

DIGITAL CROSSWORD ON 7TH GRADER'S VOCABULARY MASTERY: THE EFFECTIVENESS & STUDENT'S PERCEPTION

Elena Febiola Sihombing¹, I G A Lokita Purnamika Utami²,
Luh Gede Eka Wahyuni³

^{1,2,3} Universitas Pendidikan Ganesha
elenafebiola2702@gmail.com

ABSTRACT

The study aims to investigate the significant difference of students' vocabulary mastery between those who are taught by using digital crossword and those who are with conventional learning by using small group discussion learning method. This study also explore students' perceptions of using digital crosswords in learning English vocabulary for 7th-grade students at SMP Negeri 1 Singaraja. This research was a sequential explanatory mixed method design. In this study, the sample was divided into two groups, which are an experimental group and the control group. The research instruments used were post-test, questionnaire and interview. The post-test was used to collect students' scores in investigating the significant difference of digital crosswords. Meanwhile, questionnaire and interview were used to obtain students' perceptions of using digital crosswords in learning vocabulary. The questionnaire was designed based on the Technology Acceptance Theory (TAM) by Davis (1989). The results showed that after learning with digital crosswords, there was a significant difference on students' vocabulary mastery. students who were taught by digital crosswords have increased vocabulary mastery more than students who were taught by conventional learning. The result showed positive perceptions of students after using digital crosswords. Students feel interested and actively participate in learning. This study implies that digital crosswords can be used as an effective media to improve students' vocabulary mastery and interest in English.

Keywords: Digital Crossword, Effectiveness, Student's Perception, Vocabulary Mastery

INTRODUCTION

Vocabulary is a fundamental component in learning a language. It is also defined as every word that is contained in a sentence and that is mastered by someone in explaining something or used to communicate with other people. In the world of education, vocabulary is usually taught in language lessons such as English. Vocabulary plays an important role that affecting skills in a foreign language. At the level of education, especially for junior high school as young learners, they are learning vocabulary to improve their language skills. Learning vocabulary can also help students to more easily express something they want to convey when English learning is taking place. According to Thornbury & Scott (2002:13), words will be difficult to express when someone has only a small amount of vocabulary. So, without mastering vocabulary, we will not be able to show and express our feelings, and when that happens, it will be impossible to establish communication between students and teachers.

Some elementary schools may teach English, but at that level, English is only introduced as a foreign language, and the learning is focused on introducing vocabulary only. However, at junior school level, English lessons are taught more intensively, especially in terms of mastering vocabulary, as basic skills in speaking, writing, listening, and reading. At this junior high school level, students also learn that the way English is pronounced and written is different. As mentioned earlier, in learning English as a foreign language, the first thing to master is the 4 basic skills and also their main component, namely vocabulary. Without mastery of vocabulary, students cannot express and convey anything. That is why this component of language is very important.

Even so, it turns out that there are still many English vocabulary mastery problems that occur in schools. One of them is happen in SMP Negeri 1 Singaraja. Many students, especially grade 7 have lack mastery of English vocabulary. This happened because there were significant differences between the English lessons they received at elementary school and junior high

school. If previously they only knew some vocabulary at elementary school, now they are required to be able to use English vocabulary in the classroom. This ultimately caused students to feel difficulty in English lessons, so that the learning process in the classroom didn't run effectively. Based on that problem, a teacher must try to improve the learning process. For creating effective learning activities in teaching English, teachers have to use appropriate techniques and methods so that students can easily memorize vocabulary that they didn't know. In other words, teachers must prepare interesting media by paying attention to the needs of their students (Gaynor, 2018). Previously, teachers had tried various ways to teach vocabulary in English. According to Susanto (2017), several ways that are commonly used by teachers in teaching vocabulary are by using media such as books, cards, slideshows, and learning strategies such as spelling, using expressions, and body movements.

Even though the teacher has tried various media of teaching vocabulary, it turns out that these methods are not effective in improving students' vocabulary mastery as young learners. Teachers find out that students still have difficulty mastering English vocabulary, because most students never studied it at the elementary school level, so it is very difficult for them to pronounce vocabulary that they had not learned before (Ratminingsih, 2017). Media in learning English are very important, considering that English is taught to all ages. Therefore, it is necessary to adapt learning media that will be used for the levels. for young learners, especially in junior high school, this may be too difficult, considering their English language skills are still at a basic level. Therefore, in learning vocabulary in English, it will be better if children use fun media such as games.

A game will create a learning atmosphere that is more cheerful for students. Learning English using games will reduce pressure in learning and help students to learn cooperatively with their peers (Donmus, 2010). In teaching vocabulary for young learners, teachers can create a game as a learning media that prioritizes the brain's memory skills so it does not feel boring. several previous studies have suggested using crossword games. According to Mursilah (2017), a crossword puzzle is an interesting game in the educational aspect because this game emphasizes a person's way of thinking in identifying words as well as their definitions, spellings, and synonyms, so that students become enthusiastic in learning. Crossword is a word game that is played by filling in empty boxes horizontally and descending. Crossword games are usually played on paper, but since there are technological advances, various crossword puzzles have emerged that use technology, such as digital crosswords. The existence of digital crosswords not only helps students to improve their vocabulary mastery, but also helps students to become more aware of technological advances. According to Davis et al. (2009), using a crossword game in learning languages can increase students' curiosity and memory abilities. Crossword games can make students more confident when they can complete vocabulary with the correct alphabet. Not only that, but crosswords can also help students focus on learning vocabulary.

Several previous studies have discussed the influence of crossword games in improving students' comprehension abilities. One of them is written by Madura, (2018). Researcher used crossword puzzles to teach student's students at MTs Miftahul Ulum Palengaan Pamekasan. The researcher wanted to investigate how far students had achieved in mastering comprehension by using crossword puzzles in teaching. By conducting this research, the researcher found that the use of crossword puzzles to teach comprehension was effective and beneficial for students at the MTs/secondary school level. The use of crossword puzzles in teaching English is also said to be a fun and interesting medium.

Based on previous research, the reason why the researcher conducted this research is to investigate wheter the used of digital crossword as a learning media can have a significant difference between the class that are taught by using digital crossword and those who are taught with conventional learning or not and to find out the perception from students in the process of

learning English vocabulary, so that in the end digital crossword can be used as an effective learning media to improve student's vocabulary mastery at SMP Negeri 1 Singaraja. The difference between this study and previous studies was that in this study, the researcher used a digital crossword as a research variable because the researcher wanted to investigate the effectiveness of using this technology media in students' vocabulary mastery. Researcher want to see whether the digital crossword, as a technology media, can be an effective media to improve students' vocabulary or not, while previous studies only used traditional crosswords, which are paper-based crosswords that discussed the effectiveness of using crossword games in students' vocabulary mastery. in this study, the researcher also discussed students' perceptions after using crossword media in learning English vocabulary.

METHOD

This research is a sequential explanatory mixed-method research that means combine quantitative and qualitative research. According to Creswell (2009), sequential explanatory mixed-method is a research method that collects, analyzes and combines qualitative and quantitative data into a study that aims to solve a problem. Researchers used this research because this research will conducted to prove the hypothesis whether crossword have effect for students' vocabulary mastery. Mixed method consist quantitative and qualitative research in collecting and analyzing data. According to Creswell (2002), quantitative research is a research process that aims to collect, analyzed, interpret and explain the effect of a variable on other variables so as to produce research conclusions. Meanwhile qualitative research is a research method that investigates and explores the meaning/words of a complex individual or group social problem (Creswell, 2017). This research approach combines quantitative and qualitative research sequentially. In the first stage, the research used quantitative methods by measuring data through descriptive analysis. After that, the research continued with data description through qualitative methods. The research design itself used an experimental study through comparison between 2 classes. The first class used digital crossword in learning vocabulary and second class used conventional strategy by using small group discussion in learning vocabulary. As for this experimental research, this study used the Post-Test Only Control Group Design. After the two classes were given treatment, Post-Test will be conducted to see whether or not the significant effect of using digital crossword for students' vocabulary mastery.

FINDING AND DISCUSSION

In this study, the results of the data obtained after the researcher conducted treatment in the classroom were divided into two parts: the first was quantitative data, and supported by qualitative data. In quantitative data, the results of the study that have been obtained were in the form of post-test (vocabulary scores) and questionnaire data that produced student perceptions about the use of digital crosswords. Meanwhile, the result of qualitative data was from an interview conducted by the researcher with five participants from the experimental group. The data collected through the post-test were analyzed using SPSS 26.0.1. First, the data was analyzed descriptively to calculate mean, median, mode, and standard deviation. Second, the data was analyzed inferentially through the calculation of normal distribution, homogeneity of variance, hypothesis testing with an independent sample test (t-test).

Furthermore, the data was obtained through a questionnaire distributed to the class that received treatment to determine their perceptions about the use of digital crosswords in learning vocabulary. This questionnaire was distributed to 32 students in the experimental group after the treatment and post-test were held in the classroom. This questionnaire consists of 33 statement items using the TAM theory or also known as the Technology Acceptance Model theory by Davis (1989). This theory has 5 dimensions that influence student perceptions,

namely: Perceived ease of use, Perceived usefulness, Attitude toward using, Behavioral intention to use, and Actual system use.

Meanwhile, in collecting qualitative data, the researcher interviewed five students who were samples from the experimental group. The interview was conducted to support the questionnaire data that produced students' perceptions of digital crossword media in learning English vocabulary. Interviews with the five students were conducted on the same day at SMP Negeri 1 Singaraja. In the interview, the informants were asked to answer several questions that were prepared by the researcher. The number of questions asked by the researcher of the informants was 11. This interview was conducted face-to-face with a structured interview that used questions that had been prepared in advance. These questions were formulated through statements from Paul (2016).

After the treatment and data collection were done, the Researcher found that there were significant differences between students who were taught by using digital crosswords and students who were taught with conventional learning. The difference can be seen from the mean scores of both groups and the results of the students' post-tests that have been analyzed using a t-test. The result of the statistical analysis showed that the vocabulary mastery of students who were taught using digital crosswords increased more than students who were taught using conventional learning. This can be seen from the mean score of students in the experimental group (those who are taught by digital crossword) was 85.72, which is higher than the students in the control group (those who are taught by conventional learning) was

49.06. In addition, the t-test results show that t_{obs} was higher than t_{cv} ($15.451 > 1.998$), which means that the use of digital crosswords has a significant effect on 7th-grade students' vocabulary mastery at SMP Negeri 1 Singaraja. Based on the values from t_{obs} and t_{cv} , it can be said that the null hypothesis (H_0) was rejected and the alternative hypothesis (H_a) was accepted. It can be assumed that there was a significant difference of students who were taught by using a digital crossword.

In this study, the data description provided information about the descriptive data, which included median, mode, variance, and standard deviation from both experimental and control groups. The measurement was conducted to show the description of the data obtained from two groups using the SPSS program.

Table 1. The Description of the Data

		Experimental group	Control group
N	Valid	32	32
	Missing	0	0
Mean		85.72	49.06
Median		86.00	47.00
Mode		86	46 ^a
Std. Deviation		9.555	9.405
Variance		91.305	88.448
Minimum		66	33
Maximum		100	66
Sum		2743	1572

a. Multiple modes exist. The smallest value is shown

From Table 4.1, it can be seen that there are values of mean, median, mode, and standard deviation from the experimental group was higher than the control group. So, based on the descriptive analysis, it can be inferred that the students who were taught by using digital crosswords performed better than students who were taught by conventional learning. Before

conducting the hypothesis test, there were several requirement tests that must be done first. The pre-requisite data were a normality test and a homogeneity test.

After the normality and homogeneity tests showed that the data were normal and homogeneous, the researcher proceeded to the hypothesis test. This test was tested by using parametric analysis of an independent t-test on SPSS 26.0.1.

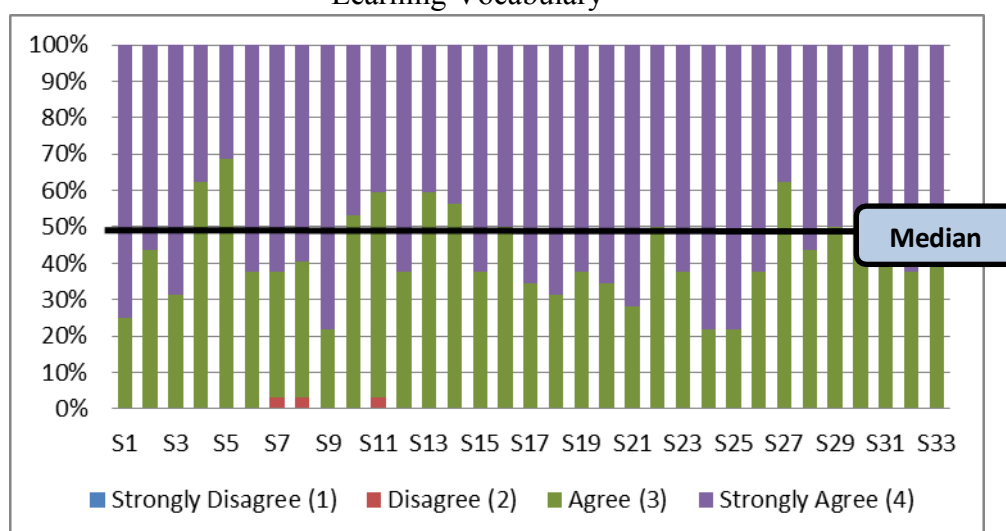
Table 2. The Result of the Independent Sample Test

		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
nilai siswa	Equal variances assumed	.152	.698	15.451	62	.000	36.594	2.368	31.860	41.328
	Equal variances not assumed			15.451	61.981	.000	36.594	2.368	31.860	41.328

The table above shows the result of an independent test of students' vocabulary mastery. The alpha is 0.05. The table shows that the significant value from both groups was 0.00, and it was smaller than the alpha level ($\alpha = 0.05$). So, based on that value, it can be said that there was a significant difference between the values. Furthermore, a hypothesis test was analyzed by comparing the value of t-observed (tobs) and t-critical value (tcv). The comparison between tobs and tcv was done to measure whether the average scores of the two groups were significantly different or not. Based on Table 4.6 below, tobs test was 15.451 at degrees of freedom (df) 62. Meanwhile, tcv 62 was 1.998. In short, tobs was higher than tcv ($15.451 > 1.998$), which means the null hypothesis (H_0) was rejected. The null hypothesis (H_0) was rejected and the alternative hypothesis (H_a) was accepted. It can be assumed that there was a significant difference of students who were taught using digital crossword.

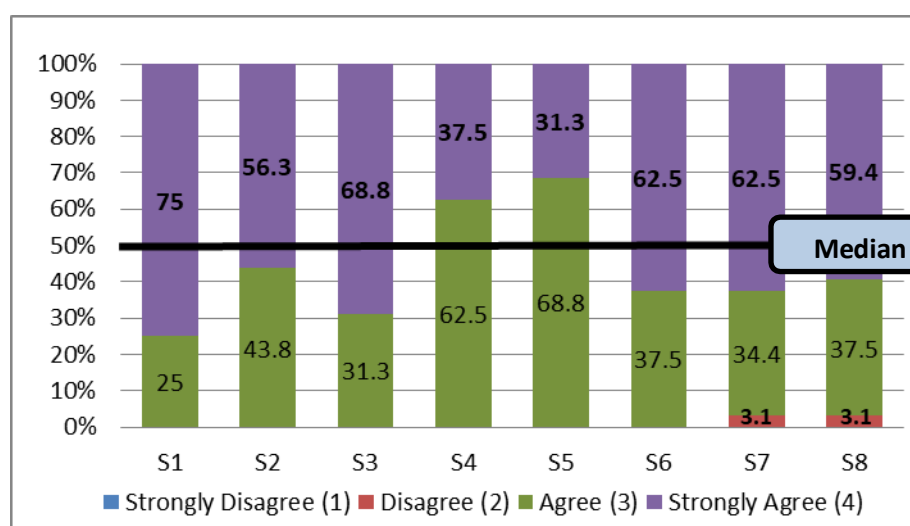
Meanwhile to explain the result of student's perception, researcher presented them in some chart. The chart 1 shows the result of students' perceptions of the use of digital crosswords in learning vocabulary. Based on that chart, it can be said that most students tend to give a "strongly agree" response to most of the statements in the questionnaire. From these responses, it can be concluded that students have a positive response to the use of digital crosswords in each dimension of the questionnaire.

Chart 1. Student's Perception While Using Digital Crossword in Learning Vocabulary



The first dimension in this questionnaire is perceived ease of use. This dimension describes how far students believe that using digital crosswords can improve their vocabulary mastery. The statements in this dimension were labeled as S1 until S8. The result of student's perception in this dimension can be seen in chart 2. From the chart below, it showed that most of the students gave their responses by selecting the "strongly agree" statement in the questionnaire. It can be seen from the percentage of students who chose the strongly agree response is higher than the median, which is 50%.

Chart 2. The Result of Student's Perceived Ease of Use in Digital Crossword



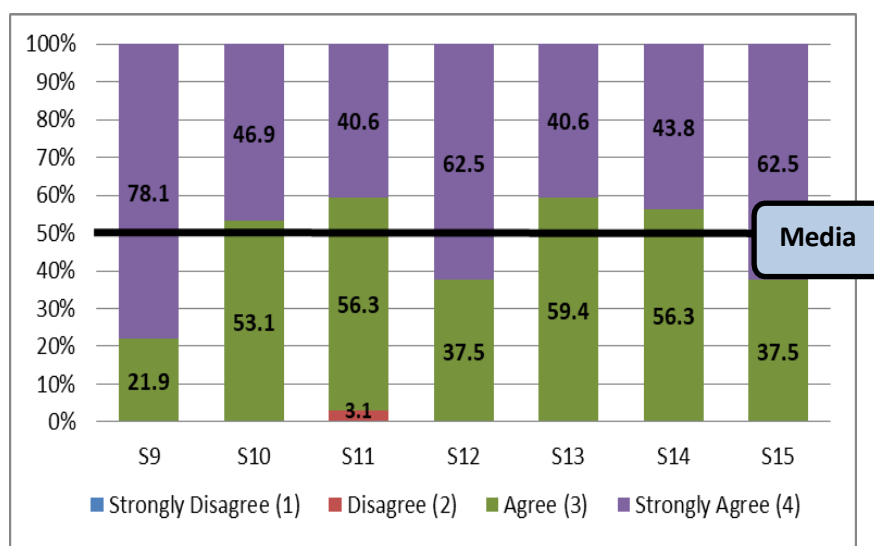
The chart showed that most of the students gave their responses by selecting the "strongly agree" statement in the questionnaire. It can be seen from the percentage of students who chose the strongly agree response is higher than the median, which is 50%. Based on the students' responses to all 8 statements, they considered that digital crossword was the fun learning media that made them enthusiastic about learning. Thus, it can be said that students strongly agree that digital crossword was a learning media that makes it easier to understand and improve their English vocabulary in the classroom.

Based on the questionnaire result, students felt more focused on learning and also easier to master new vocabulary. This was reinforced by the results of an interview with Student1 (S1), who said:

“I think digital crossword can help me improve my vocabulary because we arrange the vocabulary into boxes by looking at the existing pictures. Through that, I learned new vocabulary that I had never heard before. After learning using crossword, I became more focused and enthusiastic to participate in learning in class.” (S1)

The second dimension was Perceived Usefulness which had 3 sub-dimensions that consisted of Technology effectiveness, Technology advantages, and Relevance of technology. The chart below shows the percentage of student responses to the use of digital crosswords on the perceived usefulness dimension. The black line on the chart is the median that used to see the tendency of the percentage of student responses which are strongly agree, agree, disagree, or strongly disagree. Based on the chart, in general, students gave a positive response. This can be seen from agree and strongly agree responses on chart 3, which have a higher percentage than the median, which is 50%.

Chart 3. Student’s Perceived Usefulness in Using Digital Crossword



In this dimension, students assumed that digital crossword was a game technology that could improve their vocabulary skills. Students felt that they got new vocabulary and could pronounce it. This proved by the results of interview with Student2:

“I think crossword games can increase my vocabulary because there are some words that I did not know before, and now I know them. for example of my vocabulary words that I already know was the word “bench,” which I just found out the meaning after playing the digital crossword .” (S2)

The responses from these students said that with the advancement of technology, such as digital crossword, students knew a lot of difficult vocabulary. In addition, by using digital crosswords, English learning in the classroom was more varied than before. Based on the responses, this dimension concluded that whole students from the Experiment class strongly agree that with the use of digital crossword, they have mastered more vocabulary than they didn't know the meaning.

The third dimension was attitude toward using that showed the student's attitude towards digital crossword when it was implemented in learning vocabulary. The chart below shows that all of the students tend choose "Strongly Agree" responses. It can be said that the students have a good perception in some statements of this dimension.

Chart 4. Student's Attitude Toward Using of Digital Crossword



Based on the chart, it can be said that the use of digital crossword in learning vocabulary produced a positive attitude from students. After playing the crosswords, students feel that learning was more fun & challenging. This was stated by student 2:

"I enjoy learning with digital crossword because we usually learn English with books and PPTs before, but this time it's different because we play games. So it's more exciting. Digital crosswords are also interesting because we all participate in playing the game, so it's more challenging."

Based on the results of questionnaires and interviews of students in the experimental class, it can be concluded that in this dimension, The use of digital crosswords produces attitudes that affect students' feelings in learning vocabulary. Students assumed that crosswords really interesting and challenging, so they could actively participate in learning.

The fourth dimension was behavioral intention use. In this dimension, students gave their perceptions about digital crosswords as a learning media that made them want to use it again. The chart below shows that students have positive perceptions, and most of them tend to choose "Strongly Agree" responses. Based on the chart above, it can be said that students agree with statements in this dimension.

Chart 5. Student's Behavioral Intention Of Using Digital Crossword

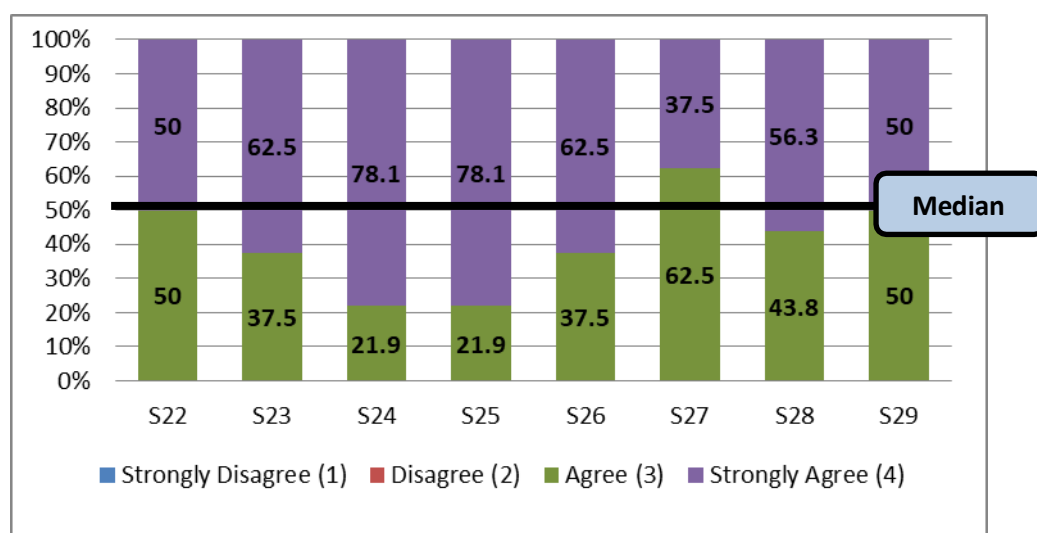


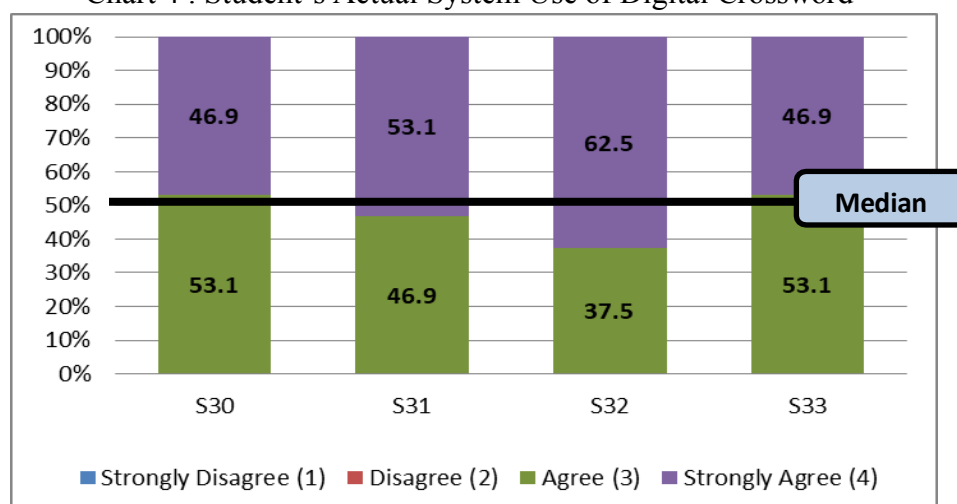
Chart 5 also showed that the use of crossword media in learning English vocabulary produced students' good attitude toward that media. Students were very comfortable when learning with crosswords and wanted to use digital crosswords again in learning. This was stated by student4, who said:

“Digital Crossword is an interesting media, because I can play the game in a fun and unique way. If I have the chance, I want to play it again in class.”

This dimension concluded that the use of digital crossword as a media in learning vocabulary turned out to affect students' behavioral intention of using it. After conducting a study with the digital crossword, students feel more excited and develop an attitude that wants to use it again for the next learning in the classroom.

The last dimension was the actual system use. In this dimension, students gave their perceptions about digital crosswords as a learning media that could make them wanted to use and spend their time to use it in their spared time.

Chart 4 . Student's Actual System Use of Digital Crossword



The chart above shows that students have positive results. This can be seen from the percentage of their response to the questionnaire, which is in “Agree” and “Strongly Agree” responses. Based on chart 4.6, it can be seen that students “Strongly Agree” with the statements in the questionnaire related to the Actual System Use of Digital Crossword. Students feel that they were more focused after playing the Crossword game. It is the reason students also played the Crossword game in their spare time. This was supported by a statement from student5, which says:

“I play Crossword for about 1 hour. I play it before and after studying because with crossword I can focus more before studying. And after studying, I play it again to evaluate the vocabulary that I already know.”

From the results of the questionnaire and interview, it can be concluded that students feel the positive effects of the existence of digital crossword, and Students more often use it in their spare time.

Based on the discussion, it can be said that the use of Digital crossword has significant difference on the vocabulary mastery between 7th grade students who were taught by this media and who were taught by conventional learning at SMP Negeri 1 Singaraja. After learning using this media, students feel that learning English is more interesting and makes them focus on learning. The result of this study was in agreement with the expert theories and empirical research which were mentioned in the chapter 2. However this is not mean that the conventional learning is bad, it is more on how digital crossword as a learning media can improve student’s vocabulary mastery in 7th grade students.

CONCLUSION

From the analysis that had been mentioned in chapter IV, it can be concluded that there was a significant effect of using the digital crossword on vocabulary mastery of seventh- grade students at SMP Negeri 1 Singaraja. Based on that significant difference, students produced a good perception of the use of digital crossword in learning English vocabulary. The results of this research were obtained through the quantitative and qualitative methods. First, it can be seen from the descriptive analysis by the mean score of the experimental group that was taught by using a digital crossword and the control group that was taught only with conventional learning by small group discussion. After descriptive analysis done, it turned out that the mean score of the experimental group was higher than the control group. The mean score of experimental group was 85.72, while the mean score of the control group was 49.06. Based on those scores, it can be said that students’ post-test scores from the experimental group were higher than the control group.

The second result can be seen from the inferential analysis, which is hypothesis testing (independent t-test). The data for this analysis were taken from the student’s vocabulary test (post-test) from the experimental group after the treatment was done. The result of the hypothesis test showed that the value of t_{obs} was higher than t_{cv} , which is $15.451 > 1.998$. From that score, it means that there was a significant effect of using digital crosswords on students’ vocabulary mastery, so the hypothesis (H_a) was accepted and the null hypothesis (H_o) was rejected. It can be said that there is a significant difference in students’ vocabulary mastery between those who are taught by using digital crossword and those who are taught with conventional learning in SMP Negeri 1 Singaraja. Students who are taught by using digital crossword have increased vocabulary mastery and enjoy learning English. Meanwhile, students who were taught with conventional learning did not have much increase in vocabulary mastery compared to students who were taught with a digital crossword.

After the descriptive and inferential analysis was done, researcher conducted the questionnaire and interview to have the perceptions from students. For the questionnaire, students answered the 33 statements by checking the statements in column strongly disagree (1), disagree (2), agree (3), and strongly agree (4). Based on the questionnaire results, students agree that the digital crossword was a fun and interesting media for learning English vocabulary. It can also be seen from the responses of students in every statement of each dimension in the questionnaire, which are always on the “Agree” and “Strongly Agree” responses. To support the results of student perceptions from the questionnaire, the interview was conducted with 5 students from the same class, which is the experimental group. The results of the interview reinforced students' perceptions that the digital crossword was able to make learning in the classroom more interesting and increase student participation in learning vocabulary. Students felt that crosswords had many effects in helping them to master vocabulary that they did not know before, so they wanted to use it again.

The conclusion obtained from this study is that digital crossword has a significant difference in students' vocabulary mastery between those who are taught by using digital crossword and those who are taught with conventional learning in SMP Negeri 1 Singaraja. The use of digital crosswords in learning vocabulary produces a positive perception from the students. It makes them feel that learning is more fun and interesting, so their vocabulary mastery increased.

REFERENCES

- Creswell, J. (2002). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Merrill Prentice Hall.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: qualitative, quantitative, and mixed methods approaches*. SAGE Publications.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–339.
- Davis, T. M., & others. (2009). Reviewing for Exams: Do Crossword Puzzle Help in The Success of Students Learning. *The Journal Of Effective Teaching*, 9(3), 4–10.
- Donmus, V. (2010). The use of social networks in educational computer-game based foreign language learning. *Social and Behavioral Sciences*, 9, 1497–1503.
- Gaynor, B. (2018). New Perspectives on the Development of Communicative and Related Competence in Foreign Language Education. *Foreign Language Education*, 28, 71.
- Gregory, W. S. (1992). *Construct validity of personal motives*.
- Mursilah. (2017). Penerapan Metode Crossword Puzzle dalam Meningkatkan Hasil Belajar IPS Kelas XII SMK Nurul Huda. *UNILTY*, 1(1), 37–47.
- Ratminingsih, N. M. (2017). *Metode dan Strategi Pembelajaran Bahasa Inggris*. Raja Grafindo Persada.
- Shoebottom, P. (2016). *The factors that influence the acquisition of a second language*.
- Susanto, A. (2017). The Teaching of Vocabulary: a Perspective. *Jurnal KATA*, 1(2), 182. <https://doi.org/10.22216/jk.v1i2.2136>