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INNOVATIVE VOCABULARY TEACHING: THE EFFECTIVENESS OF ASSEMBLR EDU APP IN JUNIOR HIGH SCHOOL CLASSROOMS

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Abstract

This study aims to determine the effectiveness of using the Assemblr Edu application as a vocabulary learning media and describe the response of seventh-grade students of SMPN 1 Gedeg Mojokerto to the media. This research is quasi-experimental research with a Non-equivalent Group design. The data collection techniques used were tests and questionnaires. Data collection tools used student worksheets and questionnaire sheets. The location of this research was SMPN 1 Gedeg, Gedeg District, Mojokerto Regency, East Java Province with a population of VII grade students as many as 256 students. The sample used was 64 students, with 32 students in the experimental class who used Assemblr Edu App media and 32 students in the control class who did not. The results showed that the use of learning media was effective as a media for vocabulary learning, with a t-test value of t = 4.127 and a significance of 0. Students' responses to this application were positive in cognitive (content knowledge 81.8%, understanding of use 81.6%, understanding of presentation 82.6%) and affective (motivation 78.1%, interest 82.8%, curiosity 81.3%) aspects. This shows that the Assemblr Edu application is effective in learning English, especially vocabulary material.

Keywords: Vocabulary, Student Response, Learning Media, Augmented Reality

INTRODUCTION

Vocabulary is a crucial aspect of language learning, as it enables individuals to construct sentences with greater accuracy, express ideas more clearly, and better comprehend texts. Mastering vocabulary is essential for enhancing reading, writing, listening, and speaking skills. It forms a fundamental part of language proficiency, significantly influencing how well learners can speak, listen, read, and write (Richards & Renandya, 2002). By expanding one's vocabulary, communication skills can be improved across various contexts. Effective strategies for vocabulary growth include engaging in active reading, intentional listening, and incorporating new words into both

speech and writing. Acquiring a sufficient vocabulary is a critical need in learning a second language (Saville-Troike & Muriel, 2012).

English is commonly studied as a second language by students in Indonesia. As they learn this new language, students must grasp new English vocabulary, which can present several challenges. These challenges can be categorized into two main factors: linguistic and non-linguistic. Linguistic factors pertain to the elements within the English language itself. Non-linguistic factors are divided into internal and external types. Internal factors include student motivation, interest, and ability to memorize words. External factors encompass learning methods, the environment, and situational contexts (Krisnayanti & Winarta, 2021).

Learning media, which includes various print and digital tools and resources, is essential for enhancing the educational process. It can be defined by its technology, symbolic systems, and processing capabilities (Kozma, 1991). Utilizing diverse learning materials, such as images, audio, video, and animations, can improve student comprehension. Interactive and engaging media, such as simulations, educational games, and multimedia content, help stimulate student interest and enhance information retention. The flexibility and accessibility provided by online materials allow students to learn at any time and from any location, accommodating different learning styles. Additionally, interactive media and media-based projects increase student engagement and creativity.

This age is characterized by ongoing technological advancements and the widespread adoption of cutting-edge technologies in everyday life (Kalogiannakis et al., 2021). Gamification involves the introduction of innovative elements into digital platforms to increase student participation and engagement in classroom learning, encouraging positive classroom behavior (Bicen & Kocakoyun, 2018). In addition, gamification creates a more dynamic, competitive, and engaging learning environment, which in turn increases student engagement, motivation, achievement, and interaction (Kalogiannakis et al., 2021).

Technology has significantly transformed the field of education, introducing innovations with a profound impact. From online learning that offers global access to the use of mobile devices enabling learning anytime, anywhere, technology is reshaping educational experiences. Virtual Reality (VR) and Augmented Reality (AR) are creating more interactive learning environments, while adaptive learning systems leverage artificial intelligence to tailor content to individual needs. Educational data analytics allow teachers to monitor student progress and devise more effective teaching strategies, and online collaboration platforms enhance cooperation between students and teachers. Additionally, robotics and coding have been integrated into curricula to foster essential problem-solving skills for the digital age. Overall, technology has broadened educational access worldwide, revolutionizing the learning process and creating a more dynamic and inclusive environment.

Several researchers have conducted research on Assemblr Edu media, both in its development, effectiveness of use, effect, and student response. The Assemblr Edu application offers a modern and engaging solution that can be effectively implemented in schools. Additionally, its ease of use provides opportunities for more efficient learning, with a comprehensive range of learning topics available for study (Majid et al., 2023). According to (Al-Farisy et al., 2023) that Assemblr Edu App media is feasible to use as a medium for mastering vocabulary and pronunciation in English language learning. Students believe that using the Assemblr Edu-based Augmented Reality helps them learn English. They all agree that the Assemblr Edu application is entertaining, and they also feel that it motivates and inspires them to study English (Rosyidah et al., 2023). Assemblr Edu App not only helps in the aspect of learning materials, but also helps in the aspect of students' critical thinking. AR media effectively improved elementary school students' critical thinking skills and digital literacy (Oktadela et al., 2023).

Initial observation was conducted at SMPN 1 Gedeg through an interview with the 7th grade English teacher. The teacher mentioned that students still have difficulties in mastering vocabulary, which affects their ability to understand the material taught in class. She also said that the LCD projector was the most frequently used learning tool. Considering this situation, it is imperative to take more effective measures to improve students' performance in learning English and provide learning media that aim to improve their vocabulary skills. To solve this, the researchers suggest using Assemblr Edu app, which features Augmented Reality, as a learning tool.

RESEARCH METHOD

The approach in this research uses a quantitative approach. The researcher utilized the quasi-experimental method with a non-equivalent control group design. The research design must be specific, clear, and detailed, determined steadily from the start, being a step-by-step guide (Sugiyono, 2013). The subjects of this study were grade 7 students at SMPN 1 Gedeg, Mojokerto. This design consists of two groups: an experimental group and a control group. The experimental group is the control class, which receives learning treatment with Assemblr Edu media, while the control group receives conventional learning treatment. The instruments employed to gather data in this study include tests and questionnaires. The test is designed to evaluate the effectiveness of the Assemblr Edu App as a tool for learning vocabulary. Meanwhile, the questionnaires are used to gauge the students' responses to the use of the Assemblr Edu App as a vocabulary learning medium. The population of this study was 7th grade students of SMP Negeri 1 Gedeg, totaling 256 students. In this study, Researchers used the simple random sampling method as a sampling technique. Taking sample participants from the population is done randomly without regard to the strata in the population (Sugiyono, 2007).

The research was divided into three stages: pre-research, planning, and implementation. The experimental group is the control class, which receives learning treatment with Assemblr Edu media, while the control group receives conventional learning treatment. The treatment was carried out on the experimental and control groups. The experimental group is a class that gets learning treatment with Assemblr Edu media as a vocabulary learning media, while the control group gets conventional learning treatment. after the treatment, the researcher took data on students' responses to Assemblr Edu App media using a questionnaire in the experimental group. at the end of the study, the researcher analyzed the vocabulary learning outcomes data between the experimental group and the control group to find out the score comparison using an independent T-test calculated with SPSS Statistics 25. while in the questionnaire analysis technique, the researcher used descriptive statistical techniques.

RESULT AND DISCUSSION

After conducting the treatment, the research analyzed the findings from the instruments given, namely the test and questionnaire.

Test

The data analysis technique used in student learning outcomes is descriptive statistical analysis to describe the data that has been obtained, normality test to determine whether each variable is normally distributed or not, homogeneity test to determine whether the groups studied are homogeneous, independent sample T-test to determine significant differences between experimental and control groups, and hypothesis testing to ensure the correctness of the previously formulated hypothesis.

Descriptive Statistic

Table 1 Descriptive Statistic

	N	Min.	Max.	Mean	Std. Deviation
Score Pre-Test Experimental	32	11	64	34,06	16,096
Score Post-Test Experimental	32	30	98	71,81	14,603
Score Pre-Test Control	32	8	52	32,03	10,322
Score Post-Test Control	32	22	82	55,75	16,475
Valid N (listwise)	32				

Based on the descriptive analysis, the experimental class had a pretest with a maximum score of 64, a minimum score of 11, and an average score of 34.06. After the post-test, the highest score was 98, the lowest was 30, and the average was 71.81. In the control class, the pretest results showed a maximum score of 52, a minimum of 8,

and an average of 32.03. The post-test scores in this class ranged from a high of 82 to a low of 22, with a mean of 55.75.

Normality Test

Table 2 Normality Test

	Class	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Score	Pre-Test Experimental	,107	32	,200*	,940	32	,075
	Post-Test Experimental	,130	32	,182	,962	32	,320
	Pre-Test Control	,094	32	,200*	,974	32	,620
	Post-Test Control	,119	32	,200*	,959	32	,264

The Shapiro-Wilk test results show that the experimental class had a significance value of 0.075 for the pretest and 0.320 for the post-test, both of which are greater than 0.05. Similarly, the control class had a pretest significance value of 0.620 and a post-test value of 0.264, also above 0.05. This indicates that the data in both the experimental and control classes are normally distributed.

Homogeneity Test

Table 3 Homogeneity Test

		Levene Statistic	df1	df2	Sig.
Score	Based on Mean	1,291	1	62	,260
	Based on Median	1,374	1	62	,246
	Based on the Median and with adjusted df	1,374	1	61,475	,246
	Based on trimmed mean	1,338	1	62	,252

The table indicates that the significance value based on the mean is 0.260, which is greater than 0.05. This suggests that the data from both the experimental and control classes are homogeneous.

T-Test

Table 4 Independent Sample T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	1,291	,260	4,127	62	,000	16,063	3,892	8,283	23,842
	Equal variances not assumed			4,127	61,120	,000	16,063	3,892	8,281	23,844

The results of the statistical hypothesis are presented in the preceding table. The table above shows that the t-count was 4,127. While the signature. The two-tailed (p) value was 0 and the degree of freedom (Df) was 38. Ha would be rejected if p >, as mentioned in the preceding chapter. The table above shows that the p-value was less than 0.05. The value of p (sig) 2-tailed is 0 < 0.05. This indicates that Ho is rejected, thus we can deduce that the mean post-test scores of the experimental and control classes are not the same

Questionnaire

Questionnaire data were gathered from a single class, the experimental group consisting of 32 students. The questionnaire featured 15 statements, all of which were positive. The questionnaire covered two aspects: cognitive and affective. The cognitive aspect included three indicators: understanding the content of the Assemblr Edu App, knowing how to use the app, and the app's presentation quality. The affective aspect encompassed three aspects: motivation, interest, and curiosity.

Descriptive Statistic

Descriptive statistics are statistics used to analyze data by describing or representing the data that has been collected as it is without intending to make conclusions that apply to the public or generalizations (Sugiyono, 2013). Using the formula:

$$\%NRS = \frac{\sum_{i=1}^{n} NRS}{\text{NRS Maximum}} \times 100\%$$

Description :

%NRS = Student response score percentage

$\sum_{i=1}^{n} NRS$ = Total student response scores on each question item

The criteria for the percentage of student responses are as follows (Wardi et al., 2020):

Table 5 Criteria Students Response

%NRS	Category
25% ≤ %N< 43%	Less
44% ≤ %N< 62%	Enough
63% ≤ %N< 81%	Good
82% ≤ %N< 100%	Very Good

After obtaining questionnaire data for each student, the researcher analyzed the data using the formula described earlier. researchers get the following results:

Table 6 Result of Criteria Indicator

Aspect	Indicator	Percentage	Criteria
Cognitive	Understanding the contents of Assemblr Edu App	81,8%	Very good
	Understanding of using Assemblr Edu App	81,6%	Very good
	Suitability of the Assemblr Edu App display	82,6%	Very good
Affective	Motivation	78,1%	Good
	Attractiveness	82,8%	Very good
	Curiosity	81,3%	Very good

The table reveals that nearly all indicators of student responses to the Assemblr Edu App as a learning medium meet very strong criteria. This indicates that students have a positive reaction to using the Assemblr Edu App for vocabulary learning, making it a suitable tool for the learning process.

Discussion

Based on the data provided, the posttest scores for the experimental class ranged from a high of 47 to a low of 30, with an average score of 40.29. This indicates that students in the experimental class demonstrated a strong understanding of size and plan, as well as their application in everyday life and the relevant formulas. On average, students were able to grasp the problems well, not only identifying the known information but also providing a thorough explanation of the problems they worked on.

They were able to clearly articulate the steps and solutions appropriate to each problem. Furthermore, the significance value (p-value) for the two-tailed test was 0, which is less than the 0.05 threshold. This means the null hypothesis (Ho) is rejected, and the alternative hypothesis (Ha) is accepted. It indicates that the Assemblr Edu App had a significant impact on the language abilities of seventh-grade students at SMPN 1 Gedeg. The data shows that students in the experimental class outperformed those in the controlled class.

The questionnaire results indicate that in the cognitive aspect, there are three key indicators: understanding the content of the Assemblr Edu App, understanding how to use the app, and understanding its interface. The student responses show an average of 81.8% for content comprehension, 81.6% for usage comprehension, and 82.6% for interface comprehension, all of which fall into the "very good" category. These indicators suggest that learning through the Assemblr Edu App significantly benefits students in acquiring English vocabulary.In the affective aspect, there are three indicators: motivation (78.1%), interest (82.8%), and curiosity (81.3%). These indicators are also categorized as "very good," as noted in the student response percentage table. This reflects that learning with the Assemblr Edu App effectively engages students by providing clear instructions and enhancing the English learning process.

A key element in maintaining effective teaching and learning over the long term is the use of educational media. Creative and interactive learning tools can engage students and draw in those who may struggle to understand lessons, helping them grasp the material more quickly. Assemblr Edu is an example of such 3D interactive learning media.

The impact of Assemblr Edu is evident through statistical analysis, which reveals that this application effectively captures students' attention and enhances their academic performance. This study highlights how Assemblr Edu aids teachers in making English lessons more engaging, resulting in better learning outcomes for students. Conversely, conventional teaching methods used in the Control Group had little effect on student interest and achievement.

Assemblr Edu offers the advantage of presenting content in 3D through its augmented reality feature, potentially leading to more engaging learning experiences. This tool allows students to utilize their visual-spatial skills to better understand the material. These skills are crucial for intellectual development, particularly during the golden age, as children learn more effectively when their visual-spatial abilities are fully engaged (Basiran et al., 2021). By augmented reality in Assemblr Edu, students can view and interact with 3D objects, making the learning process more immersive and captivating. This approach helps students better comprehend the topics, as they can visualize the content in a realistic way, rather than just through text or standard 2D images. For instance, in English classes, teachers can use Assemblr Edu to display 3D models of subjects like animals, buildings, or other objects. Students can explore these

models from various angles, zoom in and out, and interact with them directly. This type of learning experience not only makes lessons more exciting but also enhances students' retention and understanding of the material. Overall, incorporating tools like Assemblr Edu into educational activities can significantly impact how students learn and grasp information. By leveraging this technology, teachers can create a more dynamic, engaging, and effective learning environment.

Conclusion

Research conducted at SMPN 1 Gedeg, specifically in classes VII-G and VII-H, which were designated as the experimental and control classes, led to the following findings:

1. Students who use learning media demonstrate different cognitive outcomes compared to those who do not. The Independent Sample t-test analysis confirmed this, with a t-value of 4.127 and a significance level of 0. Since the significance value of 0 is less than p = 0.05, the null hypothesis (Ho) is rejected, indicating significant differences in cognitive learning outcomes between students who use learning media and those who don't. This suggests that the use of Assemblr Edu media is advantageous for junior high students in acquiring vocabulary.
2. The questionnaire data was validated, as the r-count value exceeded the r-table value, as detailed in Table 4.6. The SPSS analysis revealed a very high level of student acceptance of the learning media. The questionnaire results also indicate that the Assemblr Edu App is well-suited for teaching vocabulary. Therefore, it can be concluded that using the Assemblr Edu App for vocabulary learning effectively improves students' vocabulary skills.

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