

Improving Student Learning Outcomes Pancagram Media in Mathematics

Nanang Setiawan
SDN Bojong
karep16@gmail.com

Abstract

The purpose of this study was to determine the use of pancagram media in improving student learning outcomes in the fourth grade mathematics lessons SD N Bojong 1 Magelang. This research is a type of classroom action research. Subjects in this study were fourth grade students totaling 20 students in 2018/2019 school year SD N 1 Bojong Magelang. The object of this study is to increase student learning outcomes. Data collection techniques include observation, test results, and documentation. This research is successful if the results of classical student learning completeness reach 80%, individually if students have met the minimum completeness criteria set by the school that is equal to ≥ 70 . The results of this study using the pancagram media is to improve the learning outcomes of fourth grade students of SD N 1 Bojong Magelang in Mathematics. The improvement can be seen from the increase in the percentage of students' completeness in the first cycle which is 55% or 11 of 20 students. In cycle II the percentage of students' completeness increased significantly by 85% or 17 of 20 students.

Keywords: *classroom action research, learning outcomes, pancagram.*

Background

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-recognition, personality, intelligence, noble character, and skills needed by themselves, society, nation and state (UUSPN No.20 of 2003). According to Hilgard (Suyono and Hariyanto, 2011: 12), learning is a process where a behavior arises or changes due to a response to a situation

Mathematics subjects are one of the subjects that must be studied at the elementary school level. The 2006 education unit level curriculum in elementary school learning aims to grow and develop numeracy skills as an exercise in daily life, and form a logical attitude of being critical, careful, creative and disciplined.

Based on observations in class IV of SD N 1 Bojong Magelang conducted, information was obtained that the teacher in carrying out learning in the classroom had not used learning media. The teacher delivered the material by lecturing and working on the practice questions that came from the textbook only.

Students will more easily receive the material taught when students participate in learning. One way to involve students in learning is by using learning media. Using learning media will help students understand the material. Therefore in teaching mathematics it takes the media in the learning process so that learning activities run effectively and efficiently.

Learning activities are ideally teachers with students, students with students and students with learning resources, there will be a related interaction. But in reality, at SD N Bojong 1 learning takes place in one direction, where students become listeners and teachers become speakers. So between students and teachers there is less optimal interaction. In addition, in learning the teacher has not used learning media, causing some students to not understand the mathematical concepts conveyed by the teacher, such as in learning to build flat material. This of course causes student learning outcomes to be unsatisfactory.

According to Arief, (2014: 11) learning media is a tool for teaching and learning. With media in the learning process will help the teaching and learning process to be effective and efficient. In learning students will be interested and follow learning seriously. From the above understanding, it can be seen that learning media is very important to use in the learning process.

The learning outcomes of SD N 1 Bojong students, especially in mathematics, are quite low, one of the material is to wake up flat, it can be seen from the average daily test scores of students that is equal to 54.05 with students who pass or reach above KKM as many as 8 children while those who 12 children have not finished.

The results of the average value of students' daily test scores were 54.05, students who did not meet the daily test KKM values showed that grade IV mathematics subjects were still not satisfactory. Therefore the question arises how to improve student learning outcomes class IV SD N 1 Bojong.

A good and effective learning activity is learning that involves students actively participating in the process of their activities. Using media is one solution so that students are involved in learning. One example of media that can be used is pancagram media. The pancagram media is a modification of Chinese Tangram in the form of 5 geometric shapes consisting of 3 legged right triangle, 1 parallelogram, and 1 square. So the pancagram media is a square-shaped media in which there are 5 flat shapes. While using this pancagram media in the learning process students are expected to be more active and learning outcomes increase. Based on the description, the researcher was interested in researching the title, "Improving Mathematics Learning Outcomes with Media Pancagram Class IV at Bojong 1 Elementary School in Magelang 2018/2019

The purpose of this study is to determine the increase in mathematics learning outcomes of fourth grade students at SD N Bojong 1 using pancagram media.

Research Methodology

In this study, researchers used a Classroom Action Research approach. Arikunto (2012: 3) writes that classroom action research is a reflection of learning activities in the form of intentional actions that arise and occur in a class. This research was conducted by researchers who were also lecturers. This research is planned in two cycles, which in each cycle consists of four stages, namely planning (planning), action (action), observation (observation), and reflection, (reflection). The decision to stop or continue the cycle is a joint decision between the researcher and the partner teacher in accordance with the research objectives. The cycle is stopped if the partner researchers and teachers agree that learning with the pancagram media is in accordance with the desired goals. The subject of this study was fourth grade students of SD N 1 Bojong Magelang. The total number of students is 20 children, with male students as many as 9 children and as many as 11 children.

The object of this study is to improve the learning outcomes of fourth grade students at SD Negeri 1 Bojong Magelang in the 2018/2019 academic year which participated in mathematics learning using pancagram media.

This classroom action research uses data collection instruments in the form of observation sheets, documentation and test results. The observation sheet is used to determine the activities of students in learning using pancagram media, documentation is used to capture learning activities such as taking photos, and learning outcomes tests are used to determine the improvement of student learning outcomes after using pancagram media.

Data obtained from student learning outcomes tests are then calculated using the Siregar formula (2012: 50).

Individual completeness:

$$K = Si / Nm \times 100\%$$

Information

K: percentage of students' individual learning completeness.

Si: the number of the first item scores answered correctly for each student.

Nm: maximum value

Classical completeness:

$$x = a / b \times 100\%$$

Information :

x: percentage of classical completeness

a: number of students who have achieved individual completeness

b: number of all students

Average:

$$\bar{x} = \sum x_i / N$$

Information :

x: the average value of students.

xi: value obtained by students.

N: the number of students in one class.

In accordance with the characteristics of classroom action research, the success of this action research is marked by a change in the direction of improvement, namely an increase in student learning. As an indicator of success achieved by students in this study are:

The completeness of individual learning on mathematics subjects is achieved when students score at least > 70%. Classical learning completeness in mathematics subjects is achieved if at least 80% of the number of students in the relevant class meets the completeness of individual learning. In terms of mastery of material, this study is said to be successful if it meets the criteria for completeness of individual learning and classical completeness of the completeness that has been set.

After taking class action with pancagram learning media, the average student learning outcomes increase from one cycle to the next so that it improves the quality of student learning.

Findings and Discussion

This Classroom Action Research Study was conducted at SD Negeri Bojong 1 Magelang. This research was applied in class IV with a total of 20 students, 10 male students and 10 female students. The implementation of observations before conducting research aims to determine the real situation in the field. The results of preliminary observations prove the low mathematical value of flat-woke material. From the results of these observations, it was found that student learning outcomes in flat building material were still low.

This research was carried out in two cycles and if the second cycle had achieved the success indicator, the study would be stopped in the second cycle. The process of data collection in this research is carried out by conducting learning activities. Learning activities are carried out based on agreement between the teacher and the researcher, namely the implementers of learning activities are class teachers, researchers and friends as observers. This refers to the consideration that classroom teachers better understand the characteristics of students.

Cycle I Research Results

The results of the first cycle consist of four stages, namely planning, implementation, observation, and reflection. The implementation of learning in the first cycle has not run smoothly. This is because students still do not understand and adapt to the use of learning methods used by the teacher.

1. Planning

The activities carried out at the planning stage of action I include the making of a learning plan (RPP) prepared by the researcher and approved by the class teacher. In one cycle consists of two lesson plans for two meetings s. RPP cycle I can be seen in the attachment. Preparation of material learning material about flat building. Prepare pancagram media that will be used in the learning process.

2. Action

In cycle I, the action was carried out in 2 meetings. The first meeting as the implementation of learning and the second meeting as the implementation of learning and tests to determine the improvement of learning outcomes.

3. The first meeting

The first meeting was held on Wednesday, August 24, 2018 for 2 x 35 minutes, namely at 09.35 - 12.00 WIB, and followed by 20. In this first meeting, the material presented was building elements which were long and triangular.

At 9:35 a class teacher, and researchers entered the classroom. When entering the classroom the conditions are still very crowded, and students are still playing and chatting on their own. Next the teacher prepares students to take part in learning, after all the students have been conditioned, the teacher starts the lesson by saying hello and praying. After that, attendance is present and all students are present. The teacher confirms to students that today they will learn about flat building, which is the length of the triangle and the triangle.

4. The core activity

The core activity is initiated by the researcher as the teacher delivering the material to be learned at this meeting. Starting with apperception, the teacher gives a simple question about the flat wake that has been learned in class 3. After that the teacher issues the pancagram media, and asks the students what kind of build is contained in the pancagram media. The next step the teacher divides the class into 5 groups, by counting 1 to 5 where the child who gets number 1 is grouped with children numbered 1 and so on. The teacher sends students to make pancagram media like what the teacher brings. After each group has finished making pancagram media, then each group advances forward and presents the media that has been made. After each group presents the media that has been made, then the students and the teacher discuss the elements in the levels and triangles using pancagram media. After that students work on practice questions

The teacher and students draw conclusions about the learning that has been done today, which is about the elements of the hierarchy and triangles. And close the pelajaran with greetings and prayers

The second meeting was held on Tuesday, August 30, 2018 for 2 x 35 minutes, namely puku 07.00 - 08:45 WIB, and was attended by 19 students.

At 7:00 a class teacher, and researchers entered the classroom. When entering the classroom the conditions are still very crowded, and students are still playing and chatting on their own. Next the teacher prepares students to take part in learning, after

all students have been conditioned, the teacher starts the lesson by saying hello and praying. After that do the persuasion and all students attend. The teacher confirms to students that today will learn about the perimeter of the road and the triangle using the pancagram media.

The core activity is initiated by the researcher as the teacher delivering the material to be learned at this meeting. Starting with apperception activities, the teacher gives questions about the material that was learned in the previous week about the elements of the triangle and the triangle. After that the teacher issues the pancagram media, and takes up the angles and triangles on the pancagram media, then asks the students what is meant by traveling. Students conduct experiments using pancagram media, namely by measuring the length of the gap using threads. After being measured students were asked to measure the length of the thread that had been used earlier. Then the teacher concludes that the circumference is the length of the thread used to measure the length of the thread. And the teacher explains the formula around the perimeter and triangle is adding up all the sides in the flat building. To find out students' understanding of the circumference of students, students are asked to do practice questions.

The teacher and students draw conclusions about the learning that has been done today, namely the material around the road and the length of the road. But before closing the lesson students are given the opportunity to ask questions about what is not yet understood. The teacher closes the lesson with prayer.

The learning outcomes of students from the implementation of the first cycle of action were obtained through the posttest of learning outcomes carried out at the end of the second meeting of the cycle I. The aim of the study was to measure students' understanding of the material that had been delivered by the teacher. The following is the recapitulation of student learning outcomes in cycle I.

The highest score is 80	Lowest value 50
Average value of 68.25	Many students complete 11
Many students who have not finished 9	Percentage of students who complete 55%
Percentage of students who have not finished 45%	
The highest score is 80	Lowest value 50
Average value of 68.25	Many students complete 11
Many students who have not finished 9	Percentage of students who complete 55%

Based on the table above, students who scored above KKM or the same as KKM were 11 students with a percentage of 55%. While the number of students who have not obtained a grade above the KKM is 9 students with a percentage of 45%. The highest score obtained by students in the learning outcomes test in cycle 1 is 80, while students who get the lowest score score 50.

Reflection

After the implementation of the first cycle of mathematics learning using pancagram methods for students in class IV SD N Bojong 1 took place according to the

plan of the researcher. But the student learning outcomes test in the first cycle did not meet the classical completeness criteria expected by the researcher, so there was a need for improvement in the second cycle.

Cycle II Research Results

Before the implementation of the learning process in the second cycle begins, the researcher and class teacher reflect on the implementation of cycle I. The reflection also performs better planning so that the learning process in the second cycle runs smoothly.

1. Planning

According to the reflection in the first cycle, the researcher will carry out the same learning planning steps as in cycle I. But it is given more reinforcement about the material around and broad. The plan of action to be carried out in the second cycle includes strengthening the circumference and wide range of materials in the fields and triangles. Strengthening or stabilizing the material that is considered still quite difficult for students.

2. Action

Cycle II was held at 2 meetings. The first meeting is the implementation of learning and stabilization of material, while the second meeting is the implementation of learning or repetition of material and test results of learning. The first meeting of the second cycle was held on Wednesday, August 31, 2018, and was attended by 20 students.

At 7:00 a class teacher, and researchers entered the classroom. When entering the classroom the conditions are still very crowded, and students are still playing and chatting on their own. Next the teacher prepares students to take part in learning, after all students have been conditioned, the teacher starts the lesson by saying hello and praying. After that do the persuasion and all students attend. The teacher confirms to students that today they will learn about the widths of the spaces and triangles using pancagram media.

3. Core activities

The core activity is initiated by the researcher as the teacher delivering the material to be learned at this meeting. Starting with apperception, the teacher gives questions about the material learned in the previous week about the perimeter of the road and the triangle. After that the teacher explained about the extent of the distance using the pancagram media, but beforehand the students and the teacher made a pancagram which contained a rectangular build. After making it before the teacher tells the students that the formula for the area of a rectangle is the length multiplied by the width. Next, a rectangle is cut 3 cm long. Next the teacher explains the area of the triangle using 2 triangles that are on the pancagram media and a square. After students try and understand the area of the triangle and the levels, students are given a question to do it.

4. End activities

The teacher and students draw conclusions about the learning that has been done today, namely the material around the road and the length of the road. But before closing the lesson students are given the opportunity to ask questions about what is not yet understood. The teacher closes the lesson with prayer.

The second meeting at the implementation stage of the second cycle was held on September 5, 2018, the researcher conducted a learning process in accordance with the implementation plan that had been made by observing the shortcomings that existed in the first cycle, namely as follows:

Initial activity

At 7:00 a class teacher, and researchers entered the classroom. When entering the classroom the conditions are still very crowded, and students are still playing and chatting on their own. Next the teacher prepares students to take part in learning, after all students have been conditioned, the teacher starts the lesson by saying hello and praying. After that do the persuasion and all students attend. The teacher confirms to students that today they will learn about the widths of the spaces and triangles using pancagram media.

Core activities

The core activity is initiated by the researcher as the teacher delivering the material to be learned at this meeting. Starting with apperception, the teacher gives questions about the material learned in the previous week about the perimeter of the road and the triangle. After that the teacher gives reinforcement about the circumference and the width of the triangle and triangle using the pancagram media. After that the teacher gives a story about the perimeter and area of the spaces and aspects.

The teacher and students draw conclusions about the learning that has been done today, namely the material around the road and the length of the road. But before closing the lesson students are given the opportunity to ask questions about what is not yet understood. The teacher closes the lesson with prayer.

Observation

The learning outcomes of students from the implementation of the second cycle of action were obtained through the posttest of learning outcomes carried out at the end of the second meeting of the second cycle. The post is aimed at measuring students' understanding of the material that has been delivered by the teacher. The following is the recapitulation of the learning outcomes of cycle II students.

The highest score is 95	Lowest value 60
Average value 79	Many students complete 17
Many students who have not finished 3	Percentage of students who complete 85%
Percentage of students who have not finished 15%	
The highest score is 95	Lowest value 60
Average value 79	Many students complete 17
Many students who have not finished 3	Percentage of students who complete 85%

From the results of the data show that the learning outcomes test in cycle II has reached the indicator of success. Obtained a class average value of 79 while the classical learning percentage in the second cycle is 85%. There are 17 students who have completed and scored above the KKM.

Reflection

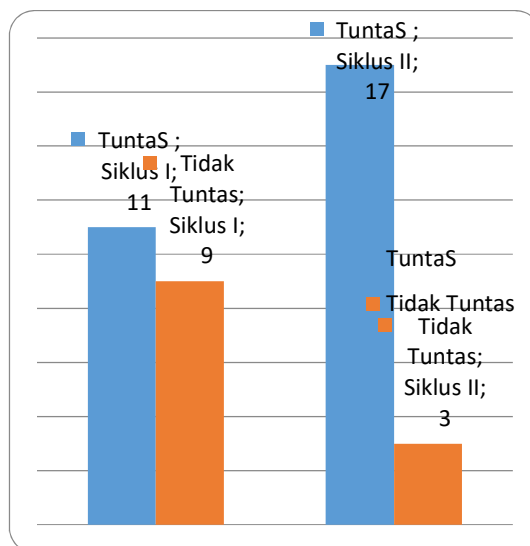
Reflection is carried out by the researcher after completing the action in the second cycle of the data that has been obtained from the implementation of the action. Reflection is carried out with the aim of drawing conclusions about the data. Some conclusions that can be taken include students can take part in learning activities using media pancagram well. Students can receive and understand material about waking up flat. The results of the learning test show that as many as 85% of students have reached KKM so that students have reached the completeness criteria.

The results of the reflection above can be concluded that this study has reached or fulfilled the indicators of success criteria that have been targeted by researchers. With the achievement of indicators of success, the researchers stopped this class action research in cycle II.

Discussion

After the implementation of classroom action research, the learning process of cycles I and II by using pancagram media to improve student learning outcomes in class IV SD N Bojong 1 Magelang, can be explained that there has been an increase in learning outcomes of fourth grade students in mathematics with flat material in accordance expected criteria. The results of student assessment using pancagram media in mathematics learning are carried out with tests at the end of each cycle. The form of the test question used is in the form of an essay question which amounts to 10 questions. The results of his research are that there has been an increase in learning outcomes of fourth grade students of SD N Bojong 1 Magelang seen from the average value and percentage of classical completeness in each cycle I and cycle II. In the first cycle the average value of student learning outcomes is equal to 69.25 with a percentage value of 55%. The implementation of the second cycle of action was carried out using pancagram media to improve student learning outcomes in accordance with the indicators of success planned by the researcher. The results of the action in the second cycle showed a significant increase and in accordance with the indicators of success planned by the researcher. The average score of student results in the second cycle is 79.5 with the percentage of student completeness of 85%. The results of the two cycles are obtained by giving the test at the third meeting after each cycle is completed.

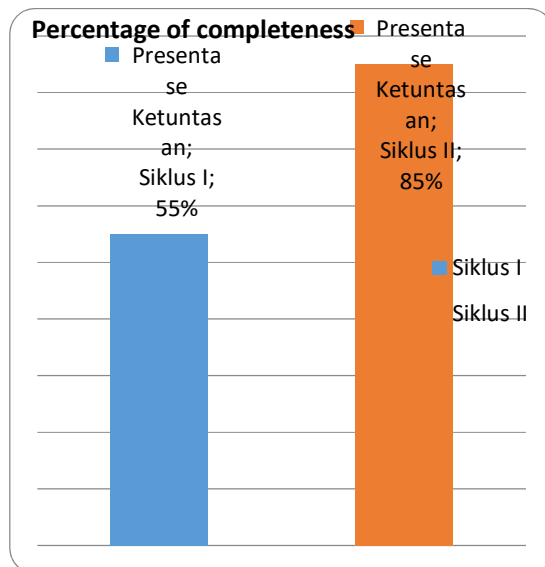
The increase in number of students who have completed starting from the first cycle to the second cycle also shows a significant increase. For more details, the increase in the number of students starting from cycle I to cycle II can be seen from the following description.



Graph of Increasing the Number of Mastery Students During the Learning Process Cycles I and II

The graph above shows the number of students who completed in the first cycle amounted to 9 students. Cycle II was carried out because the percentage of students who completed it had not met the indicators of success planned by the researcher. After carrying out the second cycle, the number of students who completed it after being given the posttest cycle II, increased to 17 children and had met the indicators of success planned by the researchers.

In addition to the increasing number of students in each cycle, the results of the percentage of completeness also increased in each cycle. The percentage increase reached the indicator of success planned by researchers in cycle II. For more details the increase in the number of completeness percentages of students ranging from pretest to cycle II can be seen from the following description:



Learners Percentage Graduation Chart During the Learning Process Cycles I and II

The graph above shows the percentage of completeness of students in the first cycle that is equal to 55%. Cycle II was carried out because the percentage of students' completeness had not yet reached the indicators planned by the researcher at 80%. After carrying out the second cycle, the percentage of student completeness increased to 85% and already met the indicators of success planned by the researcher.

Conclusion

Based on the results of the research and discussion carried out in the fifth grade of Bojong 1 Elementary School, it can be summarized as follows

The use of Pancagram Media can improve learning outcomes in mathematics subjects to construct flat about circumference and wide range of holes and triangles. This can be seen from the first cycle the percentage of the average value that is equal to 55% with an average value of 68.25. A more significant increase occurred in Cyclops II, with a percentage value of an average of 8% with an average value of 79. Therefore the researcher stopped the action in the second cycle, because the increase in the percentage value of the average learning outcomes of students in the mathematical eyes of flat building material had reached the indicator of success planned by the researcher by 80%. This also shows that the understanding of students' material on social studies subjects, material diversity of ethnic groups and cultures in Indonesia is quite good.

References

Abdurrahman, Mulyono. (2003). *Pendidikan Bagi Anak Berkesulitan Belajar*. Jakarta: PT Rineka Cipta

-
-
- Arikunto, Suharsimi, dkk.(2012).*Penelitian Tindakan Kelas*.Jakarta:PT Bumi Aksara
- Arikunto, Suharsimi.(2008).*Penelitian Tindakan Kelas*.Jakarta:PT Bumi Aksara
- Arikunto, Suharsimi. (2009). *Dasar-Dasar Evaluasi Pendidikan*.Jakarta:Aneka Cipta
- Arikunto, Suharsimi. (2010). *Prosedur Pendekatan Suatu Pendekatan Praktik*. Jakarta:PT Rineka Cipta
- Arikunto, Suharsimi.(2013).*Dasar-Dasar Evaluasi Pendidikan*.Jakarta:Bumi aksara
- Arifin, Zaenal. (2011). *Evaluasi Pembelajaran*. Bandung: PT. Remaja Rosdakarya
- Arsyad, Azhar. (2011). *Media Pembelajaran*. Jakarta: Rajawali Pers
- Eny,Widiastuti. (2013). *Meningkatkan Minat Belajar Menggunakan Permainan Tangram Pada Mata Pelajaran Matematika Bagi Siswa Kelas II SD Negeri Dukun Kecamatan Dukun, Magelang*. Yogyakarta: Sikripsi UNY
- Erman, Suherman. (2003). *Strategi Pembelajaran Matematika Kontenporer*. Bandung: UPI.
- Hamzah, Ali dan Muhlisrarini. (2014). *Perencanaan dan Strategi Pembelajaran Matematika*. Jakarta: Raja Grafindo Persada.
- Heruman.(2012).*Model Pembelajaran Matematika*.Bandung:PT Remaja Rosdakarya
- Pitadjeng.(2006).*Pembelajaran Matematika yang Menyenangkan*. Jakarta: Depdiknas Direktorat Jendral Pendidikan Tinggi
- Purwanto.(2013).*Evaluasi Hasil Belajar*.Yogyakarta:Pustaka Pelajar.
- Sanjaya, wina.(2013).*Penelitian Tindakan Kelas*. Bandung:Kencana
- Sadirman, Arief.(2014).*Media Pendidikan*.Jakarta:PT RajaGrafindo Persada
- Siregar, syofian. (2012). *Statistika Deskriptif untuk Penelitian*. Jakarta: Rajawali Pers
- Susanto, Ahmad. (2014). *Pengembangan Pembelajaran IPS di Sekolah Dasar*. Jakarta:Prenada Media Group
- Suyono dan Hariyanto. (2011). *Belajar dan Pembelajaran*. Bandung:PT Remaja Rosdakarya
- Suprijono A. (2009). *Cooperative Learning*. Yogyakarta:Pustaka Pelajar
- _____. (2003). Undang-Undang Republik Indonesia Nomor 20
- UunWahyuni.(2012). *Pengaruh Alat Peraga Tangram Terhadap Hasil Belajar Matematika Pokok Bahasan Bangun Datar Sederhana Siswa Kelas II SD Tersan Gede II Magelang*. Yogyakarta: Sikripsi UNY.