in the table. When compared to other categories, students in the good group have the most accomplishments. These findings demonstrate that students' language mastery has improved significantly. Lastly, the chart indicates that two students have scores in the range of 86 to 95. The very good category was awarded to these two students. The proportion of these two students has received an 8% percentage.

As for the data, the researcher accumulates them in the form of descriptive statistical calculations. To get the descriptive statistics, this study used SPSS 25 to process the post-test results. After processing the data, SPSS 25 outputs the minimum score, maximum score, mean, and standard deviation of the post-test score after students receive treatment by using Assemblr Edu augmented reality media. It can be seen in Table 3.6.

Table 7. Descriptive Statistics of Post-test Experimental Class Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Post-test Experiment	25	53	90	72.16	10.036
Valid N (listwise)	25				

The post-test calculation is shown in the descriptive statistics table above. According to the table, the maximum post-test score of the student in the experimental class after using Assemblr Edu augmented reality media is 90, and the lowest score is 53. The post-test mean is 72.16, and the standard deviation is 10.036. From this result, it can be concluded that the test scores significantly improved and better to the pre-test session.

The Development of Students' Vocabulary Mastery Before and After being Taught Using Assemblr Edu Augmented Reality Media

The next stage of the research is to test the hypothesis to provide answers to the research questions once the experimental class has provided the pre-test and post-test vocabulary mastery findings. The researcher tested hypotheses, calculated N-gain, and assessed data normality using the SPSS version 25 software. This was done to confirm the research hypothesis and find any significant variations between the pre-and post-test outcomes. The sections that follow provide descriptions of these stages.

Normality Test

It was important to determine whether or not the acquired data was normally distributed before examining the hypothesis. Because the sample size for this study was fewer than 50, the researcher employed the Shapiro-Wilk test to ascertain if the data was normally distributed. The test result is regarded as usually significant if it is more than 0.05. The data, however, considerably deviates from a normal distribution if the value is less than 0.05. The following is how the normal test result is displayed.

Table 8. Shapiro-Wilk Normality Test
Tests of Normality

		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
Pre-test Mastery	Vocabulary	.211	25	.005	.908	25	.028
Post-test Mastery	Vocabulary	.253	25	.000	.915	25	.039

a. Lilliefors Significance Correction

According to the Shapiro-Wilk normality test table, the experimental class's pre-test significance score was 0.028, which is less than the 0.05 ($0.028 > 0.05$) criterion. In a similar vein, the experimental class's post-test significance score was 0.039, which is less than the 0.05 cut-off point ($0.039 > 0.05$). It is therefore possible to conclude that the data were not normally distributed based on these findings as well as the Shapiro-Wilk normality test requirements.

In addition to the Shapiro-Wilk test, the Kolmogorov-Smirnov test was also performed in this study to verify data normalcy. Utilizing SPSS 25, the Kolmogorov-Smirnov test was run. The Kolmogorov-Smirnov test findings for determining data normality are as follows.

Table 9. Kolmogorov-Smirnov Normality Test
One-Sample Kolmogorov-Smirnov Test

		Pretest Vocabulary Mastery	Posttest Vocabulary Mastery
N		25	25
Normal Parameters ^{a,b}	Mean	46.44	72.16
	Std. Deviation	26.319	10.036
Most Extreme Differences	Absolute	.211	.253
	Positive	.141	.137
	Negative	-.211	-.253
Test Statistic		.211	.253
Asymp. Sig. (2-tailed)		.005 ^c	.000 ^c

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

According to the Kolmogorov-Smirnov normality test table, the experimental class's pre-test significance score was 0.005, which is less than the 0.05 ($0.005 > 0.05$) criterion. In a similar vein, the experimental class's post-test significance score was 0.000, which is less than the 0.05 cut-off point ($0.000 > 0.05$). These findings, along with the Shapiro-Wilk

and Kolmogorov-Smirnov normalcy test criteria, lead to the conclusion that the class has a significance level of less than 0.05, indicating that the data were not normally distributed.

Hypothesis Test

The hypothesis test is intended to reveal whether there are significant differences between students' vocabulary mastery before and after they receive the learning using Assemblr Edu augmented reality media. The hypothesis test used the Wilcoxon test. The test determines whether the averages of the two tests are significantly different or identical. The following table is the result of the Wilcoxon test.

Table 10. Wilcoxon Signed Rank Test Ranks

		N	Mean Rank	Sum of Ranks
Posttest Vocabulary Mastery - Pretest Vocabulary Mastery	Negative Ranks	4 ^a	7.00	28.00
	Positive Ranks	21 ^b	14.14	297.00
	Ties	0 ^c		
	Total	25		

- a. Posttest Vocabulary Mastery < Pretest Vocabulary Mastery
- b. Posttest Vocabulary Mastery > Pretest Vocabulary Mastery
- c. Posttest Vocabulary Mastery = Pretest Vocabulary Mastery

Table 10 above shows that there were four bad rankings in this investigation. This suggests that 4 students saw a decline in their results between the pre-and post-test. With a total rank of 28.00, these students' average decrease was 7.00. In addition, it is evident from the table that there are positive ranks of 21. This suggests that from the pre-test to the post-test, 21 students had a rise in their scores. The average rise was 14.14, with a total rank of 297.00. It is also evident from the table that Ties is 0. This indicates that no student's pre-test and post-test scores were identical in the research data. After seeing the Rank table of the Wilcoxon test, Table 11 below displays the result of the Wilcoxon statistic test for testing the hypothesis.

Table 11. Wilcoxon Test Statistic Test Statistics^a

	Posttest Vocabulary Mastery - Pretest Vocabulary Mastery
Z	-3.621 ^b
Asymp. Sig. (2-tailed)	.000

- a. Wilcoxon Signed Ranks Test
- b. Based on negative ranks.

According to the table, the significance of the two-tailed value was 0.000, which was lower than 0.05. Based on the overall comparison between the pre-test and post-test scores, the difference in quality was noticeable. Before the post-test, the pre-test results classified the vocabulary skills of the students as poor. However, after the post-test, the classification improved to the upper level. The results of the Wilcoxon test only considered one group and did not compare or contrast the factors within it, further supporting this data. Therefore, it can be inferred that the use of Assemblr Edu augmented reality media significantly improved the vocabulary mastery of the students before and after the test. Therefore, the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted because $Asymp. Sig. (2-tailed) 0.000 < 0.05$.

N-Gain

Students' vocabulary mastery is evaluated using the Normalized Gain (N-Gain) test, which compares test scores from before and after learning using Assemblr Edu augmented reality media. The following formula is used to calculate the difference between the student's pre-test and post-test scores.

$$Index\ Gain = \frac{\sum Posttest - \sum Pretest}{\sum Maximum\ Score - \sum Pretest}$$

The researcher used the SPSS 25 to calculate N-Gain. Below is a statistical description of the overall average N-Gain to finally conclude.

Table 12. Descriptive Statistics of N-Gain
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
NGain_Score	25	-1.40	.82	.3005	.53244
NGain_Percent	25	-140.00	82.46	30.0547	53.24369
Valid N (listwise)	25				

Based on the table above, it can be seen that the average N-Gain score is 0.30. This puts the score in the “average” category, with a range of $0.3 \leq g \leq 0.7$ ($0.3 \leq 0.30 \leq 0.7$). Therefore, based on this result, the Assemblr Edu augmented reality media shows a moderate improvement in students' vocabulary mastery, not too low, but not too high either. In conclusion, this research suggests that the use of Assemblr Edu augmented reality media is an effective way to develop students' vocabulary mastery.

Discussions

This study aimed to determine whether or not students' vocabulary mastery might be considerably improved by employing Assemblr Edu augmented reality media. The study wanted to see if employing Assemblr Edu augmented reality media for instruction resulted in any discernible improvement. Consequently, an explanation and interpretation of the results are discussed.

The student's English learning situation before treatment is described in this section. The learner still has a very poor command of terminology. Consequently, the pre-test results for the students are shown in this section. The purpose of this study was to ascertain how well Assemblr Edu augmented reality media aids in students' vocabulary learning. Pre-tests were therefore employed in the study to gauge students' proficiency before learning intervention.

Finding out the students' level of vocabulary knowledge before utilizing Assemblr Edu augmented reality media was the first study topic. The multiple choice and gap-filling items on the pre-test were used to determine the students' vocabulary mastery scores. Table 3.1 and Table 3.3 provide a solution to the first study topic, indicating that the highest score was 90 and the lowest was 10. The pre-test result had an average score of 46.44. It follows that learning media is necessary for students to increase their command of English vocabulary. The pre-test findings showed that to handle challenges that arise when studying English in the context of vocabulary, students need learning media to enhance their vocabulary abilities. The Assemblr Edu augmented reality media was then used to improve vocabulary mastering among students and the quality of their education. As mentioned in this study, this media can improve student performance and motivation in addition to helping them develop their abilities (Diegmann, 2015).

The Assemblr Edu augmented reality media is a fascinating medium. This media displays the thrill of expanding one's language alongside a glimpse of the real world through layered computer-generated images. Chen and Tsai (2013) have said that augmented reality allows users to engage with virtual objects that are merged into the real world, either in two or three dimensions. Through the use of this medium, students will retain every English word that they know or have already memorized. In addition to helping other students investigate strategies for comprehending and retaining word meanings, students can pronounce words. Table 3.4 and Table 3.6 displays the range of scores that were possible on the post-test. The lowest score was 53, and the maximum score was 90. Following the implementation of the Assemblr Edu augmented reality media, the average score was 72.16. Students' test results were found to have increased, which ultimately led to an increase in their cumulative scores. It shows indirectly how much the Assemblr Edu augmented reality media affects students' vocabulary development.

In summary, the Assemblr Edu augmented reality media is an effective educational tool for expanding students' vocabulary, particularly when it comes to resolving issues they may run into when learning English. Additionally, Assemblr Edu's augmented reality media plays a major role in giving students a comfortable learning atmosphere in the classroom.

The purpose of this research employed Assemblr Edu's augmented reality media to educate SMAN Jatinangor's XI IPS 4 students' on vocabulary mastery. To address the research concerns about the impact of Assemblr Edu augmented reality on students' vocabulary knowledge, this study effectively gathered data using tests.

This section aims to determine the third research question about whether there was an improvement in students' vocabulary mastery after receiving the learning using Assemblr Edu augmented reality media. As can be seen from the pre-test and post-test data, the post-test had a higher mean score than the pre-test. This indicates that students' comprehension of vocabulary increased as a result of using the Assemblr Edu augmented reality media.

The use of Assemblr Edu augmented reality in developing students' vocabulary mastery was quite effective. The researcher found that the majority of students demonstrated developed performance on the post-test compared to the pre-test. This is evidenced by the average score of students before treatment, which was 46.44, and the average score obtained after treatment, which was 72.16. These findings are in line with a prior study conducted by Natalia and Fitriawati (2022). This study result shows that the post-test scores were higher than the pre-test scores. The average score on the pre-test was 53.12 and the average score on the post-test was 72.81. It shows that there was a significant difference in the student's vocabulary mastery at the pre-test and post-test.

Meanwhile, this research aligns with the findings of Hafidah et al. (2022). The result of this study shows that there is an increase in children's vocabulary mastery from cycle one of 35% which increased to 85% at the end of cycle 3 for the very well-developed category. It indicated that the use of augmented reality can increase the children's vocabulary knowledge.

The current research also has a relationship with the research of Ersanli (2023). This study elaborated that the use of AR significantly improves the students' vocabulary mastery. The result shows that the post-test score of the experimental group which taught using AR showed a notable improvement in learning. Besides that, this study portrays that the use of AR was highly appealing to participating students and it motivated students to learn.

Based on the data in the present research, it can be concluded that the use of Assemblr Edu augmented reality media improves the students' scores. According to the result, the Sig. two-tailed value in the statistics test was 0.000, which was less than 0.05. Thus, the null hypothesis was rejected and the alternative hypothesis was accepted. It means that the use of Assemblr Edu augmented reality media significantly affected the vocabulary mastery of the students in XI IPS 4 SMAN Jatinangor. In addition, the effectiveness of Assemblr Edu augmented reality media was assessed using N-Gain testing. The N-Gain testing showed an average score of 0.30, which means that the use of the media takes a medium level of improvement. This conclusion was given due to the improvement being between 0.30 and 0.70. To sum up, the results obtained from two data sources (pre-test and post-test) significantly developed after implementing learning media. Additionally, it is confirmed that the implementation of learning using Assemblr Edu augmented reality media is successful.

CONCLUSION

This study investigates whether or not student vocabulary knowledge is significantly impacted by the usage of Assemblr Edu augmented reality media. The results showed that there was a substantial difference between the pupils' scores before and after therapy. The findings showed that the statistics' Sig. two-tailed value was 0.000, which was less than 0.05. Because of the strong impact that the Assemblr Edu augmented reality media had on the vocabulary mastery of the students in XI IPS 4 class SMAN Jatinangor, the alternative hypothesis was accepted and the null hypothesis was rejected. We may conclude that using Assemblr Edu's augmented reality media to teach vocabulary mastering was a successful approach.

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