

The Effectiveness of Using Crossword Puzzle Game Towards Students' Vocabulary Mastery

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ABSTRACT

This study sought empirical proof of the effectiveness of using crossword puzzle games to help students in class VIIB of SMPN 1 Diwek learn vocabulary during the academic year 2022–2023. Pre-experimental design and quantitative methodology were utilized in this study's research design. Students in class VIIB are the sample in this study. According to the research findings, there is a noticeable difference in students' vocabulary proficiency before and after using crossword puzzle games to teach them. The outcome of the descriptive statistics revealed that (85.78 > 69.53) the mean score of the students' posttest was higher than the mean score of their pretest. Additionally, the results of this research were calculated using the paired sample t-test. The outcome is a significance value between 0.000 and 0.05. It denotes acceptance of the alternative hypothesis (H1) and rejection of the null hypothesis (H0). Thus, it can be stated that employing crossword puzzle games to teach kids vocabulary is beneficial because there is a noticeable change in their vocabulary achievement before and after the application of the strategy.

Keywords: Vocabulary, Crossword Puzzle Game, Vocabulary Mastery

1. Introduction

English is a global language that should be studied since it can give benefits for students' future, such as helping them to develop certain talents or get a good job. Sadiyah et al. (2019) claimed that learning English is required to prepare learners for the era of globalization and improve their knowledge. To increase English skills, vocabulary is the basic thing that students have to understand because it can be difficult for them to express their feelings and ideas in speaking, writing, or reading if they do not have much vocabulary.

For English learners, one of the crucial things that has to be learned is vocabulary. Octaviani & Sari (2022) explained that without understanding the words in sentences, language learners will find difficulties communicating in speaking and arranging the words into sentences. Mastering vocabulary can make people confident to speak English. Especially when they live abroad, it can make it easier to know what people around them talk about. By having a good mastery of vocabulary, students can communicate fluently and clearly with other people. Learning English specifically, vocabulary is important in this era, such as for getting a good job, going abroad, or mastering technology.

Vocabulary is the first thing to be learned to be able to comprehend English. It is needed to express the idea and to know what other people say. Al-Dersi (2013) stated that mastering the

vocabulary can make an English learner a good speaker, reader, writer, and listener. Students can get more vocabulary when they learn vocabulary in the class. They will be introduced to new words by their teacher and classmates. According to Puspita & Sabiqoh (2017), three basic components (pronunciation, grammar, and vocabulary) play an important role in the process of the learning process, but vocabulary helps successful students a lot in learning English. Based on their statement, vocabulary is an important central aspect. Without knowing grammar rules well, they can make wrong sentences. Mastering vocabulary is not easy for all students, because there are so many kinds of vocabulary that students have to memorize. Syarifudin et al. (2014) stated vocabulary mastery has to be learned in the learning English process because it can be developed easily by students' experience. So even though some students face many difficulties, mastering vocabulary cannot be ignored. Alqahtani (2015) stated to convey students' ideas and comprehend what others are saying, students need to master vocabulary. The ability to process English words with high skill is referred to as vocabulary mastery. It is a personal accomplishment to acquire new terminologies.

From the observation and the scores of students' weekly tests in SMPN 1 Diwek, the researcher found some problems with students' English abilities. First, they still do not master the vocabulary for making sentences in English. Second, they still face problems in using some vocabulary in their writing. Third, they do not understand the meaning of the vocabulary in the English text. Fourth, students occasionally show little enthusiasm in studying English. Based on a conversation with an SMPN 1 Diwek English teacher, students feel bored studying English. Students have trouble selecting terms with the right meanings to describe something. An effect of students' problems is that they will be lazy to learn because students get many troubles. Some students also talk with their friends during the learning process, so it makes them unable to understand the material and the class becomes ineffective.

Learning vocabulary is not easy for all students, every student needs a different method to understand the learning material of vocabulary. Therefore, teachers have to be more creative to make the process of learning more interesting and enjoyable. The teachers have to find an effective method. A good teacher must master learning material before teaching be more creative also prepare up-to-date techniques for teaching. However, some teachers are still confused about teaching their students, because every student has different characteristics and abilities. Not all students can master vocabulary easily. Students need some methods to help students in learning it. According to Alqahtani (2015), one of the problems with teaching is that the teacher is less confident in teaching the learning process.

Using a game as a teaching and learning tool is one of the methods teachers may employ to teach vocabulary. Nurhayati (2015) argued that a game is a teaching technique that can make learners know the meaning of English words. The process of playing games can make students more active, and also a game played within a team can require students to work together and have responsibility. A game may enhance the learning process and make students more enjoy learning. Crossword puzzle games can be used to teach vocabulary. Crossword puzzle games require students to fill in blanks with words based on references, and they may be used to help students expand their vocabulary. The material is from cardboard and label stickers. Puspita & Sabiqoh (2017) explained that the process of learning vocabulary can be more interesting and fun using crossword puzzle games, and students can also get more chances to remember vocabulary and make sentence patterns. This game can also train the students to work in a team. According to Nicol (2019), filling in the crossword in the classroom as a learning process is a creative way to teach English. Using this game for learning will also make passive students to be active students.

Because every student has to give their opinion to solve the questions.

Furthermore, from solving crossword puzzles, students will also know the meaning of each word not only the meaning of the words. Lin & Dunphy (2013) stated that students can get good exercise by trying to solve puzzles, because it needs some skills such as analyzing, spelling, drawing conclusions, deciding the options, and writing inferences. The vacant spaces must be filled in by the students with a few words connected to the numbered clues, either vertically or horizontally.

Mastering vocabulary is not easy for all students. Sometimes some of them do not want to talk if the teacher does not ask them one by one. Kruawong & Soontornwipast (2021) explained that crossword puzzle games can be solved with correct spelling words. Usually, the material for this game is easily designed. This game is one of the popular puzzle games. Besides, by trying to solve a word related to the references, students can explore their thoughts and think critically. Students will not feel bored and enjoy the learning process. One of the games that can be used is a crossword puzzle game. Jaramilo as cited in Nugroho & Suprpto (2017) stated that crossword puzzle exercises can be a useful learning experience for increasing, building, and understanding the retention of terms relating to a particular area of knowledge. It indicates that students are involved in classroom activities. Students can also be more active because a crossword puzzle game is a game that is played in teams, so they can discuss or give their opinions when playing a crossword puzzle game. Based on Anwar & Efransyah (2018), games can develop students' brains to memorize new words.

Moreover, by playing crossword puzzle games students will get many benefits for example understanding the meaning of words, thinking about how to finish puzzles, making the learning process more fun, and training the student how to work in a team. By discussing the challenge in groups or the classroom, students learn how to think critically and collaborate. The previous study by Kahar et al. (2022) was about improving English vocabulary mastery using crossword puzzles. In their study, they used letters that sometimes made students feel bored with the learning material. But, in this study, the researcher used cardboard and label stickers to make learning material more colourful.

2. Methodology

The researcher applied quantitative methods. Quantitative research is concerned with accumulating and analyzing data that are organized and can be shown numerically. As for the research design, the experimental study was used in this study. In this study, a pre-experimental design was adopted. Additionally, pre-experimental design is frequently employed in studies on schooling. One group is the only one used in the pre-experimental design, with no comparison or control group. The researcher administered a pre-test to students to gauge their vocabulary proficiency before beginning the therapy. The remedy was taught to the students to memorize English vocabulary and solve some questions by using game media. The post-test, which was administered by the researcher following the therapy was delivered after the study and is a repeat of the pre-test.

This study uses a pre-experimental design and is a quantitative experiment conducted at SMPN 1 Diwek on 14 March - 28 March. Mostly, students of SMPN 1 Diwek live near the school. The implementation was carried out in class VII B. The location of SMPN 1 Diwek is at Jl. Raya Bandung No.56, Ceweng, Kec. Diwek, Kab. Jombang, Jawa Timur.

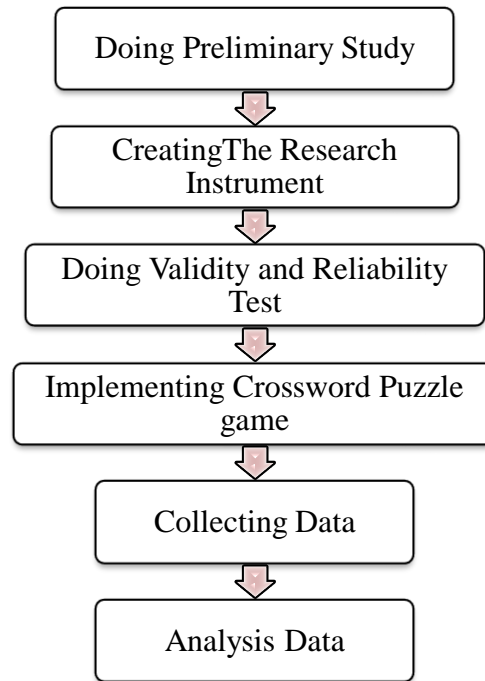
In quantitative research, the population is described as subjects/objects that have a particular characteristic which is the conclusions are determined by the researcher to be examined. The

population in this research is seventh-grade students of SMPN 1 Diwek in the academic year 2022/2023, which has 8 classes. Each of the seven classes from VII A to VII G has 32 students, whereas VIIH has 33 students. Therefore, the total number of students in seventh grade is 257 students. The researcher chose VII B because this class needs more innovations and methods for English teaching. According to the researcher's observation, in SMPN 1 Diwek VIIB is the class in which almost all students still have a lack of vocabulary, lack of motivation and their score is around 70 (less than the score of KKM). It can be seen from the fact that when the teacher explained the material, many students were bored in the learning process and when the teacher asked students about the explanation of vocabulary they were still confused. It is different with the VIII and IX classes which have a medium or advanced level of English also more understanding of English according to the researcher's interview with English teachers in SMPN 1 Diwek, they advised to choose VII B because they need new media and new method for increasing students' vocabulary mastery.

Therefore, the researcher used a crossword puzzle game because this media can make students understand how to explain the vocabulary so it can increase their vocabulary mastery. It is supported by Rusmawan (2018), stating that crossword puzzles can help students to create a good paragraph. They will also be more interested in learning English because this media is one kind of media game. Nurhayati (2015) stated that one of the methods for teaching the learning process is using games because they can give movement activities and students can be energetic. It can also make students feel more challenged, build their self-confidence and they can also spell words correctly.

Furthermore, the sample for this study consists of 32 students from class VIIB of SMPN 1 Diwek, 16 of whom were females and 16 of whom were boys. Majid (2018) explained that the sample is an important aspect of research because the population usually contains too many individuals for research to include as participants. In this research, the researcher used a sampling technique, because it will help the researcher to choose the research subject that will be included in the sample. Purposive sampling was utilized by the researcher in this study. A non-probability sampling method is called purposeful sampling. Non-probability sampling is usually used because the procedure to choose the unit to be included in the sample is much easier and faster than the procedure in probability sampling. The researcher chose this sampling technique because the researcher has to consider some considerations such as students' ability and students' knowledge.

Furthermore, the research procedures of this study can be seen in the data flow chart below.



When conducting research, the data-gathering procedure is crucial. The researcher uses a procedure called data collection to get the data for the study. Furthermore, this study uses tests as a technique of data collection. Hasibuan (2018) explained that a test is used to measure students' achievement. Measurement is used to establish the performance or ability of a student. The researcher gave a pretest and posttest to the students. Students did an exam called a pre-test before receiving therapy. The researcher got information on how many students already had previous knowledge of the material that was given. Post-test test was given after doing the treatment. By comparing the results of the pre-test and post-test, the researcher got the data on students' achievement. Before doing the test for students, the questions of the test have to be valid and reliable. Surucu & Maslakci (2020) stated that Validity is concerned with the quality of the measuring tool that is used to assess how effectively the tool fulfils its purpose. For instance, the researcher conducts this question for a vocabulary test which was validated by an English lecturer at Universitas Hasyim Asy'ari and an English teacher from SMPN 1 Diwek. In this research, the researcher selected students who did not belong to the researcher's sample to answer the post-test and pre-test questions. Furthermore, the technique of data analysis in this study examines and processes the data as the first phase in the study process. Second, after the pretest and posttest data were collected employing descriptive statistics, such as the mean, median, and mode. Third, determining the data from the pretest and posttest. Fourth, using a paired sample test to assess the data.

3. Result and Discussion

3.1. Result

3.1.1. Student' vocabulary mastery before being taught using crossword puzzle game

As a sample for this study, the researcher selected the students in SMPN 1 Diwek of class VII B. There are 32 students in this class. Three steps make up the research. The first phase is a pre-test, which is used to gauge students' vocabulary proficiency before teaching them using crossword puzzle games. Treatment is the second phase and the post-test is the final one. The last phase involves testing the students to see whether they have mastered the vocabulary using crossword puzzles. The researcher used descriptive text about animals, people and places for the topic of pre-test and post-test questions and the material for implementing the crossword puzzle game. The researcher chose that topic because the descriptive text was the material that students were studying. Following the collection of the students' pretest scores, descriptive statistics were used to examine the results. It is shown in table 1 below.

Table 1. Descriptive Statistics of Pre-test

Statistics		
Pre-test		
N	Valid	32
	Missing	0
Mean		69.53
Median		70.00
Mode		75

Based on the results of the descriptive statistics from the pretest in class VIIB are shown in Table 1, the median score, as can be seen, is 69.53. Scores range from 70 to 75, with 70 serving as the median. It indicates that the student's vocabulary score is still low and less than the score of KKM (71). Students' pretest score is shown in Table 2 below.

Table 2. Students' Pretest Score

No	Subject	Pre Test
1.	Student 1	60
2.	Student 2	75
3.	Student 3	55
4.	Student 4	70
5.	Student 5	85
6.	Student 6	65
7.	Student 7	75
8.	Student 8	60
9.	Student 9	75
10.	Student 10	90
11.	Student 11	75
12.	Student 12	85
13.	Student 13	70
14.	Student 14	60
15.	Student 15	80
16.	Student 16	70
17.	Student 17	55

18.	Student 18	75
19.	Student 19	60
20.	Student 20	90
21.	Student 21	75
22.	Student 22	60
23.	Student 23	80
24.	Student 24	55
25.	Student 25	75
26.	Student 26	65
27.	Student 27	80
28.	Student 28	50
29.	Student 29	70
30.	Student 30	55
31.	Student 31	50
32.	Student 32	80

3.1.2. Students' vocabulary mastery in post-learning using crossword puzzle game

After administering the pre-test and obtaining a statistical description, the researcher administered the intervention to the class VIIB students. After the three sessions of therapy, the students took the post-test, which consisted of 20 questions. Following the collection of the post-test results from the students, descriptive statistics were used to examine the results. It is shown in table 3.

Table 3. Descriptive Statistics of Post-test

Statistics		
Post-test		
N	Valid	32
	Missing	0
Mean		85.78
Median		85.00
Mode		95

The results of the descriptive statistics from the post-test in class VIIB, consisting of 32 students, are shown in Table 3. The average score, as can be seen, is 85.78. 85 is the median while 95 is the modal score. Therefore, the mean post-test score is higher than the mean pre-test score. It may be said that the student's vocabulary proficiency scores at VIIB are on the median level. Students' post-test score is shown in Table 4 below.

Table 4. Students' Post-test Score

No	Subject	Post-test
1.	Student 1	85
2.	Student 2	90
3.	Student 3	75
4.	Student 4	90
5.	Student 5	95

6.	Student 6	80
7.	Student 7	90
8.	Student 8	75
9.	Student 9	90
10.	Student 10	95
11.	Student 11	90
12.	Student 12	95
13.	Student 13	80
14.	Student 14	75
15.	Student 15	95
16.	Student 16	85
17.	Student 17	75
18.	Student 18	85
19.	Student 19	80
20.	Student 20	95
21.	Student 21	90
22.	Student 22	95
23.	Student 23	90
24.	Student 24	80
25.	Student 25	95
26.	Student 26	80
27.	Student 27	95
28.	Student 28	75
29.	Student 29	85
30.	Student 30	80
31.	Student 31	75
32.	Student 32	95

3.1.3. The significant differences in students' vocabulary mastery before and after being taught using crossword puzzle game

The researcher's next step was to see whether there were any notable changes in the student's vocabulary proficiency before and after being taught via crossword puzzle games. Before utilizing the paired sample t-test for statistical analysis, the researcher had to do a normality test to determine whether the data were normal. The researcher utilized SPSS to analyze the data. Table 5 displays the normality test results for the pretest and posttest.

Table 5. The normality of Pre-test and Post-test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		32
Normal Parameters ^b	Mean	.0000000
	Std. Deviation	4.55414301

Most Extreme Differences	Absolute Positive	.097
	Negative	-.094
Test Statistic		.097
Asymp. Sig. (2-tailed)		.200 ^c
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

The normalcy test result, which is displayed in the table above, is 0.200. It indicates that if $0.200 > 0.05$, the data can be regarded as normal. The next step is to do a t-test analysis once the pretest and post-test data have shown an indication to be normal. The outcome is shown in table 5. Table 5 shows that the result of the normality test is 0.200. It means that $0.200 > 0.05$, it can be concluded that the data are normal. The next step is to analyze using a t-test. The result can be seen in Table 6 below.

Table 6. Paired Sample Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRE TEST - POST TEST	-16.250	5.388	.953	-18.193	-14.307	-17.060	31	.000

The information in Table 6 may be used to demonstrate that the mean score is -16.250. The standard deviation is 5.388, the standard error mean is 0.953, and the lower difference is -18.193 while the upper difference is -14.307. The result of the test is -17.060, the df is 31 and the significance is 0.000.

The interpretation of the t-test can be described by two methods, as follows:

- Based on the score of the test, by comparing the t-count and t-test, which is the df 31 the result is 2,042 for a standard significance of 5%. It means that the t-count is -17.060 (the minus symbol in this case is ignored at standard significance 5%) the null hypothesis is thus disproved.
- According to the significant numbers, the null hypothesis is accepted if the probability is more than 0.05 and rejected if it is less than 0.05.

When 0.000 is used as a significant number, it signifies that 0.000 is 0.05. Therefore, H1 is approved whereas H0 is disapproved. The accomplishment of students before and after utilizing crossword puzzle

games for instruction shows a clear difference. Thus, it can be said that employing crossword puzzle games to teach vocabulary to students in class VII B in SMPN 1 Diwek is effective.

3.2. Discussion

3.2.1. Students' vocabulary mastery before using the crossword puzzle game

The researcher administered the pretest before the treatment. The researcher's pretest stage came before the treatment. The teacher utilized a pretest with 20 multiple-choice questions. The pretest's mean score is 69.53 as a consequence. It suggests that before employing crossword puzzle games to teach vocabulary, students' vocabulary proficiency was often still at a low level. First, according to Megawati (2016), if students find any difficulties in comprehending the meaning of English terms, this might make it difficult for them to comprehend the English phrase that they are reading. The student's limited vocabulary is caused by the fact that they still do not fully comprehend the meaning of several English terms.

Second, Warif (2019) stated that when students are getting lazy to learn, they will not do their homework and cannot finish their tasks well. The students are lazy to learn English, which can make students not willing to do their tasks and they are not willing to try to understand the learning material. Third, Dewi et al. (2019) stated that the students will not focus on listening to the explanation of the teacher. The learning method that was used to teach English sometimes did not make them interested, so it made students unenthusiastic to pay attention when the teachers taught the material and they would not understand the learning material. Fourth, according to Nadeak et al. (2016), when the learning process is boring, the students become inactive. They become passive learners and find it difficult to understand the language since they are bored when learning English.

3.2.2. Students' vocabulary mastery after using a game of crossword puzzle

There are some previous studies such as the first, Kahar et al. (2022) state that crossword puzzle games can improve students' vocabulary mastery and reduce students' nervousness. Second, Fachrozi et al. (2021) explained that using crossword puzzle games can increase students' vocabulary mastery. The result of two previous studies about crossword puzzles can be concluded that using crossword puzzle games is effective in increasing students' vocabulary mastery.

Therefore, when the researcher already explained the descriptive text, then the next step was starting to play crossword puzzles as a learning tool to acquire vocabulary in English. Eight groups were created by the researcher out of students and the students gathered with their teams so students could discuss the answer with their groups. By learning with the team, the students who are still confused with the learning material can find it easier to understand the lesson. Chim (2015) stated that in team learning, students will try to understand the topic and discuss the answers together. Each student can also express their idea or opinion. The next step was giving the learning material and explaining the rules of the upcoming crossword puzzle game. Each team will get a question from the researcher at the first meeting as per the rules of the crossword puzzle game, for instance, when the researcher asked the first question to the first team, the researcher would give two minutes. The first team could not answer that question or the

answer of the question was wrong, the researcher would ask that question to the next team. At the end of the game, the researcher calculated the points that each team had collected. The team that got the highest points became the winner.

Crossword puzzle game is one of the games that could make the learning process more active. It can be seen in the first meeting when many students tried to raise their hands to answer the questions. Aini (2013) explained that one advantage of utilizing crossword puzzle games to learn English is to increase students' motivation. When one of the groups answered the question correctly and got the prize, another group was motivated to answer. Students' motivation in learning is really important for students because it can make students more active in answering or asking questions. It also made students not bored in learning English because they used new media for learning English and all the students participated in solving crossword puzzles. Students were also excited when the researcher showed the crossword puzzle for the first time, because the crossword puzzle is a new medium for learning English, especially when the students were excited when the teacher instructed them to play a game involving a crossword puzzle.

The researcher divided the class into eight groups and provided each group with a set of cardboard and paper crossword puzzle clues. The researcher then went on to describe the rules. The researcher gave the participants thirty minutes to complete the crossword puzzle. If any of them were unsure about the definitions of certain words, they may open a dictionary to look up the words' definitions. The team can attach the cardboard to the wall once they have completed the crossword problem. The answers of each team could then be corrected by the researcher and the students. The team that completed the crossword problem the quickest and properly won and got a prize. Because each team attempted to complete the crossword problem rapidly, the students became more enthusiastic about playing the game. In contrast to the previous meeting, when each team only had to respond to a small number of questions, in this part, the group was required to respond to every crossword puzzle question that the researcher had provided. As a result, the students encountered more new vocabulary and collaboration obstacles. At the end of learning, the researcher asked some questions about the vocabulary that had been learned.

In the third meeting, the game of crossword puzzles was played individually, so the student had to think and answer the questions by her/himself. Nonetheless, many students tried to raise their hands to answer the questions. It means that they were still excited to play the game, even though without their team. Students also can practice how to make sentences from the clues of a crossword puzzle game. Fachrozi et al. (2021) explained that students can learn with the answers, the questions or the clues that are compiled by the researcher. The researcher read the crossword puzzle question during the first part of this meeting, and any student who knew the solution might raise their hand and move forward to write the answer on the cardboard. If the answer was correct, the student could get the point and the researcher could write the point. A student who gets the most points will become the winner and get the reward.

In this study, crossword puzzles were used to boost participants' self-confidence as English language learners. Additionally, crossword puzzle games might help students learn more vocabulary. The students found it simpler to respond when the teacher asked them a few vocabulary questions at the end of the learning process. In contrast, before

the researcher treated the students, they had difficulties answering. Lin & Dunphy (2013) stated that doing some exercises with crossword puzzles can increase students' ability to memorize words. Besides memorising vocabulary, students can also spell some English words correctly after the treatment. It is supported by Nopitasari & Nurteteng (2019), that crosswords are a kind of word game where students fill in empty boxes with correct words and correct word forms, so they unconsciously learn new words and spell them. When students wanted to answer the question on the whiteboard, they were not allowed to bring their notes or dictionaries. Thus, they will try to remember the words that they want to use as the answer.

Following three sessions of therapy, the researcher administered the posttest to the students. Twenty multiple-choice questions must be answered by the students. The posttest's mean score is 85.78. This indicates that after learning vocabulary with crossword puzzles, students typically have a medium degree of vocabulary knowledge.

3.3.3. The significant differences in the vocabulary proficiency of students using the crossword puzzle game before and after the implementation

Students' vocabulary mastery before and after being taught using crossword puzzle games is significantly different. Since the implementation of crossword puzzle games may increase students' engagement in learning English, they can get more new vocabulary. Students also easier to memorize vocabulary and can increase their self-confidence of students because they try to come forward to answer questions. This result substantiates some previous studies such as the first, Kahar et al. (2022) stating that playing crossword puzzles with students may increase their vocabulary. Second, Fachrozi et al. (2021) noted that crossword puzzles can help students become more proficient in vocabulary. Also, the result of the post-test score (medium level) is higher than the pretest score (low level).

Additionally, playing crossword puzzle games helps students learn to accurately spell words. This study complements the previous study by Maududi et al. (2018), whose goal was to determine the relationship between students' writing ability and vocabulary mastery.

4. Conclusion

The findings of this study show that students' vocabulary mastery before using crossword puzzle games to teach vocabulary is typically still low (mean pretest score: 69.53), while after using crossword puzzle games to teach vocabulary, students' vocabulary mastery is typically in a medium level (mean posttest score: 85.78), according to a paired sample t-test with a sig. 0.000 0.05, H1 is accepted and H0 is denied since there is a significant difference between students' vocabulary competence before and after being taught using a crossword puzzle game. As a result, it can be said that employing crossword puzzle games to teach vocabulary to students in class VIIB of SMPN 1 Diwek in the academic year 2022/2023 is effective.

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