The Effect of Android-Based Learning Media Using Crossword Puzzles On English Vocabulary Mastery

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Abstract

The aim of the study were how is the application of Android-based learning media using Crossword Puzzles in learning English vocabulary for class XI students of SMKN I Sumenep, the effect and the respon of Students about crossword puzzles. This Study is a quasi-experimental with quantitative method using true experimental design for their control class and experiment. The sampel was 74 students that grouped into experimental class 38 student and control class 36 students. It is not taken randomly but chosen by the school authority. Data collection techniques used in this study is observation techniques, testing, and questionnaires. Analysis of the observation data carried out by theEnglish teachersobtained results of 92.55% at the first meeting and 94.31% at the second meeting. This is considered to have met the "very strong" criteria. In the statistical analysis of the data, the results obtained tcount = 4.80 and db = 70, with a significant level of 5%. With t count = 4.80 and db = 70, it is known that the price ts 0.05 = 2.00 indicates that t is greater than the t table (4.80 ≥ 2.00), which means that H0 is rejected and H1 is accepted. The results of the student response questionnaire on the use of android-based media through Crossword Puzzles on the mastery of English vocabulary showed a positive response with an average value of 61% -80% and 81% -100%. Thus, it can be concluded that Android-based learning media through Crossword Puzzleshas a significant effect on the mastery of English vocabulary for class XI students of SMKN I Sumenep.

Keywords: learning media; vocabulary mastery; crossword puzzles

INTRODUCTION

Global changes in the development of knowledge and technology, especially those related to the education system in schools, require changes in the attitudes of educators/ teachers in implementing classroom learning (Serdyukov, 2017; Rapanta et al., 2020). Since ancient times there has been a misconception, namely that educators are the ones who know best. This opinion continues to develop so that educators know beforehand or educators' knowledge is only different overnight compared to students (Espino-Díaz et al., 2020). However, now not only the knowledge of educators is the same as that students, they can even know earlier than the educators. This can all occur due to the rapid development of information media around our environment. However technology develops rapidly, educators remain as "to be digested and emulated". It cannot be denied that the media cannot replace the position of educators, but an attitude of indifference to the development of knowledge and technology is not the right attitude.

Switching to the world of technology, nowadays a lot of android mobile phones from various brands are circulating in the community (Blazar & Kraft, 2017). The average Indonesian people have more than one Android cellphone per person. This is inseparable from several factors, among others: the infrastructure of the cellular telephone network that

has been built in all corners of the country (Al-Hunaiyyan et al., 2017). In addition, the cost of use is arguably quite cheap. And the factor of completeness of the features in an android mobile phone is the main attraction for the community not to be separated from carrying an android cellphone wherever they go. In the middle of pandemi Covid-19, cellphones are not only used as a medium of communication, but they also used for learning media (Hamdani, 2013; Usak et al., 2020). This condition is made the people aspecially student open minded to the development of education (Espino-Díaz et al., 2020; Biswas et al., 2020).

The results of the study said that the intensity of cellphone use in   daily activities among students increased with the highest percentage in learning achievement, then the use of cellphones for social interaction and the last, the use of cellphones in daily activities for entertainment(Fawareh & Jusoh, 2017).

Based on observation and interview from the head master and the student department at SMKN I Sumenep, it shows that 100% of students own cellphones,but they used it just for call, send message and playing game. They seldom used the cellphone for studying especially for English subject. The situation changed during Pandemic Covid-19. The students should be studied online everyday and did the homework by android application.

The researcher have interviewed the English teacherand found that the English language skills of the students of SMKN I Sumenep were still lacking. This is because students perceive that English is difficult, students' perceptions about the difficulty of English are quite reasonable because language learning cannot be done only by learning in the classroom but needs to be practiced directly and carried out continuously, in this case practice in English is to speak or write in English. But to be able to do these practices, students need to have more vocabulary to make it easier in the process of learning English because understanding vocabulary is the initial capital or foundation for learning a language.

Teaching vocabulary at SMKN I Sumenep is currently usually done by teachers in the classroom, which is more directed at memorizing vocabulary. Students are only asked to read new vocabulary after that students are required to memorize by themselves at home. Teaching vocabulary in this way is only temporary, meaning that students will quickly forget the vocabulary that has been learned if students do not participate in trying directly to find out what the new vocabulary means. Learning vocabulary is not enough just memorizing it, but other methods are also needed in teaching vocabulary so that students can better understand and are more interested in memorizing new vocabularies. When students are involved in searching for the meaning of these vocabulary directly, it will certainly be remembered more by students

In general language learning, English is no exception, the basic thing that must be learned is vocabulary. This is because vocabulary is the vocabulary that becomes the basis for a person to be able to speak, because the more vocabulary a person has, the better his language skills.

Marianne state that vocabulary is the most important component language because it affects the four language skills, there are listening, speaking, reading, and writing (Murcia, 2002). Related in to the language first, second, or foreign. Generically, vocabulary is the knowledge of meanings of word (Hiebert & Kamil, 2005). Vocabulary is all the words that a person knows or uses (Dictionary, 2008). Besides, Averil stated that vocabulary is a central part of language. The more words students know well and can use, the more meaning they able communicate in a wide variety of circumstances (Prastyo, 2020).

Vocabulary mastery is the competence or complete knowledge of a list. Vocabulary mastery is important part to master English as a foreign language in elementary, junior, and senior high school.

In learning four language skills, vocabulary is one basic component to be mastered. It is reasonable, remembering that the four language skills need knowledge of words because they will get nothing without vocabulary. They larger the students master vocabulary, the better

they perform their language. By having too limited vocabulary, the students will find difficulties in mastering reading and other skills (Siregar, 2013).

Statement above had same problem that happened in SMKN I Sumenep the vocabulary of the XI grade students of SMKN I Sumenep is very limited. Therefore, the researcher tries to make it easier for students to learn English vocabulary by using crossword puzzles. It is learning media based on Android.

In the Indonesian language Crossword Puzzles is called the game of Crossword Puzzles. According to Mursilah in his journal Crossword puzzle is a learning method by reviewing the learning that has been taught by the teacher by filling in the empty columns starting with the questions horizontally, this learning method is one way to be able to invite interest in student participation and abilities, the results of research Charless Hall from Albert Einstien said that the crossword puzzle activity was able to strengthen student analysis or as an anti-senile drug. Crossword puzzles can be used for all subjects and is very appropriate if the learning model is thematic integrative. The activity of working on the Crossword puzzle forces students to know and remember the terms of the lessons.

Related to the above, the researcher tries to carry out an experimentation of learning English by implementing learning strategies that involve the things most familiar to students with the aim of increasing students' vocabulary mastery in learning, namely the effect of Android-based learning media through crossword puzzles on mastery of English vocabulary.

Besides, the researcher focus on 1) How is the application of android-based media through Crossword Puzzles in learning English vocabulary for class XI students of SMKN I Sumenep?, 2) How is the effect of using android-based media through Crossword Puzzles on the mastery of Chinese vocabulary in class XI students of SMKN I Sumenep?, 3) How is the response of class XI students of SMKN I Sumenep to the use of Android-based media through Crossword Puzzles in learning English vocabulary?

The objectives of the study are 1) Describe the application of android-based learning media using Crossword Puzzles on mastery of English vocabulary for class XI students of SMKN I Sumenep, 2) Describe the effect of using android-based media using Crossword Puzzles on the mastery of English vocabulary in class XI students of SMKN I Sumenep.and 3) Describe the responses of class XI students of SMKN I Sumenep to the use of Android-based media using Crossword Puzzles on mastery of English vocabulary.

The hypothesis of this study is Android-based media learning through Crossword Puzzles has a significant effect on the ability to master English vocabulary in class XI students of SMKN I Sumenep academic year 2020-2021.Mastering vocabulary is one of important part in learning English. So the researcher made android.

METHOD

The method used in this research is a quasi-experimental method. Experimental research is one type of quantitative research that is very powerful to measure causal relationships. This research was conducted to find out how much the effect Android-based learning media using crossword puzzles on English vocabulary mastery. According to Sugiyono the experimental research method can be interpreted as a research method used to find the effect of certain treatments on others under controlled conditions (Sugiyono, 2017). Through research on the results of thisexperimental trial, researchers tried to find quantitative data related to students' abilities in mastering English vocabulary. The data used to analyze the quantitative approach is data in the form of numbers.

This quasi-experimental research was used to determine the differences in the abilities of the treated class and the untreated class. The experimental research design used in this study was a nonequivalent control group design. According to Sugiyono, in this study there will be two groups that were not selected randomly. The two of them were then given a pretest to determine the initial state and the difference between the experimental group and the control group. If the value of the experimental group in the control group is not

significantly different. Based on the research design that has been stated above, the following is an overview of the research design of the nonequivalent control group design(Sugiyono, 2016).

Table 1. Research design nonequivalent control group design

E	O1	X1	O2
C	O3	X	O4

(Sugiyono, 2016)

Information :
E : Experiment Class
C : Control Class
O1 : Pre test in the experimental class
O2 : Post test in the experimental class
O3 : Pre test in the control class
O4 : Post test in the control class
X1 : treatment given to the experimental class
X : the treatment given to the control class.

Based on the research design that has been described, the study conducted twotests in each group. The initial test was carried out on the experimental group and the control group to determine the initial results of learning English before being given treatment. Then in the final test, the experimental group was given treatment in the form of Android-based media learning using a crossword puzzle. Meanwhile, the final test of learning English in the control group was carried out in a direct way. After the two groups carried out the final test, the results of the two were then compared or tested for differences. The significant difference between the two scores in the experimental group and the control group will show the effect of the treatment that has been given.

Population is a generalization area consisting of objects or subjects that have certain qualities and characteristics that are determined by researchers to study and then draw conclusions (Sugiyono, 2013). Thus the population in this study were all students of class XI SMKN I Sumenep. In accordance with the 2013 curriculum, the determination of class XI as the population of this study with the consideration that class XI gets material using crossword puzzle media in odd semesters, so that the strategy effectiveness of using the nonequivalent control group design strategy in learning can be seen from the increase in the results of pre-test and post-test using crossword puzzle media. in class XI students.

The sample is part of the number and characteristics possessed by the population (Sugiyono, 2016). The sampling technique chosen by the researcheris the nonprobability sampling technique. Divided the nonprobability sampling technique into several types, including systematic, quota, incidental, purposive, saturated, and snowball sampling (Sugiyono, 2016). In this study the authors determined the type of sampling, namely purposive sampling. This sampling technique with certain considerations suggested by the Indonesian language teacher.

The sample used in this study were students of class XI SMKN I Sumenep Academic Year 2020/2021 with a total number of students of 74 students, 36 students of class XI Office Automation & Governance 2 as the control class and 38 students of class XI Office Automation & Governance 3 as an experimental class.

The data collection techniques are 1) Observation as a data collection technique has specific characteristics when compared to other techniques, namely interviews and questionnaires. Hadi in (Sugiyono, 2013) states that observation is a complex process, a process composed of various biological and psychological processes. Two of the most important are the processes of observation and memory. The use of observations in this study

was carried out by the English teacher of SMKN I Sumenep which was carried out to determine the activities of teachers and students in the experimental class when implementing the Android based learning media using Crossword Puzzle on English vocabulary Mastery. 2) Test Technique; The test is a series of questions or exercises and other tools used to measure skills, intelligence knowledge, abilities or talents possessed by individuals or groups (Arikunto, 2013). The use of tests in this study included pre and post-tests which were carried out before and after the treatment was carried out. In the pre-test and post-test there was no difference between the experimental class and the control class. The similarity of questions was carried out because the researcher wanted to know the extent of the students' ability in mastering English vocabulary. 3) A questionnaire or questionnaire is a data collection technique that is done by giving a set of questions or written questions to the respondent to answer (Sugiyono, 2017)(Sugiyono, 2016). The use of a questionnaire in this study was carried out after the experimental and control class are received treatment. The results of the questionnaire data were used to measure the effectiveness of using the Crossword Puzzles.

The research instrument is a tool used in collecting data (Arikunto, 2013). In this study, researchers used data collection instruments in the form of observation sheets which will be filled in by an English teacher at SMKN I Sumenep. There are two observation sheets filled out by the observer which includes observations at the first meeting and observations at the second meeting. Through observation, it can be seen how the attitudes and behavior of teachers and students during teaching and learning activities, the level of student participation and the results of the activities carried out.

Data obtained from the observation sheet which was carried out when the application of the Crossword Puzzle game media in learning English vocabulary in the experimental class. The observation sheet data is rated with 5 assessment criteria, namely 1, 2, 3, 4 and 5. A score of 1 is for the lowest assessment and a score of 5 is for highest assessment. After analyzing the questions, then to draw conclusions, the analysis is carried out using a Likert scale, namely: the highest.

P = $\underline{\text{Acquisition Value}}$x 100%
Maximum score

The results of these conclusions will be clarified according to the grouping of questions that have been provided. According Riduwan & Sunarto (2009)the percentage classification of respondents can be presented in the following table 2.

Table 2. The Percentage Classification of Respondents

Precentage	Criteria
0-20%	Very less
21-40%	Less
41-60%	Enough
61-80%	Good
81-80%	Very good

(Riduwan & Sunarto, 2009)

Pretest and posttest questions; The instrument used is in the form of questions that will be tested during the pretest and posttest. The number of questions tested was 30 questions. 5 questions match the pictures with the vocabulary that has been provided, 15 multiple choice questions, namely choosing the right answer with a choice of answers A to D, and 10 essay questions about understanding the meaning of a word. Data analysis is an activity after data from all respondents or other data sources have been collected. The data analysis in this study is as follows: 1) Determining the t-significance of the control class. To see the effectiveness of learning in the control class, a test for the difference between the two means of the control

class is carried out using the t-significance formula. Here are the steps to determine the t-significance of the control class. 2) Determining the t-significance of the experimental class to see the effectiveness of learning in the experimental class, testing the difference between the two means in the experimental class using the t-significance formula. Here are the steps to determine t-significance.

Questionnaires; In this study, researchers used a data instrument in the form of a questionnaire statement which aims to measure the effectiveness of using the Crossword Puzzle. The questionnaire is made in the form of a statement which is answered with alternative answers to:

Strongly agree (SA)   : 4
Agree (A)   : 3
Less agree (LA)   : 2
Disagree (Ds) : 1

There are 10 statements that must be answered by students of class XI Office Automation & Governance SMKN I Sumenep.

Table 3. Statements Students of class XI Office Automation & Governance SMKN I Sumenep.

No	Question	SA	A	LA	Ds
1	In learning English, you experience difficulty in memorizing and understanding English vocabulary	10 = 27,78%	26= 72,22 %	-	-
2	Using crossword puzzle can make it easier to master vocabulary.	10= 27,78%	23=63,88%	2= 5,56%	1= 2,78%
3	By using the crossword puzzle, you can master more vocabulary.	5= 13,89%	26=72,22%	5= 13,89%	-
4	By using the crossword puzzle, you able to memorize easier the english vocabulary	5= 13,89%	21= 58,33%	10= 27,78%	-
5	The use of crossword puzzle can create an active and mutual learning atmosphere Cooperate	13= 36,11%	21= 58,33%	1= 2,78%	1= 2,78%
6	The use of crossword puzzle makes teaching English vocabulary mastery more interesting	9= 25,00%	25= 72,22%	1= 2,78%	
7	By using the crossword puzzle to help you arrangethe words in English	8= 22,22%	27= 75%	1= 2,78%	
8	The use of crossword puzzle can motivate you to learn mastery of English vocabulary	3= 8,33%	31= 86,11%	2= 5,56%	
9	Teachers give you plenty of time inside do a game of crossword puzzles	7= 19,44%	26= 72,22%	2= 5,56%	1= 2,78%
10	In your opinion, the crossword puzzle is in accordance with the teaching material provided by the teacher.	5= 13,89%	30= 83,33%	1= 2,78%	-

The value above is used to calculate the questionnaire which is analyzed using descriptive statistics, namely the percentage analysis (%) per question item using the following formula:

$P = \frac{f}{N} \times 100\%$ (Arikunto, 2013)

Information:
P   : Percentage
F   : frequency of each answer
N   : the number of subjects

After analyzing the percentage of questions, then to draw conclusions from the aspects in the questionnaire, an analysis was carried out using a Likert scale, namely:

P= Acquisition value x 100%   (Arikunto, 2013)
        Max. Score

Hypothesis is interpreted as a temporary answer to the formulation of research problems. The correctness of the hypothesis must be proven through the collected data. The steps for testing the hypothesis for the difference between the two means are 1) Formulating hypotheses Formulating hypotheses H0 and H1 for t-scores on correlated samples H0: there is no significant difference between the learning outcomes of the control class and the experimental class H1: there is a significant difference between the learning outcomes of the control class and the experimental class. 2) Determine the 95% confidence level or the 5% significance level (α = 0.05) to be used as criteria for acceptance or rejection of the hypothesis. 3) Determine the criteria for which H0 is rejected or accepted. These criteria are as follows: H0 is accepted if it meets the t-score interval (0.05db) t-score t (0.05db) H1 is rejected if it meets the t-score interval <-t (0.05db) or t-score> t (0, 05db). 4) Data analysis by calculating the t-test. The results of data collection were analyzed by statistical calculations with the t-test formula. This formula is used to find whether or not there is a difference between the two means, namely the control group and the experimental group. 5) Test hypotheses and draw conclusions.

RESULTS AND DISCUSSION
Based on the results of student responses, this Android-based learning media is very fun, it is proven by the learning process and student responses. The students really enjoy learning activities and not infrequently students to ask the teacher about how to use the android application.This is also provedBased on the observation data was found that the application of the android based learning media using Crossword puzzles on English vocabulary mastery has significant effect. Based on the results of the data on the teacher's observation sheet, it was very good at the first meeting and the second meeting. At the first meeting the results obtained were 92.55% and at the second meeting the results were 94.31%. Thus it can be concluded that the application of the Crossword Puzzle game media in learning English vocabulary goes very well and students follow the learning process well and are enthusiastic in participating in the learning.
In this case, there are two classes that were sampled, class one is called control class and class two is called experiment class. We found that form the pre-test scores in the control class and the experimental class were very low because the students 'scores were still below the KKM score of 75. This shows that students' understanding of environmental-themed English vocabulary and objects in class is very lacking. In the control class, the pre-test average value was 39.86 and in the experimental class the pre-test average value was 47.89. This proves that students have not really understood or mastered the vocabulary of objects and support in the classroom. This value is obtained before the treatment (treatment) carried out by researchers in the control class and the experimental class. Furthermore, for the post-test score in the control class an average value of 65.38 and in the experimental class an average value of 83.56. This proves that, the control class gets an increase in the average value of the pre-test scores after receiving direct instruction by the researcher. Unlike the control class, the experimental class got a significant increase from the pre-test score after

receiving the treatment, namely the android based learning media using Crossword Puzzle on English vocabular mastery. With the average post-test experimental score, this proves that by using Android-based learning media usingthe Crossword Puzzle on English vocabulary mastery students are required to work together with a group of friends to answer the questions contained in the Crossword Puzzle so that students are more active. in socializing and exchanging opinions with friends. In addition, the influence of android based learning media using Crossword Puzzles on English vocabulary masteryor XI grade students of SMKN I Sumenep has been shown to have increased quite well. The difference between the value of the control class and the experimental class is also quite far, namely 4.80.

The results of the pre-test and post-test on the learning process carried out in the control and experimental classes obtained results of $t0 = 4.80$ and $db = 70$, then consulted by looking at the 5% level value table. With $t0 = 4.80$ and $db = 70$, it is known thatthepricets$0.05 = 2.00$ indicates that t is greater than the t table ($4.80 \geq 2.00$), which means that H0 is rejected and H1 is accepted. Thus, it is concluded that the Android-based learning media using the Crossword Puzzle on English vocabulary mastery has a significant effect on the experimental class. Based onstudent response questionnaires that have been made by researchers to determine student responses or responses about Android-based learning media using the Crossword Puzzle on English vocabulary mastery.

Based on the student response questionnaire analysis that has been carried out by the researcher, it can be concluded that the Android-based learning media using the Crossword Puzzle on mastery of English vocabulary is proven to be effective. This is evidenced by the increasing number of students who are motivated and more active in learning by using the Crossword Puzzle to increase the English vocabulary mastery for class XI students of SMKN I Sumenep. It can be seen from the psychological function of students, namely the motivation, activeness and potential of students in the English learning process.

Based on the results of this discussion, it can be concluded from the entire research process that there is a positive influence on the use of Android-based learning media using Crossword Puzzle on English vocabulary mastery. English as well as positive responses from students to Android-based learning media using Crossword Puzzle on mastery of English vocabulary in the experimental class. The result of this researh is the same as Alfira Ramadani which shows that there is an effect of the Crossword Puzzle learning method on biology learning outcomes in students (Ramadani, 2019). This is in line with what was stated by Riska Rebrianti stated that the crossword puzzle method applied in the experimental class could significantly influence student learning outcomes in moral subjects(Febrianti, 2020). This can be seen from the average results of student learning outcomes taught by the crossword puzzle method, before applying the crossword puzzle method in the experimental class to get a mean $x = 61.46$. However, after applying the crossword puzzle post test method the experimental class got a mean $x = 85.16$. While the results of data analysis using the t test was obtained tcount = 3.57 and ttable 2.02 so the calculation results showed that tcount was higher than ttable (tcount>ttable: 3.57> 2.02).

CONCLUSION

Based on the formulation of the problem and the results of the analysis, it can be concluded that: Based on the analysis of the observation data, it can be proven that the applicationof Android-based learning media using Crossword Puzzle on English vocabulary masteryor XI grade students of SMKN I Sumenep is considered to have met the "very strong" criteria with a percentage of 92.55% on the observation sheet of the first meeting and 94 , 31% on the second meeting observation sheet.

The use of Android-based learning media through Crossword Puzzle on English vocabulary matery inn class XI students of SMKN I Sumenep has a significant effect on student learning outcomes. This is evidenced by the t-test which shows the results of $t0 = 4.80$ and $db = 70$, then consulted by looking at the 5% level value table. With $t0 = 4.80$ and

db = 70, it is known that the price of t10.05 = 2.00 indicates that t is greater than the t table (4.80 ≥ 2.00) which means that H0 is rejected and H1 is accepted. So it can be concluded that Android-based learning media through crosswords puzzles on mastery of English vocabulary has a significant effect on the experimental class.

The results of the student response questionnaire on the use of Android-based learning media through the Crossword Puzzle on English vocabulary mastery are very interesting for students and help students in understanding and masteringEnglish vocabulary which is considered very difficult. This shows a positive response with the average values obtained in the range of 61% -80% and 81% -100%.

RECOMMENDATION

According to Rini (2020) The researcher developed the study about crossword puzzle on the title The Development of Learning Media Based on Android Using Crossword Puzzles to Improve Student's Vocabulari Skill. The resultofthis studyshowedthatthe students' conclusions about the media in terms of aspects viewed from software, learning aspects and design aspects obtained a score of 4, 37 which lies in the range X> 4.20 with a veryfeasiblecategory.

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