

IMPLEMENTATION OF ACTIVE, CREATIVE, EFFECTIVE LEARNING, AND FUN IN IMPROVING RESULTS OF LEARNING MATHEMATICS THREE-DIMENSIONAL CONCEPTS

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Abstract. This research is backgrounded because of the lack of mathematics teachers in applying learning methods that are by the characteristics of students and the material to taught so that it affects learning outcomes in the classroom. This study aims to implement Active, Creative, Effective, and Fun Learning to improve student learning outcomes in class X SMAS PGRI Bolo. The type of research used is Classroom Action Research which consists of four stages, namely action planning, action implementation, observation and reflection, with a total of 25 subjects. The data collection technique is by conducting tests and observations. An observer carries out an observation to observe the learning activities of teachers and students, and the test is used to determine students' learning outcomes after participating in learning activities. After analyzing the data on learning outcomes, it was obtained that the average score of students increased, namely in the initial test obtained an average score of 51.52 with a percentage of completion of 28.00%, increased in cycle I to 68.24 with a rate of completion of 60.00% and increased significantly in cycle II to 80.16 with a percentage of completion of 92.00%.

Keywords: Active, Creative, Effective, and Fun Learning, Learning Outcomes, Three Dimensions

Abstrak. Penelitian ini dilatar belakangi karena minimnya guru matematika dalam menerapkan metode pembelajaran yang sesuai dengan karakteristik peserta didik dan materi yang akan diajarkan sehingga berpengaruh pada hasil pembelajaran di kelas. Tujuan penelitian ini adalah untuk implementasi Pembelajaran Aktif, Kreatif, Efektif, dan Menyenangkan dalam meningkatkan hasil belajar siswa pada kelas X SMAS PGRI Bolo. Jenis penelitian yang digunakan adalah Penelitian Tindakan Kelas yang terdiri dari empat tahapan yaitu perencanaan tindakan, pelaksanaan tindakan, observasi dan refleksi dengan subjek berjumlah 25 orang. Teknik pengumpulan data yaitu dengan cara melakukan tes dan observasi. Observasi dilakukan oleh seorang observer untuk mengamati kegiatan pembelajaran guru dan siswa dan tes digunakan untuk mengetahui hasil belajar siswa setelah mengikuti kegiatan pembelajaran. Setelah melakukan analisis data pada hasil belajar, diperoleh bahwa nilai rata-rata peserta didik meningkat yakni pada tes awal memperoleh nilai rata-rata 51,52 dengan persentase ketuntasan 28,00%, meningkat pada siklus I menjadi 68,24 dengan persentase ketuntasan 60,00% dan meningkat secara signifikan pada siklus II menjadi 80,16 dengan persentase ketuntasan 92,00%

Kata Kunci: Pembelajaran Aktif, Kreatif, Efektif, dan Menyenangkan, Hasil Belajar, Dimensi Tiga

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INTRODUCTION

Our current education still seems to be a shackling education. The development comes from the vagueness of the vision and mission of education, the practice of centralization of uniformity, and the education system with the concept of a delivery system (Sarama et al., 2017). In this process, there is an educational practice that flows from the top-down, which does not pay attention to the factors of children's rights democratically and creatively, as well as the lack of opportunities for them to engineer in their educational activities (Çelik & Özdemir, 2020; Uno, 2010).

The success of a teaching and learning process, in addition to understanding the material is, also required to know exactly the initial position of the student before attending the lesson (Mukasyaf et al., 2019). Teachers can use the appropriate learning approach to help students develop knowledge effectively. For students to get maximum learning results, they need help and guidance in learning so that they don't have much difficulty following the lesson. To solve problems related to education, in this case, learning, it is necessary to change the approach in planning the educational or learning process (Sa'ud & Syamsudin, 2012). Creative learning is learning that can encourage students to carry out various activities that demand student independence. The innovative learning process is an action for continuous discovery. The creative process between students and each other is in different doses. Deep excavation with heart, mind, and passion for obtaining beauty and dense new experiences are felt (Getenet & Fanshawe, 2018).

Mathematics subjects with a three-dimensional subject matter are one of the materials given to students as a provision to develop attitudes and abilities as well as basic knowledge and skills. By studying the three-dimensional material, students can understand the various forms of building space around the student's living environment and the position of points and lines in a spacious building. The problem faced in mathematics learning today, namely mathematics, is still considered a scourge by students. The students think that mathematics is difficult to learn, especially with the use of learning methods or strategies that teachers use monotonously, making students bored quickly and not motivated to learn mathematics (Kamsurya & Saputri, 2020).

A similar condition also occurs in SMAS PGRI Bolo. Based on the results of preliminary observations made by researchers in the mathematics learning process at the school, teachers did not use various media and appropriate methods in delivering material to students. So that the impact on student activities is very large; namely, the students' activeness in the learning process is low. Students cannot express their opinions or ask questions, especially in

understanding the material taught by the teacher is very low. This is evidenced by the low learning outcomes of students, especially in mathematics subjects.

Active, Creative, Effective, and Fun Learning is one of the learnings oriented towards students' activities and understanding. The process is student-centred learning, and learning is fun (Putra & Nasrullah, 2017), so that students feel motivated to continue learning on their own without being ruled and so that they do not feel burdened or afraid (Novianingsih, 2016). In addition, Active, Creative, Effective, and Fun Learning continue to motivate children to carry out continuous exploration, creation, and experimentation in learning (Fahmi, 2013). The teacher's learning process must create an atmosphere where students actively question and express ideas (Hayati & Lailatussaadah, 2016). Learning is indeed an active process of students in building their knowledge, not a passive process that only accepts the teacher's lectures about knowledge. What if learning does not provide opportunities for students to be active? Then the learning is contrary to the nature of learning (Kaban et al., 2020; Rohaniawati, 2016). This study aims to determine the implementation of Active, Creative, Effective, and Fun Learning in improving mathematics learning outcomes of three-dimensional material class X SMAS PGRI Bolo.

METHOD

The type of research used in this study is class action research which is a form of research that is reflective by the perpetrator of the actions carried out to improve the rational ability of the actions carried out. The class action research includes four stages: planning, action implementation, observation, and reflection (Cohen et al., 2018).

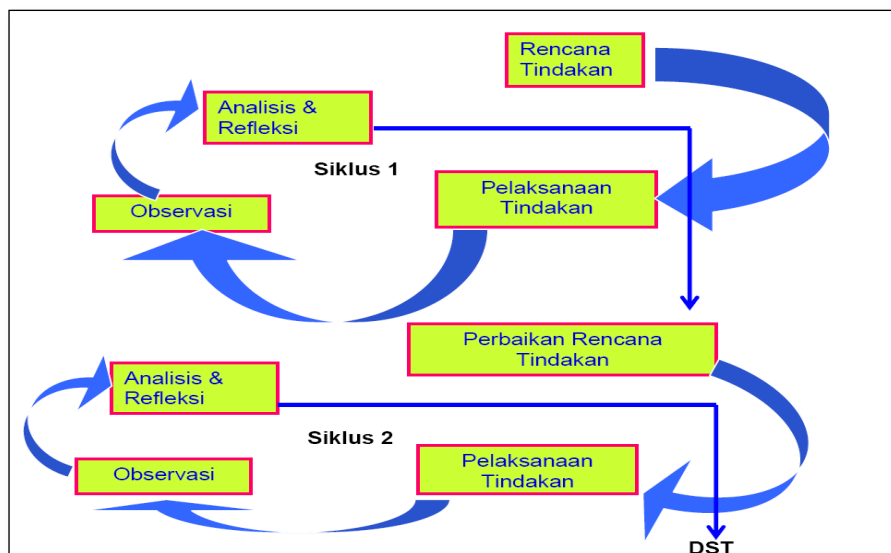


Figure 1. Spiral Classroom Action Research (adaptation of Hopkins, 1993)

The subjects in this study were class X SMAS PGRI Bolo students who totalled 25 people and consisted of 8 male students and 17 women. The instruments in this study consisted of observation sheets and tests. Observations are conducted to objectively determine the learning conditions at the research site. Observations are carried out to follow student activities in the learning process (Arikunto, 2012). This test is carried out to find student learning outcomes by sharing compiled test questions (Arifin & Retnawati, 2017; Arikunto, 2010). This research is declared successful if student learning outcomes have reached the individual Minimum Completion Criteria, which is 64 and classically, the percentage of student completion has reached 75%.

The procedures in the study are researchers (a) carrying out action planning consisting of: (1) preparing learning tools, (2) preparing observation sheets during the teaching and learning process, (3) preparing evaluation tools for each cycle, and (4) determining success criteria. (b) implementation of actions consisting of (1) topic selection, (2) planning cooperation, (3) implementation of learning, (4) conducting analysis and synthesis, (5) presenting the final results, and (6) evaluating, namely the initial test and the final test. (c) observe student activities and students' ability to answer each question material given by the teacher. (d) reflection: researchers with peers reflect on learning based on the results of existing observations in the form of test scores or student learning outcomes and whether action is necessary to continue in the next cycle.

The data from this study were analyzed descriptively, explaining the facts, phenomena and symptoms found in the field together with collaboration partners (teachers and peers). Then interpreted based on existing theories. To calculate the ideal maximum value that must be achieved, the formula used is as follows:

$$NP = \frac{R}{SM} \times 100$$

Information:

NP = The value of the searched or expected gain.

R = Raw score obtained by the student.

SM = Ideal maximum score of the test (Purwanto, 2012)

RESULTS

Preliminary Test Analysis Results

The results of the initial test of students on three-dimensional learning in class X SMAS PGRI Bolo students by applying Active, Creative, Effective, and Fun Learning can be seen in the following table:

Table 1. Student learning completion in the initial test

Test Scores	Mastery Level	Frequency	Average Value	Percentage (%)
≥ 64	Pass	7	51,52	28
< 64	Not Passed	18		72

Source: Student pre-test results

Based on table 1, it is known that the level of completion of learning in the initial test was only achieved by seven students from the total number of 25 people with a percentage of completion of 28%. The number of students who had not completed the initial test was 18, with a percentage of 72%, with the average class score obtained in the initial test of 51.52. Based on the pre-test results, researchers are Active, Creative, Effective, and Fun Learning by previously preparing the necessary media in three-dimensional learning. This is intended so students' understanding and learning outcomes can be better compared.

Implementation of Cycle I

Action Planning in Cycle I

The stages carried out in the action planning are learning tools, namely the syllabus the researcher has compiled, which are consulted with teachers of mathematics subjects at SMAS PGRI Bolo. The goal is that the material to be taught can be by the curriculum used in SMAS PGRI Bolo. Prepare teaching aids or media that will be used in the learning process. Compile observation sheets for observers to use in learning activities by researchers and students. Ask subject teachers to become observers so that researchers can know the learning process that takes place based on the results of observations. Prepare test instruments that will be used to implement the final test.

Implementation of Actions in Cycle I

The implementation of actions in the first cycle begins with an explanation to students about the learning that will be carried out with Active, Creative, Effective, and Fun Learning. After explaining the learning process, researchers divided students into groups and immediately started learning by applying Active, Creative, Effective, and Fun Learning. After the learning is completed, the researcher tests all students. The test results obtained at the time of the test after the data have been analyzed are as follows:

Table 2. Student learning completion on the first cycle test

Test Scores	Mastery Level	Frequency	Average Value	Percentage (%)
≥ 64	Pass	15	68,24	60
< 64	Not Passed	10		40

Source: Student test results in the implementation of cycle I

Based on table 2, it is known that the level of completion of learning in the initial test was only achieved by 15 students of the total number of 25 people with a percentage of completion of 60%. The number of students who had not completed the initial test, namely ten people with a percentage of 40%. The average class score obtained in the initial test of 68.24.

Observation Results in Cycle I

The observations of teachers in learning activities concluded that the material taught by the researcher had been mastered well. The application of the learning process has not been maximized, so it seems that many students are still confused. This is because students have never participated in learning with learning as researchers apply. Teachers do not reinforce students, so it still seems that many students during the learning process are still playing and telling stories with their friends. The use of time is not optimal because a lot of time is used by teachers to direct students to focus on learning.

The results of observations on students in learning activities concluded that (1) students do not pay much attention to the learning process because there are still students who play and stories with their friends, (2) students do not understand the material that researchers teach because not all students focus on learning, (3) student activity is still very lacking, teachers dominate learning activities, and (4) students have not dared to express their own opinions, both in asking and answering questions submitted by researchers orally.

Reflection Results on Cycle I

The process of reflection is carried out in the form of discussions between researchers and subject teachers who act as observers. The reflection is carried out to evaluate the learning process applied in the learning process and the learning outcomes that have been obtained by students in the implementation of the final test of the first cycle. The results of these reflections are (1) researchers must make students more focused on learning, (2)

teachers must be more consistent with the lesson plans that have been prepared and carry out learning steps by the lesson plan, (3) reinforce students about the importance of the learning process, (4) teachers must be more active to students so that interactions between students and students occur, especially in the discussion process, (5) the teacher Must be able to motivate the students so that the students can take the courage to express their opinions, and (6) the teacher reminds the students when the theme finds the answer to the question they must pay attention because it is possible that the question came out during the test.

After reflecting with the subject teacher, and the researcher has known the various shortcomings in the implementation of learning in the first cycle, the researcher corrected all these shortcomings. Because student learning outcomes have not yet completed student learning classically, namely, the number of students who have completed classically has only reached 60%, the implementation of learning using Active, Creative, Effective, and Fun Learning is continued in cycle II. This is intended so that the completeness of student learning classically at least reaches 75%.

Implementation of Cycle II

Action Planning in Cycle II

The action planning process is carried out by referring to the results of reflection in the first cycle, namely the shortcomings of the learning process in cycle I. As for what is planned, namely (1) carrying out learning by the learning steps contained in the learning implementation plan, (2) providing motivation to students so that students are more focused on learning, (3) making observation sheets and asking subject teachers to become observers, and (4) prepare test questions that will be used in the test process after carrying out learning.

Implementation of Actions in Cycle II

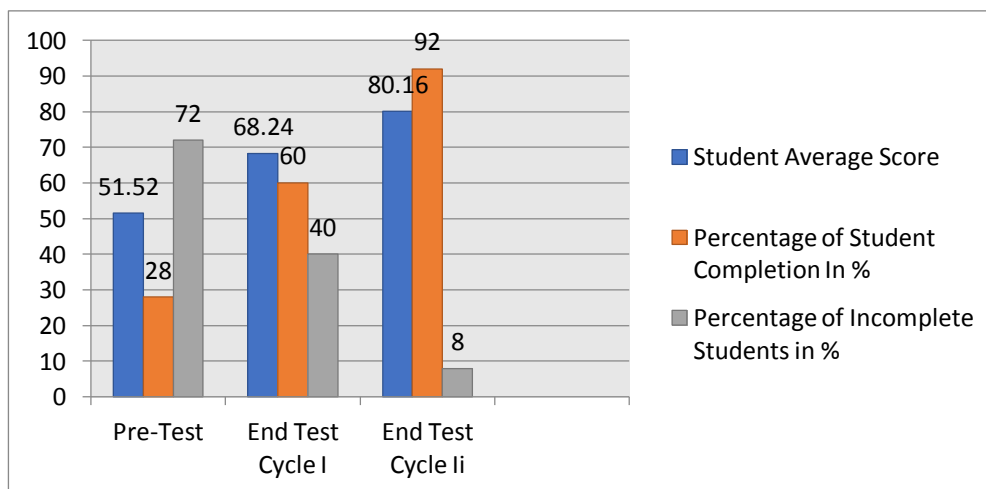
The implementation of actions in cycle II begins with the teacher explaining the reflection results in cycle I. This is done so that students can understand and know the results they get in learning in cycle II so that the learning process in cycle II can run optimally. After that, researchers carry out learning using Active, Creative, Effective, and Fun Learning. After learning using Active, Creative, Effective, and Fun Learning, tests were carried out on all students who were the research subject. The goal is to determine students' understanding and learning outcomes on three-dimensional material. The has obtained in the second cycle of learning are as follows:

Table 3. Completion of student learning on the second cycle test

Test Scores	Mastery Level	Frequency	Average Value	Percentage (%)
≥ 64	Pass	23	80,16	92
< 64	Not Passed	2		8

Source: Student test results in the implementation of cycle II

Based on table 4.3, it is known that the level of completion of learning in the pre-test was only achieved by 23 students from the total number of students, namely 25 people, with a percentage of completion of 92%. The number of students who had not completed the pre-test. Two people with a percentage of 8% with an average class score obtained in the initial test of 80.16. In general, student learning outcomes on three-dimensional material by applying Active, Creative, Effective, and Fun Learning can be seen in the following chart.

**Figure 2.** Graph of student learning outcomes

The graph above generally shows that the average score of students in learning has increased, namely, the average student learning outcomes on the initial test were 51.52 and increased in the final cycle I to 68.24 and in cycle II, which was 80.16. The same thing happened in the completion of student learning outcomes increased. In the initial test, the percentage of student completion was 28.00% and increased in the final test of cycle II to 60.00% and cycle II to 92.00%. Meanwhile, students who did not complete it decreased, namely in the initial test, the percentage of students who were not complete it was 72.00% and decreased in the final test of a cycle I to 40.00% and decreased again in the final test of cycle II, which was 8.00%.

Observation Results in Cycle II

The results of observations on teachers concluded that (1) the mastery of the material by the teacher was very good, (2) the learning method used was the steps of the learning method, and its implementation was very good, (3) the teacher had provided reinforcement to students to be more focused and attentive to the learning process, and (4) the use of learning time was by what was planned in the lesson plan. The results of observations on students concluded that (1) students' attention has been good to the learning process, (2) students' mastery of the material has been good, especially seen in the discussion process, (3) students have been more active, marked by many students who have dared to ask questions and answer in the discussion process, and (4) the interaction between students and teachers and students with students has been built up, especially seen in the learning process.

Reflection Results in Cycle II

The reflection process is carried out between the researcher and the subject teacher, who acts as an observer. The reflection process is carried out to evaluate the learning process carried out by the researcher in implementing elbow II. The results of these reflections, in general, the implementation of learning carried out by researchers is quite optimal, both in terms of mastery of methods, class management, time management, and student activity in the learning process is quite good.

DISCUSSION

To realize student activity and improve student learning outcomes in the classroom. The teacher's selection of the right learning method or strategy in learning is an essential factor (Haeruman et al., 2017; Kamsurya, 2019), because learning methods will stimulate students to play a more active role in the learning process (Susanto, 2019). One of the methods of learning that teachers in mathematics learning can use. Teachers can use one form of learning to develop and improve student interest, and learning outcomes are Active, Creative, Effective, and Fun Learning (Kaban et al., 2020; Novianingsih, 2016). Active, Creative, Effective, and Fun Learning is learning that places students as learning subjects because in learning, all students are divided into groups and all students are given tasks and responsibilities to be completed and discussed with their peers in their group (Sumartono & Hartati, 2013).

Based on the data analysis of test results carried out on all students subjected to this study, it was obtained that the implementation of learning by absorbing Active, Creative,

Effective, and Fun Learning obtained student test results were quite good and slightly improved. This can be seen in the first cycle test results in the student test results. If only seven students reached the minimum completion criteria in the initial test process, there was an increase in the results of the first cycle test. Namely, 15 students had reached the minimum completion criteria with a percentage of 60% completion that had been set by the school, namely the Minimum Completion Criteria of 64. Meanwhile, 12 students have not reached the minimum completion criteria with a percentage of 40.00%, and the average class score obtained in the first cycle test results is 68.24. Because in the first cycle, students who graduated and reached the minimum completion criteria have not reached 75% of the total number of subjects, a study was carried out in cycle II.

These results are a benchmark that the implementation of Active, Creative, Effective, and Fun Learning is better when compared to the initial test. Where the learning process in the initial test, the number of completed students were only obtained in 7 students with a percentage of completion of 28%, while the average class score obtained in the initial test only reached 51.52. The shortcomings in the first cycle, after reflection with the subject teacher, are that students are not very familiar with the learning used by researchers during the learning process. Because so far, students have not been familiar with the learning methods researchers have applied. On this basis, researchers make improvements during the learning process.

The results obtained in the learning process in cycle II occurred significantly compared to the previous learning process. In the second learning cycle, all students seem to be very active and motivated in learning. This can be seen from the discussion process carried out in their respective groups and the discussion process. In the discussion process, students were enthusiastic about submitting questions to the group that made the presentation. In contrast, the group given the questions seemed to be trying to answer the questions asked by other groups (Pradnyawathi & Sastra Agustika, 2019).

Judging from the learning outcomes obtained by class X students of SMAS PGRI Bolo, there was a very significant increase. In the second cycle test process, students who have reached the Minimum Completion Criteria are 23 students with a percentage of completion of 92.00%. In contrast, students who have not completed are two people with a percentage of 8.00%. These students have not been completed because they are among the students who are lazy to enter school, so almost all the material learned at the time of learning is not understood by them. But in general, the learning process by applying Active, Creative,

Effective, and Fun Learning obtains good learning outcomes because it can improve student learning outcomes.

In addition, learning by using Active, Creative, Effective, and Fun Learning in learning three-dimensional material motivates learning activities (Hayati & Lailatussaadah, 2016). This is seen through the responses obtained through learning with Active, Creative, Effective, and Fun Learning (Sumartono & Hartati, 2013). Students are more enthusiastic about following the lesson by solving sample questions on the blackboard given by the researcher. Students are very interested in solving problems both done in groups and individually. In addition, students are also very concerned about the direction given by the teacher (Putra & Nasrullah, 2017). Cooperation and participation between other students can be seen through the experiments carried out so that they can exchange ideas well with other fellow students. Through these several things, in the end, students can present the results of their discussion with other groups and can exchange ideas between groups with each other.

Through some of the explanations above, it can be seen that Active, Creative, Effective, and Fun Learning provides a new atmosphere for learning activities in general, so that teaching and learning activities can take place effectively and pleasantly (Zahara, 2016). Unlike the learning system that uses a conventional approach model, the learning atmosphere created tends to be monotonous. It cannot motivate students well, so learning activities tend to be boring, and students become passive.

CONCLUSION

Based on the study results, learning using Active, Creative, Effective, and Fun Learning on three-dimensional material can improve student learning outcomes in class X SMAS PGRI Bolo. The average score increased, namely the initial test of 51.52, with a completion percentage of 28.00%. In the first cycle to 68.24, with a percentage of completion of 60.00%. Meanwhile, in the results of the second cycle test, the average score was 80.16, with a completion percentage of 92.00%. This is inversely proportional to the number of students who are not completed. In general, the number of students who are not completed has decreased in each cycle.

RECOMMENDATIONS

Based on the conclusions above, the researcher conveyed several suggestions, namely (1) it is hoped that teachers can try to apply Active, Creative, Effective, and Fun Learning to other subjects. The goal is that students have readiness, discipline, and a sense of

responsibility and are motivated in learning and can improve student learning outcomes in other materials or subjects, (2) With learning applied by the teacher in learning, it is hoped that it can increase and arouse students' interest and active learning in mathematics subjects so that it can improve learning outcomes, (3) because learning using Active, Creative, Effective, and Fun Learning requires a lot of time, in its implementation the teacher is expected to be able to streamline time as well as possible.

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