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The Use of Human Skeleton Puzzle Media in Improving Learning Achievement of Class IV MI Darul Quran Wal Hadits Telaga Lebur Students

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This learning game is used to create an exciting atmosphere and this will encourage the acceleration of learning. Especially in science learning using a constructivist approach, students are encouraged to increase courage and foster cooperation (collaboration) in trying to find solutions according to how to find and transform complex information so that students automatically rebuild a new understanding to overcome problems. Based on the results of the research, student learning activities have progressed in several activities, namely asking questions in the first cycle 59% increased to 63.63%, answered from 68% to 72.72%, but in the rebuttal activity 9% did not increase and the activity of expressing opinions increased from 13.63% to 18%, however, it is still in the less category. From the test results during the study, it can be concluded that the application of puzzles in science learning can improve student achievement. This is proven by two implementations or cycles obtained the average score of test results from each cycle which always increases. The score obtained in the first cycle of the pretest meeting reached an average of 48.4 then in the postes it rose to 60.64, this shows an increase of 12 points. Then the second meeting of the pretest reached 63 and the postes reached 70.20. This shows that all students who participated in the second cycle had succeeded in exceeding the limit of learning completeness.

1. Introduction

Education is a very important thing in human life. Education is a means to achieve quality and character human beings. Therefore, the course of the education process must be interspersed with the quality of educators and adequate infrastructure facilities in order to create good education. In education, there is the term Teaching and Learning Activities or Teaching and Learning Process. (Tantri Tanggu and Pudjawan; 2020)

In this term, there are two processes or activities, namely Learning activities and Teaching activities. The two processes seem to be inseparable. But actually the learning process can happen even without anyone teaching, because basically learning can happen anytime and anywhere. The learning process occurs because of the interaction of individuals with their environment.

School is a means provided by the government to carry out the learning process for students. The success of an educational process is highly determined by teachers, students and the school environment. These three things cannot be separated because they are interrelated with each other. Even though the teacher has explained at length about a material, not necessarily all students can accept it well. This is because not all students can receive lessons if they are only explained through the lecture method.

Therefore, teachers must innovate to provide learning that is fun, not boring and of course can be easily accepted by all students. As in the following example, science lessons are lessons that are considered in the fun category under the Sports lesson which incidentally is the most liked subject by students, especially elementary school students.

Science lessons are considered fun by students because the material in science subjects is about everything in the environment of human life so that students will more easily grasp science lessons than other lessons. But now more and more students are also bored with science subjects, this is due to the lack of creativity of teachers in providing subject matter. Teachers most often give lectures and are supplemented with image media. However, this is done too often by teachers so that students become bored with the learning process that tends to be the same every time the lesson takes place.

The next impact that arises is the decline in student learning outcomes. Therefore, teachers must be good at making innovations in the implementation of learning which is expected to be able to improve student learning outcomes. As seen in MI Darul Quran Wal Hatits Telaga Lebur whose students tend to get bored with attending lessons and seem to lack

concentration which causes their learning results to decrease.

According to information obtained by researchers from grade IV teachers of MI Darul Quran Wal Hadith Telaga Lebur, the learning process, especially science, still uses monotonous media, so that students feel saturated and have an impact on low student learning outcomes. Students who were able to receive science lessons well were only 6 students out of a total of 17 students or 9 students who were not able to receive science lessons well. One of the things that teachers can do is to utilize learning media.

Learning media is needed as a means of supporting the learning process, in addition to transforming conventional or face-to-face learning (lectures) in the classroom. The use of learning media is an inseparable part and has been an integration of the learning methods used.

Learning media is one of the dynamic elements in learning. The position of learning media has an important role because it can help the student learning process. The use of learning media can make abstract things more concrete and make an uninteresting learning atmosphere interesting. (Arikunto:2018) Many learning media exist but not all of them are used properly by teachers. The learning media that is often used is picture media.

However, because image media is used too often, other media are needed to be used to support the learning process in schools. For this reason, teachers need to apply a new learning media such as using Puzzle media. Rahadi, Learning Media:) By using Puzzle media, it is hoped that students will be easier to receive science lessons which will ultimately make student learning outcomes increase.

2. Method

1. Type of Research

This study uses classroom action research (*Classroom Action Research*). (Zainal Aqib:2018) The reason why this research was conducted is to explain and improve the learning process in the classroom during learning, in order to improve student learning outcomes with the media of *human skeleton* puzzles.

The cycle in this study refers to Kurt Lewin's model which consists of four main activities, namely planning, action, observing, and *reflection*. (Husaini Usman: 2019).

2. Research Location

This research took place at MI Darul Quran Wal Hadith Telaga Lebur which is located in Sekotong Tengah Village, Sekotong District, West Lombok, with the reason that the author served in the school. The research in this place is based on the consideration that the school has a representative number of students to be researched. In addition, the location is easy to reach by researchers so that it is more efficient in obtaining data. This school is considered to be a proper place of research, this is shown by the quality that is quite good and many new students continue to increase from year to year.

3. Research Subject

As the subject of this study, there are students of grade IV MI Darul Quran Wal Hadith Telaga Lebur, Central Sekotong Village, Sekotong District, West Lombok with a total of 17 students, consisting of 10 male students and 7 female students. The classroom situation that is the subject of the research is quite adequate. The object of research in this class action is student activities and student learning outcomes in Natural Sciences (IPA) subjects.

4. Data and Data Sources

In this study, the data used by the researcher includes:

- 1) Data on Teaching and Learning Activities.
 - 2) Grade IV grade archive of MI Darul Quran Wal Hadith Telaga Lebur.
 - 3) Results of the evaluation of science learning in grade IV MI Darul Quran Wal Hadith Telaga Lebur, Sekotong District, West Lombok Regency
- The data sources used in this study are the results of formative tests in cycle I and cycle II as well as field observation records in early conditions, cycle I and cycle II as well as class observation results.

5. Data Collection Techniques and Tools

This research uses data collection techniques, namely:

a. Observation

The observation is intended to find out the conformity of the action with the plan that has been prepared and to find out the extent to which the implementation of the action has been carried out, then the results of changes that are in accordance with the desired can be obtained. The activities observed include teacher activities and student activities in learning processing. The data collection technique is carried out through observation accompanied by recording the state or behavior of the target object, this observation activity has the purpose of getting a direct picture of student learning activities in the classroom.

b. Test

In terms of data collection, tests are in the form of questions, exercises used to measure students' abilities. Data collection using tests in the form of information about knowledge, attitudes, talents and others can be done by testing or measuring initial provisions or learning outcomes with various research procedures. Suharsimi Arikunto, stated that "Test" is a series of questions or exercises as well as other tools used to measure skills, knowledge, intelligence, abilities or talents possessed by individuals and groups. (Suharsimi Arikunto:2018) The test used in this study was to measure the learning outcomes of science students in grade IV.

c. Documentation

Sugiyono, argued that the document is a record of events that have passed. Data collection by taking documentary evidence such as: class lists, student names, grade lists, and notes in the form of documents. (Sugiono:2019). The documents used by the researcher are a list of students which contains the names of students, gender, age, number of students, school profiles and science subject scores before the action.

The data collection technique is carried out by observation. used to carry out the research are (1) action observation documents in the form of notes on students in science learning during learning, analysis action documents at the end of each cycle. (2) Another source of information is the collaborator (teacher) who observes during the implementation of the action. (3) Test sheets in the form of questions used to see the mastery of the concepts of learning materials about the human digestive system that have been taught.

During the learning process, student activities continue to be observed by observers and researchers. The things observed were a) actively compiling *puzzle pictures* in groups, b) reading resource books to complete tasks in worksheets, c) interacting with classmates in solving problems, d) recording the results of the discussion in the worksheet, e) asking questions in class discussions, f) answering questions from friends in class discussions, g) making conclusions about the results of class discussions.

6. Data Analysis

Data analysis is carried out from the beginning of the provision of actions to the writing of research reports. The data analysis technique used is a flow model consisting of three activities, namely data reduction, data presentation and conclusion drawn. The data obtained is analyzed and described according to the existing problems in the form of a report on the results of the research. The interactive learning design and the assignment of group work

assignments are validated by the teacher.

The data from the observation of student learning activity were analyzed using a simple descriptive analysis by calculating the percentage of increase in student motivation in teaching and learning activities in the classroom.

7. Data Validity

a. Data Validity

Data validity is a measure that indicates the levels of validity or validity of a data. The validity test of this data uses triangulation. According to Sugiyono, triangulation is checking data from various sources in various ways and at various times. (Nana Syaodih Sukmadinata: 2019). This study uses investigator triangulation, namely triangulation with techniques using researchers or other observers for the purpose of re-checking the degree of data trust. (Lexy J Moleong:2018) This is done to reduce data bias. The data that was checked again using investigator triangulation was about student activity. Other observers intended are Class IV Teachers and V Teachers.

b. Instrument Validity

Instrument validity is a measure that shows the level of validity of an instrument. The instrument in this study is in the form of a test, so the validity test used is the content validity test. To test the validity of the instrument, it is by comparing the question items with the indicators to be achieved.

c. Success Indicators

Achievement Indicators in this study can be known the success rate based on:

- 1) Students' understanding of the concept of science increases, namely students can answer questions based on their understanding of the material that has been studied so that the score achieved is equal to or exceeds the KKM (Minimum Completeness Criteria), the KKM that is set, namely.
- 2) The completeness of student learning outcomes in science subject matter is above 75% of all students.

Success indicators are determined after the researcher conducts the learning process in the classroom according to the material taught. In addition, a formative test has been carried out after the learning is completed. The criteria for success indicators are as follows.

- a. If the average daily test results of students and formative test scores are more than 70 (70%), learning can be said to be successful.
- b. If the average daily test result is less than 70 (70%), the learning has not been successful so it is necessary to continue to cycle 2.
- c. Average score is the sum of the total scores divided by the number of students studied.
- d. The percentage of average score is the sum of the total scores divided by the number of students studied and the results multiplied by one hundred percent.

d. Research Procedure

This class action research is carried out in a class in which the researcher is directly involved or a class that is taught, aiming not only as a solution to overcome problems, but also to involve the teacher himself actively in developing a learning approach. The research is carried out through four steps in each research cycle, namely planning, action, *observation* and *reflection* as well as work indicators. The second cycle is carried out referring to the previous cycle by perfecting all the shortcomings that existed in the first cycle. This research will be carried out in 2 (two) cycles, with each cycle using the following steps:

a. Cycle I

1) Planning Stages

The teacher makes a lesson plan that will be implemented, then prepares drawings of human skeletons that will be used in the puzzle drawing game. In addition, student worksheets are also prepared that will guide students in activities (work). Also make questions for student homework (homework), assessment system, preparation of student handbooks, preparation of evaluation questions, observation sheets.

2) Stages of Implementation of Actions

The teacher explained the subject matter about the function of the human skeleton and its maintenance in accordance with the lesson plan that had been prepared. Furthermore, it provides information about using *puzzle* pictures that involve students in groups. Forming student study groups and students compiling *puzzle drawings* that have been prepared by teachers in their respective groups. After the pictures are arranged, the students work on the worksheet by discussing in groups, the teacher gives an explanation in relation to the difficulties encountered by the students while supervising the students' activities. After the worksheet is completed, students are asked to percentage the results of the work in front of the class and other groups respond. At the end of the activity, a final test was held.

3) Observation Stage

Observations are carried out by observers and researchers. All the things found were written and recorded by researchers and observers. This observation is carried out to determine the suitability of the action with the plan that has been prepared and to find out to what extent the implementation of the action can produce the desired change in learning achievement. The details of the observation format can be seen in the table below.

4) Reflection Stage

Reflection activities are carried out by considering the teaching guidelines carried out and seeing the conformity achieved with what is desired in learning which in the end weaknesses and shortcomings are corrected in the second cycle. To correct the activities that have been carried out, a reflection is held on the results that have been obtained based on the observation records or recordings.

b. Cycle II

1) Action Plan Stage

Based on the results of the reflection, a learning plan was made for the second cycle to continue the activities of the first cycle, by perfecting the actions according to the correction.

2) Action Implementation Stage

In cycle II, the subject matter continued by preparing a *puzzle game* of human skeleton drawings with the learning material being about the function of the human skeleton and its maintenance. Students work in a group to complete the LKS that has been provided by discussing, plenary and defending the opinions of their group. The role of teachers is still to go around supervising and providing explanations if students experience difficulties.

3) Observation Stage

Observations are carried out by observers and researchers, all findings are recorded and recorded as study material in reflection later.

4) Reflection Stage

After carrying out learning activities using a human skeleton puzzle drawing game, it was continued by reflecting on cycle II activities based on observer notes.

3. Result and Discussion

1. Exposure to Research Results Data

a) Pre-Action Activities

This research was carried out at MI Darul Quran Wal Hadith Telaga Lebur Loang Balok. Before taking action, the research makes preparations related to the implementation of actions so that the research can run smoothly and get good results.

He hopes that the research that will be carried out can make a great contribution to learning at MI Darul Quran Wal Hadith. After discussing with Mrs. Heri Herlina, she suggested to directly meet the teacher of Mathematics Studies, Mrs. Miarni, she suggested taking class IV because the learning results were still lacking and the students were still passive. The researcher also communicates with him about the learning plan that will be implemented by the researcher and also the learning material. With a smile and full of hope, he responded to the researcher's plan. He gave the opportunity for researchers to research in class IV of MI Darul Quran Wal Hadith.

2. Initial Condition Description

Based on the results of observations in science learning in grade IV, it is known that the average score of students is 64.78 with 14 students or 43.75% reaching the Minimum Completeness Criteria (KKM) of Science of 65. Meanwhile, 3 students or 56.25% of students obtained scores below the KKM.

3. Description of Cycle Research

a. Description of Cycle I

Cycle I consists of two meetings held on August 21, 2023 and September 23, 2023. In this cycle, the role of the teacher is the researcher. In this cycle, researchers use puzzle media in the science learning process of grade IV. The results can be seen that 3 students or 40.62% of students are still below the KKM. Meanwhile, 14 students had scores equal to or exceeded the KKM.

b. Description of Cycle II

Cycle II also consists of two meetings which will be held on October 18, 2023 and October 20, 2023 and still use puzzle media in the science learning process. The results obtained were 6 or 18.75% of 2 students whose scores were still below the KKM. Meanwhile, 15 students have scores equal to or exceed the KKM.

4. Implementing a Good Learning Strategy with Human Frame Puzzle Media

The learning that will be carried out must be carefully prepared, so that all learning materials can be learned properly, the learning process becomes active and students get good learning results. Below is a detailed explanation of the application of the human skeleton puzzle strategy in learning science material in grade IV MI Darul Quran Wal hadith.

a. Planning for the Implementation of Puzzle Strategies

In the planning activity for the implementation of the puzzle strategy in science learning, the researcher coordinated with the science teacher, Mrs. Miarni, S.Pd to prepare learning components/tools and provide a presentation on what the puzzle strategy is. In this planning activity, the learning components that are prepared by the researcher himself and compiled together with the science teacher are (1) Selection of science subject matter listed on the syllabus, namely human skeleton puzzle material, (2) Preparation of Learning Implementation Plan (RPP), Annual Program (Prota), Semester Program (Promes) and SK-KD Mapping (3) Draft Objective Assessment of students when participating in learning, (4) The selection of human images to be printed like cards that will be used as learning media aids.

It should be explained that this planning stage has been included in the implementation of the Identification Phase puzzle strategy (curriculum identification). All components of learning preparation that have been prepared and used in this study are listed in the research appendix.

b. Application of Puzzle Strategies in Learning

The application of the Puzzle strategy in this study was carried out with two meetings, the first meeting on Thursday, August 6, 2023 on the grounds that it coincided with the material that the author taught. which started at 08.25 – 09.35 WIB and the second meeting (second) on Monday, October 10, 2023 started at 07.30 – 08.40 WIB. The stages of the implementation of this research are explained in detail in the explanation below.

1) Providing Pre Test to students

Before the application of the puzzle strategy in learning science material for living things to adapt themselves to their environment, the researcher first gave an initial test to the students. This is done to adjust the research with a predetermined research design and to see the level of students' knowledge of science material that will be used as research material later.

The Pre Test given to students is a question in the form of Multiple Choice as many as 45 items. The allocation of 90 minutes of work time will be carried out on Monday, August 3, 2023 at 07.30 – 09.00 WIB. For the details of the questions, the research attachment includes question items used for pre-test assessment.

Before giving the pre-test exam, the researcher first attracted the attention of students (Engage Phase) to find out what they knew about the adaptation of living things to the environment by giving short questions to students. For example, a question asked by one of the students named Bintang with the context of the question "What do you know about the human skeleton?", the student's answer was "the human skeleton is a pack of human bodies that are not wrapped in flesh". From the short answer of one of these students, it can be seen what they have understood before participating in the science learning activity of human skeleton puzzle material .

2) Opening up learning well

In this activity, the time used by the researcher to open the lesson is around seven minutes, the researcher opens the lesson by first greeting the students, inviting students to pray in accordance with Islamic teachings and motivating students to be enthusiastic about participating in the lesson. At the beginning of the lesson, the researcher tried his best to look energetic while occasionally asking about the student's condition.

Opening the lesson needs to be done as well as possible, because if a teacher who will deliver the learning material at the beginning of the teacher's learning opening is already seen as not having full power to deliver the learning material, then indirectly and psychologically it will affect (give a negative impression) on the students, which will eventually make the students not enthusiastic about participating in learning and will have the impression that there are some students who are not paid attention to.

Based on the results of observations at the research site, there is one activity that is not good for learning according to the researcher. Where, the teacher leaves the classroom when the students are praying before the teacher delivers the lesson, according to the researcher, this is not good to implement, because if the teacher is not in the classroom to accompany the students and participate in praying with the students, there will always be students who do not participate in prayer and are busy with their other work.

3) Explaining the Learning Steps

At the stage of explaining the learning steps using the puzzle strategy, the researcher explained to the students a series of activities that will be carried out in the learning process, including directing students to pay attention to a brief explanation of the presentation of the learning material, explaining the techniques for writing the material that they understand during the brief explanation from the teacher (researcher), explaining to the students that the learning material will be delivered using the help of electronic media, image display and video display, directing students to pay attention to the image display and video display carefully, identify images that have been printed in the form of cards, and explain to students that in participating in learning about human frame adjustment materials.

4) Provide Blank Paper To Write Material That Students Understand.

This activity began when the researcher explained the learning steps while walking in the classroom and came to the students' desks one by one which then put blank paper on the students' desks, the paper distributed to the students will be used as a sheet to write material that they understand both when listening to brief explanations, observing the appearance of pictures, observing pictures made in the form of cards and observing videos delivered through the display infocus. At this stage, the level of precision and dexterity of students will be seen, whether they are able to write material that they understand in their own language, this activity is a technique made by the author to see the students' grasp and memory of the subject matter explained, each teacher (researcher) finishes delivering the material briefly, displays pictures and learning videos, Students are given 10 minutes to record anything they understand.

5) Briefly explain the subject matter

The researcher carried out this activity only to convey the outline of the learning material, in this stage the material explained is that the human skeleton is divided into three large groups, namely the upper skull of the body and legs.

6) Students Observe Pictures and Learning Videos Displayed Using Infocus.

This activity is the Exploration Phase or the third phase in the application of puzzle strategies. The time used by the researcher to carry out this activity is 15 minutes. In this activity, students will observe 20 images and a video about the human skeleton and its function, one video displayed is two minutes and eight seconds long and various kinds of images are images of

animals and human skeletons that are displayed with infocus, when the picture is displayed the teacher (researcher) gives students 10 seconds to observe each image, When the picture is displayed, the teacher (researcher) occasionally gives a brief description of the image.

7) Students are divided into groups and given pictures of humans and animals to be identified.

Once the students finished observing the video and the image of the human skeleton displayed with infocus, the students were then divided into four groups, after the group was divided the students were directed to the table where there was already a skeleton image in the form of a card, each student who was divided into groups would take 10 cards randomly, the image made in the form of this card was the image displayed through the previous infocus.

8) Students Explain the Images of Humans and Animals They Observe.

When learning comes to the division of students in the form of groups, then identifying images and videos and explaining them in their own language in the form of groups, then at the stage of the human skeleton puzzle the activity has reached the Explain Phase, the core activity in this phase is the explanation of understanding the material in the language of the students.

After the observation of animal images and human skeletons is carried out in a group form, one of the students from each group will explain the results of their observations written on a blank paper that has also been divided previously in the position where they sit in their own language, why are the students directed by the teacher (researcher) to explain in their own language? This is because, psychologically, it is easier for students to absorb sentences and explanations in the language they use every day, triggering students to actively integrate what they think and what they say is poured out in written form and this is also the reason why an educator is required to convey learning materials using language that is easy for students to understand. This activity takes about 10 minutes, all students in the class must pay full attention to their friends who are explaining the material from their respective group observations.

9) Compiling a Picture on Cork

This activity is the Extend Phase or expansion of material in other forms in the application of puzzles. When the observation was completed and the results were explained, all students who had been divided into groups were directed to take pieces of human skeletal names that had been placed on other tables. In this activity, students in each group must choose the names of

human skeletons according to the pictures in their group. After they took the name of the animal or human skeleton, students were encouraged to neatly arrange and paste the picture and name on a cork sheet that had been provided by the teacher (researcher) using a mini paying nail that was also provided by the teacher (researcher), after the picture was finished pasted on the cork each group applied the cork to the blackboard by giving a double tip on the back of the cork so that the cork could stick to the blackboard.

10) Identify students' understanding of the subject matter.

This activity was carried out after the Extend Phase human skeleton puzzle strategy was completed. The identification of students' understanding of the learning material will be seen from the material notes they make on the blank paper distributed previously and when they convey the results they write to their friends by standing in their respective seating positions while explaining what they have written. In this activity, it will be seen whether students have new knowledge about human skeleton materials and others.

After listening to the students' explanations, the teacher (researcher) collects the students' writings that they made while participating in the learning process using puzzle strategies, then gives an explanation again about the videos and pictures that are displayed as reinforcement of the material to the students, at this stage also students are given the opportunity to ask questions about everything related to the learning material that has just been completed carried out, both from the learning procedure and from the content of the learning material.

A really active learning atmosphere can be seen in this series of learning, where at the beginning of learning students are motivated to seriously follow the learning, and towards the end of the teaching and learning process students are invited to play while learning, this begins to be seen when students are divided into shapes, directed to observe pictures, name pictures and are encouraged to arrange pictures on cork while being given a fairly short time limit.

11) Assessment of learning during the application of the Human Frame Puzzle Strategy.

All educational activities in any form must require an assessment that aims to conclude whether the educational process is feasible to continue, whether it is good, whether there is something that must be revised or even its implementation must be stopped. Therefore, in this study, an assessment is needed to draw conclusions about what is the result of this study. This assessment activity is the last stage in the application of the human skeleton puzzle strategy or the research

has reached the Evaluation Phase, in fact this phase has indirectly begun to be carried out at the stage of identifying students' understanding of the subject matter.

4. Conclusion

From the achievement of the learning results that have been presented in the previous chapter, the researcher can conclude that the results of the research that has been carried out in grade IV semester I of MI Darul Quran Wal Hadith Telaga Lebur, Central Sekotong Village are as follows:

1. The application of the human skeleton puzzle strategy has proven to be effective judging from the enthusiasm of students to learn and the level of understanding that is relatively fast, besides being fun, it is also very effective in honing students' thinking skills and meticulousness in arranging the pieces of the human skeleton that have been provided.
2. Based on the results of the study, it can be concluded that the use of human skeleton puzzle media can improve learning outcomes in science subjects in grade IV MI Darul Quran Wal Hadith.

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