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# The Effect of Crossword Puzzel Learning Strategies on Fourth Grade Student Learning Qutcomes on Science Learning Contents at Gunung Sari 1 Elementary School Rappocini District Makassar City

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**ABSTRACT**

This research is a pre-experimental research which aims to determine whether or not there is an effect of the crossword puzzle learning strategy on the learning outcomes of fourth grade students on science learning content at Gunung Sari 1 elementary school, Rappocini District, Makassar City. The independent variable in this study is the crossword puzzle learning strategy, while the dependent variable is the student learning outcomes in science learning content. The population and sample in this study were fourth grade students of Gunung Sari 1 elementary school, Rappocini District, Makassar City, with a total of 26 students. The research data obtained by giving a test of learning outcomes on the theme of caring for living things, sub-themes of animals and plants in my home environment in the form of pretest and posttest. The data analysis technique used is descriptive statistical analysis and inferential statistical analysis. Based on the results of the descriptive statistical analysis that has been carried out, it can be concluded that the pretest score is in this good category because the mean value of overall learning outcomes is 80.19 while from the posttest it is also in the good category because based on the overall mean value of learning outcomes is 83.27 while The results of inferential statistical analysis after the normality test using the Kolmogorov-Smirnov test with pretest and posttest data are normally distributed and the results of hypothesis testing using the paired sample T-test whose probability value is 0.000 <0.05, which means that Ho is accepted and Ha is rejected because the test criteria are if the probability value greater than the significance level of 0.05, Ho is accepted and Ha is rejected, in other words, the pretest and posttest data have a significant difference. It can be concluded that the crossword puzzle learning strategy has a significant effect on the fourth grade learning outcomes of science learning content at SDN Gunung Sari 1Rappocini District Makassar City.



## INTRODUCTION

Entering 2020 there was an outbreak of the corona virus (Covid-19) which attacked almost the entire world, including in Indonesia. Since March 2020. Education has stopped for a while, be it elementary, junior high school and university, so the government recommends doing this distance learning in accordance with a circular issued by the government which is through the Minister of Education and Culture Circular Number 4 of 2020 (Minister of Education and Culture Republic of Indonesia, 2020, p. 1) "Learning from Home through online/distance learning is implemented to provide a meaningful learning experience for students, without being burdened with demands to complete all curriculum achievements for grade promotion and graduation". To meet the requirements set by the government, the author will carry out research online at SDN Gunung Sari 1 Rappocini District Makassar City.

Improving the quality of national education in shaping and developing the potential that exists in each generation as well as educating the nation's life so that it is able to compete in modern times like today. Therefore, one thing that must be considered is to improve the quality of education in Indonesia, education can be done through several improvements in the learning process. According to Aqib (Aswat, 2019, p. 29) said that "learning is a systematic effort made by teachers to realize the learning process runs effectively and

efficiently, starting from planning, implementing, and evaluating". Therefore, teachers must increase their knowledge and understanding for the success of the quality of education in Indonesia.

One of the efforts made by the government to improve the quality of education is by improving the curriculum. Before the existence of Curriculum 13, as it is now, the curriculum used was the Competency-Based Curriculum (KBK) and it was changed again to the Education Unit Level Curriculum (KTSP) so that it was changed again to Curriculum 13 (K13). Which is where in K13 the learning model combines various content of learning material in one theme or is usually subverted by thematic learning. In elementary school, one of the subjects that is incorporated in thematic is Natural Sciences, as it is known Natural Science (IPA) is the study of natural knowledge and everything in it. The Ministry of National Education (Anggraini & Purwanto, 2018, p. 100), states that:

"Science subjects are subjects that focus on natural order and all its beauty, so that students are motivated to love and admire their Creator, instill a scientific attitude, develop and apply concepts. science concept ".

According to Damanhuri (Permatasari, 2017, p. 97), "The learning process is said to be effective if students are actively involved in all matters, both mental, physical and social." Therefore, using the right strategy is needed to improve the learning process in the classroom, the teacher must have the right and attractive strategy so that learning is fun and students become active so that they can improve learning outcomes. Based on observations in a study conducted by (Sulasmi et al., 2018, p. 140) "The low result of learning science, students tend to be low is because the teachers recognize that in the process of learning science rarely use learning model centered on students*(studentcentered)*". The results of this study indicate that there is a significant effect of the science learning outcomes of grade V SD students. Likewise with the research results from (Rakhma et al., 2016, p. 70) stated that: "The low student learning outcomes are caused by several factors, including the habit of educators using only the lecture method so that it seems monotonous and tends to be passive, learning is unidirectional and less. involve student activeness".

It can be concluded from observations made by previous researchers, namely that teachers tend to use monotonous methods and rarely use other methods so that students are less enthusiastic when learning takes place. One of the ways that learning can be active and enjoyable is by using the right learning strategy. According to Zainul (Karlina et al., 2020, p. 31) "Active learning is a learning approach that involves more student activity in accessing various information and knowledge to be discussed and studied in classroom learning so that students gain a lot of experience to improve their abilities and skills. his knowledge ".

One of the learning strategies that can please students in learning is the *crossword puzzle* or what is known as a crossword puzzle (TTS). This is in line with Zaini et al. (Mingan, 2018, p. 73) stated that "thelearning strategy *crossword puzzle* is a puzzle game. -teki which is used as a fun learning strategy, without eliminating the essence of ongoing learning. " The success of achieving learning objectives on the content of Natural Science (IPA) learning depends on several aspects, one of which is the aspect of how a teacher provides material to students.

This research is strengthened by previous research, which is related to the *crossword puzzle* (crossword puzzle) is Muhafidin (2019) with the title "The Effect ofLearning Strategies on *Crossword Puzzle* Student Learning Outcomes in Social Science Subjects for Class V Min 6 Students in Bandar Lampung". The results of this study indicate that there is a significant influence in the application of thelearning strategy *crossword puzzle* on social studies learning outcomes in class V MIN 6 Bandar Lampung.

Based on previous research and research to be carried out there are differences, namely differences in class levels and differences in learning content, therefore the authors want to find out whether thelearning strategy *crossword puzzle* has an influence on student learning outcomes for science learning content in class IV.

Therefore, researchers are encouraged to conduct research with the title "The Effect ofLearning Strategies *Crossword PuzzleCrossword Puzzles* () on the Learning Outcomes of Class IV Students in Natural Science Learning at SDN Gunung Sari 1, Rappocini District, Makassar City".

**1. Learning Strategy**

**a. Understanding Learning Strategies**

When we become a teacher we don't just stand in front of the class doing motivation, lecturing, providing learning material but we also need to have various competitions to support all our needs and also help us to become a versatile teacher, then we need to have ability to utilize various existing learning strategies so as to achieve a learning process that is in accordance with the objectives. According to Sa'ud (Humaira, Sardinah, 2015, p. 62) states that "Learning must be able to bridge the present and the future by introducing reforms that tend to pursue efficiency and effectiveness". The conclusion that can be drawn from the understanding of the

learning strategy above is that all actions taken by the teacher are plans that have utilized various resources so that the learning process runs effectively and efficiently to generate learning outcomes in students.

**2. *Crossword Puzzle***

**a. Understanding *Crossword Puzzle***

As it is known that there are so many learning strategies that can be used, one of which is thelearning strategy *crossword puzzle* in line with Khardi (2017: 146) "This strategy is more effective to use than other strategies and this strategy on average students is fun, active, and enthusiastic "and also" This strategy allows students to learn optimally because it is fun and resembles playing word guessing through a crossword puzzle ". Moreover, *crossword puzzle* or what we usually call a crossword puzzle and abbreviated as TTS is a game in which there are empty columns which will be filled in with some horizontal and descending questions and it is also familiar to hear what else is a crossword puzzle. This has been around for a long time, this is also explained by Setiawan et al (2017, pp. 171–172) that: “Crossword puzzles that have become a hobby of these generations are actually new, but not so new. This means that this has been going on from time to time with the same but not the same format and form. Historical records state that the current format for crossword puzzles has existed since ancient times. The shape is still quite simple, namely a square containing words, the same letters in that square connect the words *vertically* and *horizontally*. Almost similar to the crossword puzzles that are known today. In the book *Tell Me When - Science and Technology*, the first crossword puzzle appeared in thenewspaper *New York World* on December 21, 1913. This first crossword puzzle was compiled by Arthur Winn and published in the supplementary sheet of the newspaper's Sunday edition".

The use of thestrategy *crossword puzzle* can hone a child's thinking ability in answering questions where it will be easier for him to understand the concept of this learning material in line with (Khardi, 2017, p. 150) states that "This type oflearning *crossword puzzle* can stimulate the cognitive aspects of students, namely Intellectual abilities of students in thinking, knowing and solving problems. Nirmalasari et al (Egi et al., 2019, p. 141) "In addition, the games used in learning allow students to be creative and have a sense of pleasure in learning." *Crossword puzzles* can be used as a learning strategy that is fun for students and even makes students more active from the beginning in the learning process and makes learning outcomes increase. In addition, according to Mingan (2018) states that: “crossword puzzle is a learning strategy to review the material that has been delivered. This review is useful for making it easier for students to remember what material has been delivered. Thus, students are able to achieve learning objectives both in cognitive, affective and psychomotor aspects ".

Use *crossword puzzles* too arguably this effect on student learning outcomes is corroborated by the results of research from (Rakhma et al., 2016, p. 76) which states that: "The application of demonstration methods with magic crossword puzzle media is effectively used for learning material from natural events, it can be seen from classical completeness. The pretest value was 55.56%, then after applying the magic crossword puzzle it increased to 94.4%. Student activity was 38% and teacher activity was 32%, indicating that the magic crossword puzzle media was effectively used in science learning".

**3. Strengths and Weaknesses ofLearning Strategies The *Crossword Puzzle***

Advantages of thelearning strategy *crossword puzzle* according to Ghanoe (Khardi, 2017, p. 148), are as follows:

1) Can hone memory. When a puzzle is presented, students will comb through all their experiences up to that time, then they will select all their experiences if they are suitable (appropriate) to answer the existing puzzle. Thus the benefits of puzzles as a memory sharpener have been obtained by a student;
2) Learn clarification. Require students to learn to group or clarify several words so that they become complete sentences;
3) Develop analytical skills. When a question is given, students will review their experiences and analyze their experiences, such as matching which word is the most suitable so that it becomes a complete sentence;
4) Entertaining. As a form of brain teething games, it needs a good analysis. In principle, when he is busy looking for answers, it is an activity to entertain him; and
5) Stimulating creativity.

The weaknesses of thelearning strategy *Crossword Puzzle* according to Hisyam et al (Oktavia & Has, 2017, p. 45) are:

“(1) Students can imitate other people's work; (2) Tasks can be done by other people; (3) if it is often given, the students will get bored; and (4) if the work is not accompanied by clear instructions, the result of the work may deviate from its objective. "

**4. Natural Sciences**

**a. The Essence of Natural Science**

Natural Science or what we usually know by the acronym IPA, is a science that studies natural knowledge and everything in it. The Ministry of National Education (Ariyanto, 2016, p. 134) states that: "Natural Science (IPA) is related to how to find out about nature systematically, and IPA is not only mastery of a collection of knowledge in the form of facts but accompanied by concepts, principles. - a principle which is a process of discovery".

The understanding of science according to experts, according to Samatowa (Ariyanto, 2016, p. 135) "Stating that Natural Science is a child's activity through various real activities with nature being the main thing in science learning." Meanwhile, according to Hendro Darmodjo (Surahman et al., 2015, pp. 92–93) the essence of science, namely:

1) The process of human efforts to understand various natural phenomena. This means that a certain way is needed which is analytical, careful, complete and connects one natural phenomenon with another natural phenomenon so that the whole
2) Forming a new point of view about the object being observed, the products of human efforts to understand various natural phenomena, and
3) Factors that can change human attitudes and views of the universe, from a mythological point of view to a scientific point of view".

**b. Scope of Natural Sciences**

The scope for Natural Sciences SD / MI includes aspects, Mulyasa (Saputro, 2017, p. 928):

1. Living things and life processes, namely humans, animals, plants and their interactions with the environment, as well as health.
2. Objects / materials, their properties and uses include: liquid, solid and gas.
3. Energy and its changes include: force, sound, heat, electric magnet, light and simple planes.
4. Earth and the universe include: land, earth, solar system and celestial bodies.

The explanation that has been put forward by Mulyasa (Saputro, 2017, p. 928) can be concluded that the scope of Natural Sciences (IPA) is living things, objects, energy and their changes as well as the earth and the universe. Science is a science that deals with all existing aspects ranging from general aspects such as living things to specific aspects, namely, the life processes that exist on earth and this universe.

**c. Purpose of Natural Science**

IPA which is a body of knowledge where this study includes a collection of facts, legal theories and others which all go through a scientific process especially we all know that Science is the basic knowledge of technology. Thus, according to Maslichah Asy'ari (Surahman et al., 2015, p. 93), the objectives of science learning are:

1. To instill curiosity and a positive attitude towards science, technology and society.
2. Develop process skills for investigating the environment, solving problems and making decisions.
3. Develop knowledge and understanding of science concepts that will be useful and can be applied in everyday life.

**5. Learning Outcomes**

**a. Understanding Learning Outcomes**

According to R. Ibrahim (Irma, 2020, p. 11) states that "Teaching results are the main component that must first be formulated by the teacher in the teaching process. This role is very important because it is the goal of the teaching and learning process. The pouring of learning outcomes in the lesson plan not only clarifies the direction to be achieved in a learning activity, but in terms of efficiency, the maximum results are obtained ". So that from the learning results, it produces benefits that can be obtained through pouring the following learning results according to Hamzah B. Uno (Irma, 2020, pp. 11-12):

1. Teaching time can be allocated and utilized appropriately.
2. Subjects can be balanced, so that no learning material is discussed too deeply or too little.
3. The teacher can determine how much learning material can or should be presented in each learning hour.
4. The teacher can determine the sequence and series of learning material appropriately.
5. Teachers can easily define and prepare the most suitable and interesting teaching and learning strategies.
6. Teachers can easily prepare various equipment and learning needs.
7. Teachers can easily measure student learning success in learning.
8. Teachers can guarantee that their learning outcomes will be better than those without clear results.

Based on the above understanding, it can be concluded that learning outcomes are the values achieved by students before and after learning in the form of numbers to measure student cognitive learning outcomes. As well as learning outcomes it is concluded that we can design all the needs during the learning process to get learning outcomes that are in accordance with the learning objectives.

**b. Kinds of Learning Outcomes**

As explained above, learning outcomes are behavioral actions and according to Susanto (Karlina et al., 2020, p. 33) "suggests that learning outcomes are changes that occur in students, both concerning cognitive, affective, and psychomotor aspects as a result of learning activities. To make it clearer, the understanding of the cognitive (conceptual understanding), affective (student attitudes) and psychomotor (process skills) aspects will be described as follows:

**c. Cognitive Aspects (conceptual understanding) The**

Classification most often used in the cognitive realm is understanding according to Taxonomy Bloom (Bundu, 2016, pp. 20–21) which consists of six levels of intellectual thinking abilities and skills. The six cognitive aspects are:

1. Knowledge at this level the purpose of the assessment is related to (a) specific knowledge; (b) knowledge of how to use facts; and (c) knowledge that is universal.
2. Understanding this level include (a) translation; (b) interpretation; and (c) material exploration.
3. Application goal at this level is the level that requires cognitive ability to use things that are abstract in the real practice or in a new dituasi and concrete.
4. Analysis on this level expresses one's ability to be able to describe a situation or particular circumstances into elements or its components by grouping into (a) elemental analysis; (b) relationship analysis; and (c) organized principles analysis.
5. Synthesis at this level requires a person to be able to unite certain parts into new patterns, such as (a) arranging specific communications; (b) operation plan; and (c) a set of abstract relationships.
6. Evaluation decision making at the level of (a) internal evidence and logical consistency; and (b) external evidence with the consistency of existing data.

**d. Affective Aspects (student attitudes)**

The affective domain includes the attitudes, values and emotions of students. Therefore, Krathwohl, Bloom and Marsia (Bundu, 2016, pp. 24–25) divide the affective domain into seven conditions:

1. Accepting.This objective indicates the sensitivity of a person to received stimuli, and includes (a) vigilance; (b) willingness to receive; and (c) attention selection. This begins with awareness of the ability to receive and show
2. Answering Attitude conditions are sensitive attention to stimuli, including (a) agreeing; (b) willingness to respond; and (c) a feeling of satisfaction.
3. Assess The objectives of this aspect of attitude are beliefs and attitudes that are considered good in the form of (a) recognition; (b) election; and (c) commitment.

Organization This level is related to the internalization of value which includes (a) conceptualization of value; and (b) organizing a value system.

The conclusion that can be drawn from an understanding of the affective above is the stimulus for accepting*(receiving)*the material so that the conditions are ready to answer*(responding)*the questions so it is easy to judge*(valuing)*the attitude of the responses given and can organize*(organization)*system of values.

**e. Aspects Psychomotor (skills process)**

The psychomotor aspects according to the Ministry of Education (Bundu, 2016, p. 26) "To suggest some measures psychomotor seen from the impulse causes, the movement that is of imitating*(perception),*composing*(manipulating),*perform the procedure*(precision*), do well and appropriately (*articulation*), and carry out the action naturally (*naturalization*).

## METHOD

Type of research that will be carried out by researchers is the type of *pre-experimental design*. This study did not have a control variable so the sample was not randomly selected. The purpose of this research is to test the conditions that can be achieved through actual experiments, but there is no control over the variables.

This research will be conducted in November. Which is located at SDN Gunung Sari 1 Rappocini District Makassar City. Emmi Saelan Monument Street Number 17 Rappocini District Makassar City.

This research design uses a *Pre-Experimental Desigs design* without a comparison group or a single group design in the presence of a *pretest* and *posttest* or so-called *One Group. pretest and postest design*. This study

used this design to determine the effect of thelearning strategy *crossword puzzle* on the learning outcomes of fourth grade students on the science learning content of SDN Gunung Sari 1 Rappocini District Makassar City. Research can be seen in the following table:

| Value of Pretest | Treatment | Value of Posttest |
|---|---|---|
| $O_1$ | X | $O_2$ |

Source: Sugioyono (2016)
Description:
$O_1$ =value *pretest* (before being given treatment)
X = treatment, in this case the use of thelearning strategy *crossword puzzle* (crossword puzzle)
$O_2$ =value *postest* (after being given treatment)

The experiment was carried out according to the time needed. The difference between $O_1$ and $O_2$, namely $O_2$ - $O_1$ is assumed to be the effect of the given experiment.

The population in this study were the fourth grade students of SDN Gunung Sari 1, Rappocini District, Makassar City in the 2020/2021 academic year with 52 students consisting of 24 boys and 28 girls

**Table 3.2 Number of Class IV Students SDN Gunung Sari 1 District Rappocini Makassar City**

| No | Class | Gender | | Number of Students |
|---|---|---|---|---|
| | | Male | Female | |
| 1. | IV A | 11 | 15 | 26 |
| 2. | IV B | 13 | 13 | 26 |
| Total | | 24 | 28 | 52 |

Source: SDN Gunung Sari 1 District Rappocini City of Makassar

In this study, the class that will be used as the tested group is class IVB with the consideration that there are more students who have not reached the KKM score, which is 6 people compared to class IVA which is only 1 person.

Used in this research is *The samplingNon Probability Sampling,* techniquenamely technique *sampling saturated* sampling in this study to draw samples from the population to determine the placement of the sample in the study. Technique *saturated sampling was* chosen because the population is relatively small, that is, less than 30 people. The total population in this study amounted to 26 people.

The data collection technique used in this study is a learning outcome test, the test aims to test student learning outcomes on science learning content which is an instrument for collecting research data, the test is carried out twice in the form of a *pretest* and *posttest.* But before the questions are used, they have been developed from the instrument grid with the aim of mapping what will be measured. The test given uses the same questions related to the science learning content that will be studied during the teaching and learning process (*treatment*). The test given is a written test in the form of(*multiple choicemultiple choicechoice of multiple choice*), thequestions is due to reducing the level of subjectivity in giving, scoring 1 (one) for correct answers and 0 (zero) for wrong answers, then the score will be validated. by experts in the field.

Observations were made to collect data onlearning strategies *crossword puzzle* on science learning content in relation to the target implementation of the learning process that will occur in online classrooms focused on students and teachers. The aspects observed were the opening, the learning process with thelearning strategy *crossword puzzle* and the activities that occurred in the online class, google meet and whatsapp group.

**Table 3.3 Learning Process Implementation**

| Score | Category |
|---|---|
| < 20% | Very less effective |
| 21%-40% | Less effective |
| 41%-60% | Quite effective |
| 61%-80% | Effective |
| 81%-100% | Very Effective |

Sourcer: Arikunto (2013)

Supporting data documentation in this study includes a list of the number of students both girls and boys, teacher and student books, lesson plans, student worksheets, *pretest* and *posttest questions*, and pictures of student activities while carrying out online learning.

Data analysis aims to narrow and limit findings to become an orderly, structured and more meaningful data. The data analysis technique in quantitative research is to use statistics. The data that has been obtained were analyzed using statistical analysis techniques, namely descriptive statistics and inferential statistics.

Descriptive analysis aims to describe or describe the score of science learning outcomes. The learning outcome data were obtained from thedata *pretest* and *posttest* after learning was carried out. Student learning outcomes scores are presented in the form of maximum values, minimum values, mean, mode, median, standard deviation, frequency, histography and variance. Student learning outcomes are grouped into five categories, namely very good, good, moderate, lacking and very poor. These categories are stated in the table form below:

**Table 3.5 Category Student Learning Outcomes**

| No | Score | Category |
|---|---|---|
| 1. | $85 < x \leq 100$ | Very Good |
| 2. | $70 < x \leq 85$ | Good |
| 3. | $55 < x \leq 70$ | Fair Good |
| 4. | $40 < x \leq 55$ | Poor Good |
| 5. | $< 40$ | Very Poor |

Source: Poerwanti (2010)

Normality testing is used to find out data on learning outcomes of fourth grade students. It is intended to determine whether the data under study comes from a normally distributed population or not. To test the normality of data using the assistance of the *IBM SPSS Statistic Version 23 program,* so using thenormality *Kolmogorov-Smirnovtest*. The reason researchers use a normality test *Kolmogorov-Smirnov,*because the sample used in this study amounted to <100,

Hypothesis:

$H_o$:The samples come from populations with normal distribution

$H_a$: Samples derived from distributed population of abnormal

Test criteria if the probability value real level of greater than 0.05, then $H_o$ accepted and $H_a$ rejected.

After the normality test is fulfilled, then the hypothesis testing is carried out. Hypothesis testing is done to find out whether thislearning strategy *crossword puzzle* can affect student learning outcomes or not, therefore researchers use the *Paired Sample T-Test* or commonly called the t-test, therefore researchers use the assistance of the *IBM SPSS Statistic Version 23 program*. *Paired Sample T-Test* is used to compare the difference in the mean of two paired samples with the assumption that the data is normally distributed. The method used to use the *Paired Sample T-Test* is to compare the t count with the t table. Criteria for testing if the probability value is smaller than the real level of 0.05, then $H_o$ o is rejected and $H_a$ accepted. Furthermore, to support the research hypothesis above, it is formulated as follows:

The null hypothesis ($H_o$) = There is no difference before and after the use oflearning strategies *crossword puzzle* on the learning outcomes of fourth grade students on the science learning content at SDN Gunung Sari 1, Rappocini District, Makassar City.

The alternative hypothesis ($H_a$) = There is a difference before and after the use oflearning strategies *crossword puzzle* on the learning outcomes of fourth grade students of fourth grade students on the science learning content at SDN Gunung Sari 1, Rappocini District, Makassar City.

## RESULTS AND DISCUSSION

### Research Results The

Results of this study will describe the research objectives that have been carried out, namely to find out the picture learning strategies *crossword puzzle* (crossword puzzles) and knowing the description of student learning outcomes in science learning content usinglearning strategies *crossword puzzle* (crossword puzzles) in grade IV students at SDN Gunung Sari 1, Rappocini District, Makassar City, and to find out how much the influence of thelearning strategy *crossword puzzle* on the learning outcomes of fourth grade students on the content of science learning at SDN Gunung Sari 1, Rappocini District, Makassar City. The process of implementing science learning content with "the theme of caring for living things" with "the sub-theme of animals and plants in my home environment" was held three times online.

**1. Descriptive Statistical Analysis**

**a. Data *Pretest* Siswa Hasil Belajar Muatan Pembelajaran IPA**

The pretest of student learning outcomes was held on Monday, November 16, 2020 with 26 research subjects. After the data is obtained, it is then processed using theapplication *IBM SPSS Statistic Version 23*, in order to find out descriptive data ofscores *pretest* students'on science learning content. Theresult data *pretest* can be seen in the following table :

**Table 4.1 Descriptive Value Pretest**

| Descriptive statistics | Statistical Value |
|---|---|
| Number of samples | 26 |
| Lowest value | 65 |
| Highest value | 100 |
| Average (Mean) | 80,19 |
| Range | 35 |
| Standard deviation | 13,891 |
| Median | 80 |
| Mode | 65 |

Source: *IBM SPSS Statistic Version 23*

From table 4.1 above can be seen that the value of the average*(mean)*of 80.19 while the middle value*(median)*of 80, the standard deviation of 13.891, range of values*(range)*between the highest value to lowest value is 35. the frequency distribution of the value of *pretest* on student learning outcomes can be seen in the following table:

**Table 4.2 Distribution and Percentage of Values Pretest**

| No | Score | Category | Frequency | Percentage |
|---|---|---|---|---|
| 1. | $85 < x \leq 100$ | Very Good | 8 | 30,7% |
| 2. | $70 < x \leq 85$ | Good | 8 | 30,8% |
| 3. | $55 < x \leq 70$ | Pretty Good | 10 | 38,4% |
| 4. | $40 < x \leq 55$ | Less Good | - | - |
| 5. | $< 40$ | Very Less | - | - |
| Total | | | 26 | 100% |

From table 4.2 above it can be seen that the number of students who received grades good enough totaled 10 people with a percentage of 38.4% while the number There are 8 students who get good grades with a percentage of 30.8% and 8 students who get very good grades with a percentage of 30.7%. Based on the results of the descriptive analysis that has been carried out, it can be concluded that the results ofscore *pretest* thisare in this good category because based on thevalue of *mean* the overall learning outcomes amounting to 80.19.

**b. Data *Posttest* Student Learning Outcomes Science Learning Content**

The posttest of student learning outcomes was held on Monday 23-24 November 2020 with 26 research subjects. After the data is obtained, it is then processed using theapplication *IBM SPSS Statistic Version 23*, in order to find out descriptive data of scores *posttest* students'on science learning content data *posttest* can be seen in the following table :

**Table 4.3 DescriptiveValue *Posttest***

| Statistics Description | Statistical Value |
|---|---|
| Number of samples | 26 |
| Lowest value | 65 |
| Highest value | 100 |
| Average (Mean) | 83,27 |
| Range | 35 |
| Standard deviation | 13,412 |
| Median | 85 |
| Mode | 100 |

Source: *IBM SPSS Statistic Version 23*

From table 4.3 above It can be seen that the value (*mean*) is 83.27 while the middle value (*median*) is 85, the standard deviation is 13.412 and the value (*range*) between the highest value to the lowest value is 35. The frequency distribution of thescores *pretest* on student learning outcomes can be seen in the table following :

**Table 4.4 Distribution and Percentage of Posttest Value**

| No | Score | Category | Frequency | Percentage |
|---|---|---|---|---|
| 1. | 85 < x ≤ 100 | Very Good | 10 | 38,4% |
| 2. | 70 < x ≤ 85 | Good | 7 | 26,8% |
| 3. | 55 < x ≤ 70 | Good Enough | 9 | 34,8% |
| 4. | 40 < x ≤ 55 | Not good | - | - |
| 5. | < 40 | Very Less | - | - |
| | Total | | 26 | 100% |

From the table 4.4 the frequency above can be seen that the number of students who get good enough grades is 9 people with a percentage of 34, 8% while the number of students who are me There were 7 with a students who got good gradespercentage of 26.8% and 10 students who got very good grades with a percentage of 38.4%. Based on the results of the descriptive analysis that has been carried out, it can be concluded that the results ofscore *posttest* thisare in this good category because based on thevalue of *mean* the overall learning outcomes amounting to 83.27.

Inferential statistical analysis is intended to answer the research hypotheses that have been formulated. Before the researcher performs an inferential statistical analysis, an assumption test must first be carried out, namely the normality test.

**1) Normality test**

The normality test in this study was conducted to determine whether the *pretest* and *posttest* data were normally distributed or not, the processing of this normality test also used theapplication *IBM SPSS Statistic Version 23*. For this normality test, thetest was used *Kolmogorov-Smirnov*. Thetest *Kalmogrof-Mirnov* is said to be normally distributed if the probability value is greater than the real level, which is 5% (0.05). Summary of data normality test results *pretest* and *posttest* can be seen in the table below :

**Table 4.5 Data Normality Test Results *Pretest* and *Posttest***

| Data | Probability Value | Description |
|---|---|---|
| *Pretest* | 0,005 | 0,005 ≤ 0,05 = normal |
| *Posttest* | 0,022 | 0,022 > 0,05 = normal |

Source: *IBM SPSS Statistic Version 23*

Based on the results of the normality test, it is known that the significance value of the data from the *pretest* shows a value of 0.005 which means the same as 0.05, while the results of the data from the *posttest* show a value of 0.022 which means that it is greater than 0.05. So it can be concluded that the two values are normally distributed, this is because the value at the significance level at the *pretest* is equal to 0.05, while the *posttest* significance level is greater than 0.05. Therefore the normality test can be fulfilled and the next stage will be tested the hypothesis.

**2) Hypothesis testing**

This hypothesis testing is carried out in order to test the results of the *pretest* and *posttest* using theapplication. The *IBM SPSS Statistic Version 23* data is said to be significant if the probability value is less than 0.05. This analysis is used to determine differences in student learning outcomes before and after being given treatment (*treatment*).

**a) Test *Praired Sample t-Test***

Note in the following table are the results of the *Praired Sample t-Test* from thevalues *pretest* and *posttest:*

**Table 4.6 Results of the *Praired Sample t-Test Pretest* and *Posttest***

| Data | T | Df | Probability Value | Information |
|---|---|---|---|---|
| *Pretest* dan *Posttest* | -4,170 | 25 | 0,000 | 0,000 < 0,05 = there is a difference |

Source: *IBM SPSS Statistic Version 23*

Based on the table above it can be seen that the t value of -4.170 is due to the value of the average The mean (*mean*) of thelearning outcomes *pretest* (80.19) was lower than the average (*mean*)learning outcomes *post-test* (83.27). So in this context the negative value of t count can have a positive meaning so that the t value becomes 4,170. Therefore the value of t count is greater than t table, this can be seen with the value of t table and df = 25, then the t table is obtained of 2.060. Thus t count has a value greater than t table (4,170> 2,060), which means that if t count is greater than t table, there is a significant effect. Therefore $H_o$ rejected and $H_a$ accepted.

**b) Based on the Comparison of Probability Value**

This hypothesis testing can be done by comparing the probability value. That where if Sig. (2-tailed) <0.05 then $H_o$ rejected and $H_a$ accepted. The results obtained were the Sig. (2-tailed) value, namely 0.000 <0.05. This means that the results obtained are that there are significant differences in student learning outcomes before being given treatment and after being given treatment. So with this it can be concluded that thelearning strategy *crossword puzzle* affects the learning outcomes of fourth grade students on the science learning content at SDN Gunung Sari 1, Rappocini District, Makassar City.

**Discussion**

This research applies thelearning strategy *crossword puzzle* in the content of science learning to the fourth grade students of SDN Gunung Sari 1, Rappocini District, Makassar City with the theme of caring for living things and sub-themes of animals and plants in my home environment and also the use oflearning strategies *crossword. Puzzles* have a positive effect on improving student learning outcomes, this is evidenced by observations made by observers during the learning process that takes place online using *Google Meet*. At the first meeting, there were still some things that had not been carried out properly, this was shown by the percentage of the learning process implementation of 72.05% which was in the effective category, the second meeting had an increase to reach a percentage of 80.26% in the effective category while at the meeting the third has increased the percentage of 81.57% which is in the very effective category. This achievement has not been able to reach a percentage of 100% due to various situations and conditions that are less supportive but from the results of these observations it can be concluded that the learning process using thelearning strategy *crossword puzzle* is effective with an increasing percentage for each meeting.

Student learning outcomes on the application of thelearning strategy *crossword puzzle* in the content of science learning to fourth grade students of SDN Gunung Sari 1, Rappocini District, Makassar City have increased this is evidenced by the results of the *pretest* and *posttest* that have been carried out. *The pretest was* carried out online using *google form* on Monday, November 16, 2020, showing aresult *mean* of 80.19 and a standard deviation of 13.891. based on the frequency table it is known that there are 10 people in the fairly good category, 8 people in the good category with a percentage and 8 people in the very good category. Based on the results of the descriptive analysis, it can be concluded that the *pretest* is in this good category basedvalue *mean* on the overallof learning outcomes amounting to 80.19. Meanwhile, the results of the *posttest* which was also carried out online using *google form* on Monday 23-24 November 2020 showed aresult of *mean* 83.27 and a standard deviation of 13.412, based on the frequency table it is known that there are 9 people in the fairly good category, 7 people in the category good, and 10 people in the very good category. Based on the results of the descriptive analysis, it is concluded that the *posttest* is in this good category because it is basedvalue *mean* on the overallof learning outcomes amounting to 83.27.

In the inferential statistical analysis, the researcher first carried out an assumption test, namely thenormality test *pretest* and *posttest* of student learning outcomes using the *Kolmogorov-Smirnov test* with the results of all data being normally distributed, after carrying out the *Kolmogorov-Smirnov test the* researcher also conducted a hypothesis test which was based on hypothesis testing with Inferential statistics show that there is a significant effect on student learning outcomes by implementing thelearning strategy *crossword puzzle* in the process of learning content in science. The results of this hypothesis testing are carried out in two ways, namely comparing the t table with the t count and also comparing the probability value, the results used from the calculation of the t test *paired sample T-test* using the help of *IBM SPSS Statistic Version 23* obtained the t value of 4,170. While t Table, and df = 25 = 2,060. Thus t have a value greater than t table (4.170> 2.060) which means that Ho is accepted and Ha is rejected because the criteria of the test if the probability value is greater than 0.05 then the real level $H_o$ accepted and Ha rejected. Meanwhile, by comparing the

probability value, a significant value is obtained from the results of the *pretest* and *posttest*, where the probability value is 0.000 <0.05 means that Ho is rejected and Ha is accepted as the test criteria if the probability value is smaller than the real level 0.05 then Ho is rejected and $H_a$ received. So it can be concluded that there is an effect of thelearning strategy *crossword puzzle* on student learning outcomes on science learning content at SDN Gunung Sari 1 Rappocini District Makassar City.

Thus this research is in line with previous research conducted by Muhafidin (2019) with the title "The Effect ofLearning Strategies on *Crossword Puzzle* Student Learning Outcomes in Social Science Subjects for Class V Min 6 Bandar Lampung Students".

## CONCLUSION

Based on the research that has been If done, it can be concluded several things, including:

1. An overview of the use of thelearning strategy *crossword puzzle* on student learning outcomes on science learning content at SDN Gunung Sari 1, Rappocini District, Makassar City, which gives this positive influence is proven by the results of observations. from effective to very effective category.
2. The learning outcomes of students have increased. This is based on the results of the descriptive analysis that has been carried out, it can be concluded that thevalue *pretest* is in this good category as evidenced by the mean (*mean*) of 80.19 and likewise the results of the descriptive analysis that have been carried out can be concluded that the results ofscore *posttest* thisare also in the good category with an average (*mean*) of 83.27.
3. There is an influence on the application of thelearning strategy *crossword puzzle* due to a significant difference between the *pretestscores* and *posttest* after learning using thelearning strategy, *crossword puzzle* this can be seen in Table 4.6 *Sample t-Test Pretest* and *Posttest*.

Based on the research that has been done, it can be concluded that several suggestions include:

1. For the principal, giving appreciation to teachers who uselearning strategies *crossword puzzle* to improve student learning outcomes, especially for teachers who teach long distances or online as it is today.
2. Teachers can use thislearning strategy *crossword puzzle* as an alternative to improve student learning outcomes for science learning content, especially in the midst of the Covid-19 pandemic.
3. Students can participate in the learning process more actively, enthusiastically, and feel happy in the learning process even though it is in distance learning or online.
4. For other researchers, it can be used as a reference when doing research and can developlearning strategies *crossword puzzle* (crossword puzzles).

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