The Implementation of P.O.W.E.R Learning Model Using Modules to Improve Students' Mathematics Learning Outcomes

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ABSTRACT
This research was a classroom action research with a problem statement: how are the students' mathematics learning outcomes of Grade XI IPS before and after implementing the P.O.W.E.R learning model using modules?; Could it improve students' mathematics learning outcomes? This study aims to determine: the implementation, result, and improvement of mathematics learning outcomes for students of Grade XI IPS MA Syech Yusuf. The research subjects were 45 students of Grade XI IPS MA Syech Yusuf. The data were taken through observation sheets and students' mathematics learning outcomes tests. The data obtained were analyzed by descriptive statistics. The result of this study is the students' mathematics learning outcomes of Grade XI IPS MA Syech Yusuf before implementing the P.O.W.E.R learning model using modules. None of them passed the passing grade. After implementing them in the first cycle, are 2% of the students passed the passing grade, and in the second cycle are 89% of the students passed the passing grade. While the average score from the pre-test is 12.40%. The first cycle is 17.67, and the second cycle is 69.47. Generally, students' mathematics learning outcomes can be improved by using the P.O.W.E.R learning model using modules. Quantitative analysis shows that it improves students' attendance and students' activity when following the learning process. In other words, implementing the P.O.W.E.R learning model using modules can improve students' mathematics learning outcomes.

Keywords: *Model, P.O.W.E.R Learning, Module, Students' mathematics learning outcomes.*

1. INTRODUCTION

The infusion of educational facilities influences specialization fields, such as children's education. Reflect education policy and teacher education is written widely with some meaningful instrumentalists discourse has been and remains prominent in early childhood evolution field [1].

Every child must study mathematics as a base of technology. To master technology and create it in the future, one needs a mastery of mathematics at the early school level. Mastery of mathematics means understanding mathematical concepts, developing mathematics reasoning and mathematical problem-solving skills, mathematical communication skills, and respect for mathematics itself [2].

Mathematics education requires the application of mathematics in everyday life and embedding mathematics in contexts that have meaning for students [3]. The success of improving the quality of graduates can be seen from student learning outcomes which are the result of the student learning process influenced by many factors [4]. If students think that mathematics is a complicated subject, it affects their interest in learning the subject [5].

Students must understand the transfer of knowledge from teacher to student, and they must be given more opportunities to express their opinions. This needs to be done especially in the delivery of mathematics subject matter because most students consider mathematics difficult.

This problem was also experienced by students of Grade XI IPS MA Syekh Yusuf Sungguminasa. The students complained about the difficulty of learning mathematics. The condition of the students at the time of observation showed that they were not too enthusiastic about participating in mathematics lessons using traditional models such as lectures.

Based on the data obtained from the mathematics teacher, it was revealed that the students' mathematics learning outcomes were very low. So that a mathematics teacher is expected to be able to use a delivery method that students can understand given the abstract nature of mathematics itself so that it is difficult for students to digest if they do not use the suitable model. It should be realized that not all teaching models are suitable for achieving all goals and circumstances, so a learning model is chosen according to need.

The P.O.W.E.R learning model was introduced by Robert S. Feldman, a professor in psychology at the University of Massachusetts Amherst. This model is an acronym for the five words of its builders, namely Prepare, Organize, Work, Evaluate, and Rethink [6].

The first component in P.O.W.E.R learning is preparation. This means that a teacher must guide students to set long- and short-term learning goals and the things to be achieved in the teaching. The second component is organized; before the teaching and learning process occurs, the teacher assists students in preparing tools to accomplish the goals that have been set.

The third component is work. This means the teacher helps students achieve the goals set and uses their goals as motivation. The fourth component is Evaluate; this means that teachers evaluate what they have done and relate it to the plans that have been set at the preparation stage by looking at the level of success. The last component is rethinking; this means that the teacher reflects on the process that students have gone through and plans what will be carried out next in a better way based on previous experience.

The learning syntaxes are: 1) The teacher guides the students to determine the learning objectives of the material to be studied, 2) Students are given the material and are allowed to absorb and understand the material, 3) The teacher provides several strategies to remember the new material, 4) The teacher gives a test, and 5) The teacher gives games to refresh students' minds.

This model will be supported using modules. Modules are subject matter arranged and presented in writing so that the readers are expected to absorb the material themselves [7]. One of the modules aims to develop students' ability to think critically about mathematics, express points of view, learn logistics, and solve problems effectively [8].

The subject matter in modules is arranged and presented so that students can independently understand the material presented. Modules generally consist of 1) Instructions for students, 2) Contents of discussion material (descriptions and examples), 3) Student worksheets, 4) Evaluation, 5) Evaluation answer keys, and 6) Tutor/teacher handbook (if any) [7].

The book by Robert S. Feldman revealed that this model was proven to improve student academic achievement. So that the P.O.W.E.R learning model using modules will be applied to Grade XI IPS MA Syekh Yusuf students; in addition, the P.O.W.E.R learning model can be used by teachers as an alternative to improve student learning outcomes.

2. METHOD

This research was conducted in MA Syekh Yusuf Sungguminasa, which is located at Jl. Sirajuddin Rani Number 1A Gowa Regency. The subjects of this study were students of Grade XI IPS with 45 students. This research was CAR (Classroom Action Research). Four stages are commonly used: planning, implementation, observation, and reflection [9].

This classroom action research was carried out in the even semester, which consisted of two cycles, namely, cycle I and cycle II. The two cycles are interconnected series. That is, each cycle is carried out based on the previous cycle. The first cycle lasted for 3 meetings (6 hours of lessons) and the second cycle for 3 meetings (6 hours of lessons).

The activities carried out in the first cycle included four stages. The first is the planning stage. This stage is a preparatory stage to take any action; at this stage, the steps taken include: 1) Establishing the status of the teaching system, including reviewing MA Syekh Yusuf Sungguminasa curriculum for mathematics subjects and matters relating to student conditions, 2) Formulating teaching objectives, 3) Creating learning modules according to the selected material 4) Developing research instruments to see students' learning outcomes of mathematics on the material presented, 5) Making learning designs in this case learning tools for each meeting in the lesson plan (RPP) and 6) Make an observation sheet (to observe how the teaching and learning conditions when the action takes place).

The second stage is the implementation with the following activities: 1) Testing the designs that have been made in the planning process and 2) Providing tests to find out learning outcomes related to the material that has been taught.

The third stage is observation. At this stage, the activities carried out are observing each student activity during the learning process using an observation sheet containing the observed factors, namely: 1) Students who are present during the learning process, 2) Students who carry out other activities during the discussion, 3) Students who are active when discussing sample questions, 4) Students who answer when asked questions about the subject matter, 5) Students who volunteer to work on questions on the blackboard, 6) Students who work on questions on the blackboard with correct, 7) Students who respond to answers from other students, 8) Students who still need guidance in working on questions, 9) Students who raise their hands during learning and 10) Students who often go in and out of class.

The last stage is reflection. At this stage, the researcher evaluates the actions that have been carried out, including assessing the quality, time, and other things that affect the learning outcomes of each type of action and improving the implementation of actions in accordance with the evaluation results for use in the next cycle.

Meanwhile, the steps taken in the second cycle are relatively the same as the first cycle, and by making improvements according to the reflection results in the first cycle. As well as analyzing the results obtained by students.

The data research instruments used in this classroom action research are observation sheets, learning outcomes tests, and documentation. The observation sheet describes all aspects of the curriculum that becomes a guide in learning. This observation sheet contains items that will be observed during the teaching and learning process.

A test is a tool used to measure individuals or groups' skills, knowledge, and abilities. This learning outcome test is obtained from each cycle to see whether there is an increase or not to be used as a measure of success.

Documentation is an attempt to provide an overview of how classroom action research is carried out. This activity was carried out by taking pictures of the activities of students and teachers in the implementation of learning when the study was carried out. The instruments used in this documentation are photographs during the teaching and learning process to record important events in learning activities.

Data regarding the improvement of learning outcomes were taken from the tests of each cycle, in which the tests of each cycle were made by the author in collaboration with the mathematics teacher who taught in the class. Data about the teaching and learning situation when the action was taken were taken using an observation sheet. Data about the description of the action is obtained from the documentation in each cycle.

The data that has been collected were analyzed using qualitative analysis techniques and quantitative analysis. Qualitative analysis was used to analyze the results of the observation sheet. While quantitative analysis is used to analyze the results of the learning test each cycle.

There are three descriptive statistics used. The first is the range using equation (1).

$$R = X_t - X_r \quad (1)$$

Where: R = Range, X_t = Largest Data and X_r = Smallest Data [10].

The percentage is calculated using equation (2).

$$p = \frac{f}{N} \times 100\% \quad (2)$$

Where: p = Percentage, f = Frequency and N = Number of cases [11].

The mean is calculated by equation (3).

$$\bar{x} = \frac{\sum_{i=1}^{k} f_i x_i}{\sum_{i=1}^{k} f_i} \quad (3)$$

Where: $\bar{x}$ = Mean, f = frequency and x = midpoint [12].

Categorize students' learning outcomes with the guidelines in **Table 1**. [13]

Table 1 Categories of Students' Learning Outcomes

Mastery Level	Learning Outcomes Category
0 – 34	Very low

35– 54	Low
55 – 64	Medium
65 – 84	High
85 – 100	Very high

The measurement of the indicator of increasing student learning outcomes in mathematics is that the student's test results have shown an increase in learning mastery. The Minimum Learning Completeness (KKM) in mathematics is 65. So, if students get a minimum score of 65 from the ideal score, it is complete. Completed classically if at least 85% of the number of students who have completed learning.

The qualitative analysis is carried out according to the trends in each cycle using verbal research (observable activities).

3. RESULT AND DISCUSSION

Madrasah Aliyah Syekh Yusuf Sungguminasa Gowa building was initially built by the Gowa Regency Government, which was designated as the Office of Religious Affairs (KUA) until 1966. Based on the decision of the Directorate General of Islamic Institutional Development Number EW/PP.03.2/KEP/36.B/99 dated March 29, 1999, was granted the status of Madrasah Aliyah, which has been the same until now.

MA Syekh Yusuf Sungguminasa is very strategic because it is right behind the historic house for the Gowa people, namely Balla Lompoa. Access to this school is easy to reach because it is close to the intersection between Jl. Sirajuddin Rani and Jl. Andi Mallombasang. Because of its location near the highway, it causes disturbances during the teaching and learning process. This is unavoidable because the school is located in a densely populated area. So, it takes the cooperation of the school's stakeholders to overcome this.

The facilities owned by Madrasah Aliyah Syekh Yusuf Sungguminasa Gowa are the school building, library, language laboratory, science laboratory, administration room, classroom, principal's room, vice principal's room, teacher's room, ceremonial field, prayer room, toilet, canteen, and schoolyard.

Before applying the P.O.W.E.R learning model with modules, the researchers conducted a preliminary test to determine the students' mathematics learning outcomes. After the researcher obtained and collected data through the learning outcomes test instrument, the score data was obtained.

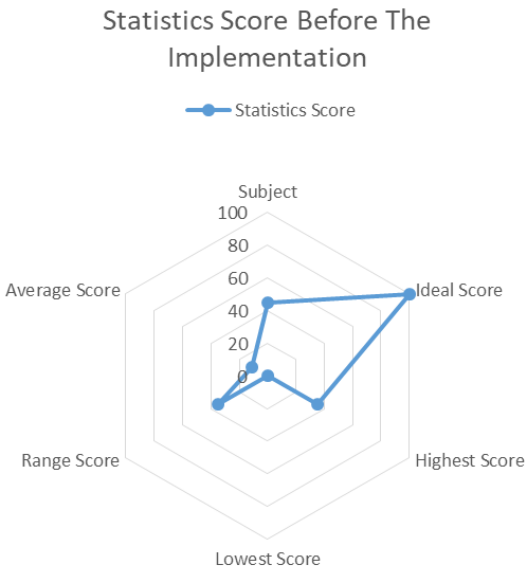

Figure 1. Statistics of Mathematics Learning Outcomes before the Implementation

The average score of the students' mathematics learning outcomes test was 11.02. The lowest score obtained by students is 0 from a possible score of 0 to the highest score obtained by students 35 from the ideal score achieved by 100. This indicates that learning outcomes in mathematics are very low because the lowest score is zero.

If the learning outcomes scores are grouped into five categories, then **Figure 2** is obtained.

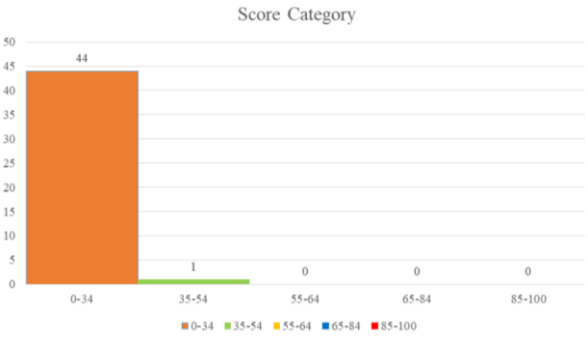

Figure 2. Graph of Mathematics Learning

The percentage of students' mathematics learning outcomes scores before the P.O.W.E.R learning model with the modules were applied, 98% in the very low category and 2% in the low category. None in the other category.

The percentage of completeness of mathematics learning outcomes for students of Grade XI IPS MA Syekh Yusuf Sungguminasa before applying the

P.O.W.E.R learning model using modules is shown in Figure 3.

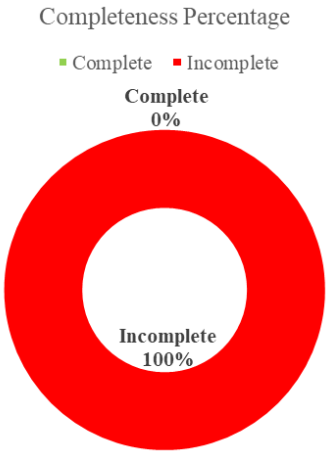

Figure 3. Completeness Percentage of Mathematics Learning Outcomes before the Implementation

Completeness of mathematics learning outcomes that are 100% categorized as incomplete and 0% complete. From the results obtained, it can be stated that it is necessary to apply a new model in the teaching and learning process. In this case, the P.O.W.E.R learning model using modules will be applied.

The teaching and learning process uses observation sheets to observe student activities. After being collected, the observation data is presented, which is used to determine how far the implementation of P.O.W.E.R learning using modules in cycle I and cycle II is.

Changes in student attitudes towards mathematics subjects during the teaching and learning process were obtained from the observations that had been carried out. From the beginning of the meeting, researchers have observed the activities of students in the process of learning mathematics. Several activities are in accordance with the learning objectives, and some are contrary to or not in accordance with the learning objectives.

The results of the observations are described in Figure 4.

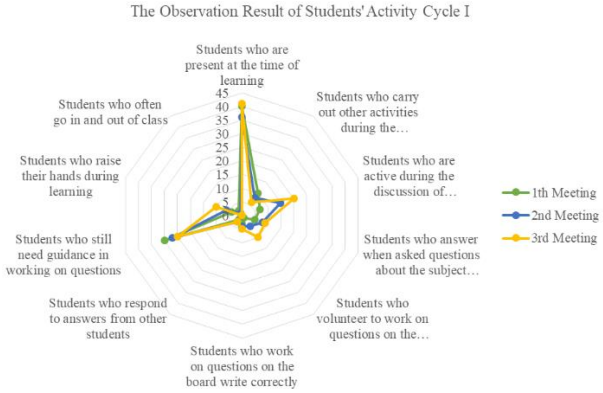

Figure 4. The Observations Activity Result of Cycle I before the Implementation.

The observation of this first cycle can already be seen changes in students' learning patterns who answer questions by the researchers. Besides, they were also more enthusiastic and active in doing the assigned tasks. Activities that are not good also tend to decrease, like students who go in and out of class and ignore the lesson. This shows a change in attitudes in students.

As a comparison, the following are the results of observations obtained in cycle II.

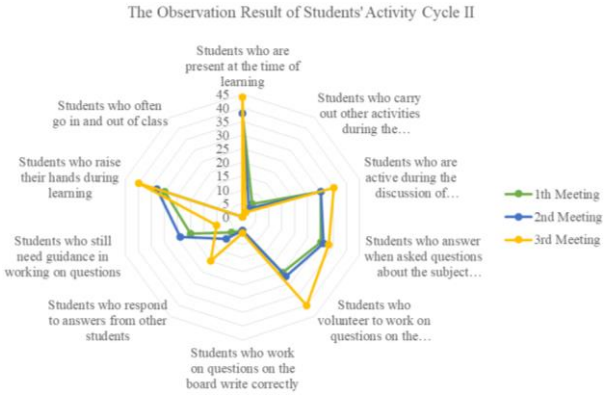

Figure 5 The Observation Results of Student Activities before the Implementation of Cycle II.

It can be seen that student activity increased when compared to cycle I. The observations in cycle II showed an increase in learning patterns in the number of students who asked and answered questions given by the researcher.

The data on mathematics learning outcomes for students of Grade XI IPS MA Syekh Yusuf Sungguminasa cycle I was obtained after the test. This data was collected through a test instrument for learning mathematics outcomes. The distribution score statistics are in Figure 6.

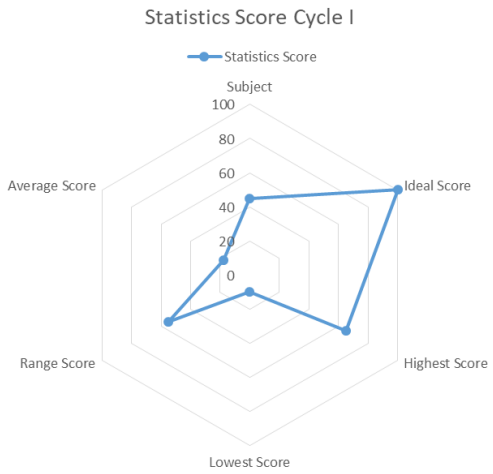

Figure 6. The Statistics Score of Mathematics Learning Outcomes after the Implementation of Cycle I.

The average score of the student's mathematics learning outcomes test is 17.67. The lowest score obtained by students is 10 from a possible score of 0 to the highest score obtained by students of 65 from the ideal score achieved by 100. This indicates that the learning outcomes of mathematics have increased when compared to the initial test. But the increase is not significant.

If the scores of these learning outcomes are grouped into five categories, as shown in Figure 7.

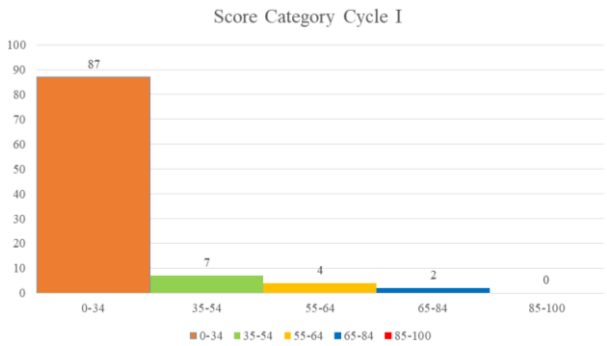

Figure 7. Graph of Mathematics Learning Outcomes after the Implementation Cycle I.

Percentage of students' scores on mathematics learning outcomes before the P.O.W.E.R learning model using modules are applied, 87% in the very low category, 7% in the low category, 4% in the medium category, and 2% in the high category.

The percentage of completeness mathematics from Grade XI IPS MA Syekh Yusuf Sungguminasa after implementing the P.O.W.E.R learning model using modules in the first cycle is shown in Figure 8.

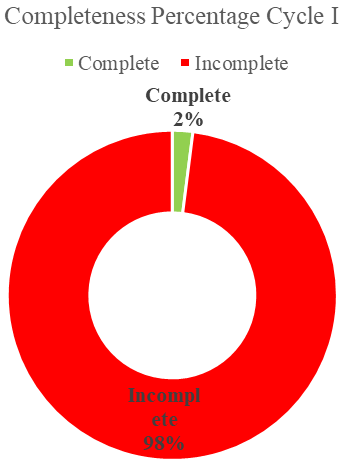

Figure 8. Percentage of Mathematics Mastery Learning Outcomes after the Implementation of Cycle I.

Mastery learning outcomes mathematics, namely 98% categorized as incomplete or 44 students and 2% categorized as complete or 1 student. From the results obtained, it can be stated that there has been an increase in mathematics learning outcomes in the first cycle.

The test scores of students' mathematics learning outcomes in cycle II are as shown in **Figure 9**.

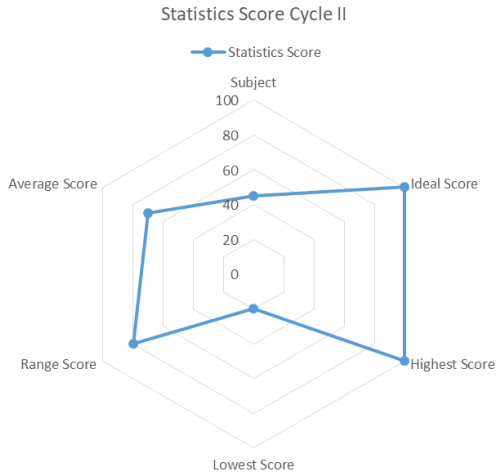

Figure 9. The Statistics Score of Mathematics Learning Outcomes after implementing the P.O.W.E.R model of Cycle II.

The average score of students' mathematics learning outcomes test is 70.00. The lowest score obtained by students is 20 from a possible score of 0 to the highest score obtained by students of 100 from the ideal score achieved by 100. This indicates that mathematics learning outcomes have increased when compared to the first cycle test. The increase is very significant.

If the learning outcomes scores are grouped into five categories, the percentages obtained are shown in **Figure 10**.

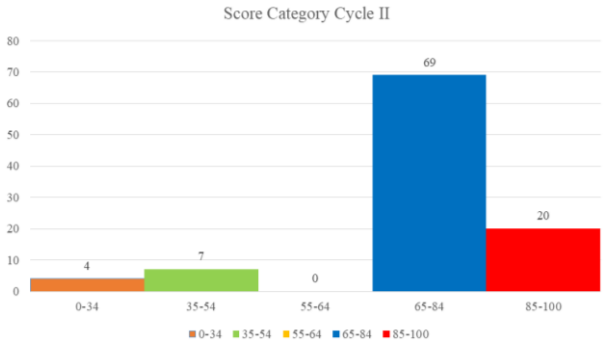

Figure 10 Graph of Mathematics Learning Outcomes students after applying the P.O.W.E.R model of Cycle II.

After applying the P.O.W.E.R learning model using modules, the percentage of students' mathematics learning outcomes is 4% in the very low category, 7% in the low category, 69% in the high category, and 20% in the very high category.

The completeness percentage of mathematics learning outcomes for Grade XI IPS MA Syekh Yusuf Sungguminasa students' after applying the P.O.W.E.R learning model using modules cycle II is shown in Figure 11.

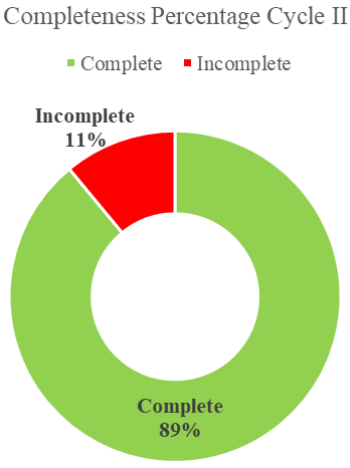

Figure 11. Percentage of Mathematics Mastery Learning Outcomes after the Implementation of the P.O.W.E.R model of Cycle II.

The completeness of mathematics learning outcomes is 11% categorized as incomplete or 5 students and 89% as complete or as many as 40 students. From the results obtained, it can be stated that there has been an increase in mathematics learning outcomes in the second cycle. Therefore, the cycle is stopped.

Based on the results of the descriptive analysis conducted, the results of this study reveal that students who were originally in the low category can be increased to high by using the P.O.W.E.R learning using modules.

The statistical comparison of the scores of students' mathematics learning outcomes in cycle I and cycle II is shown in Figure 12.

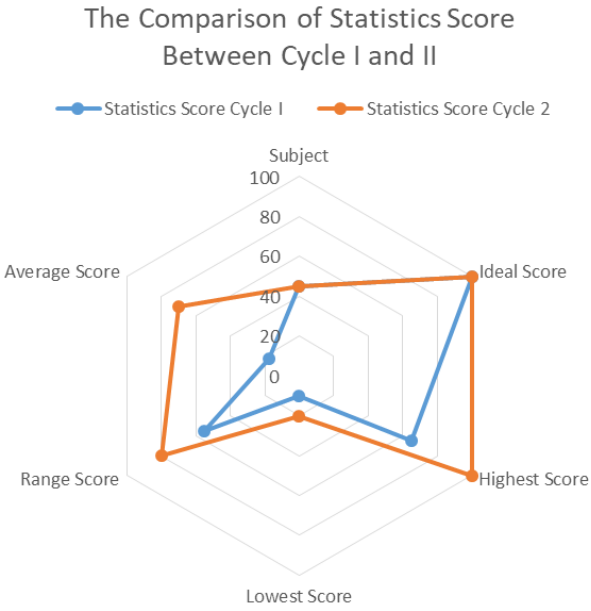

Figure 12. The Statistics Scores Comparison of Mathematics Learning Outcomes after applying the P.O.W.E.R model in Cycle I and Cycle II.

Students' average score of learning outcomes has increased from 17.67 in the first cycle to 70.00 in the second cycle. Likewise, there is an increase marked by the blue line located inside the orange line with other statistical measures.

While the percentage of mathematics learning outcomes scores for Grade XI IPS MA Syekh Yusuf Sungguminasa after implementing the P.O.W.E.R learning model with modules in Cycle I and Cycle II can be seen in Figure 13.

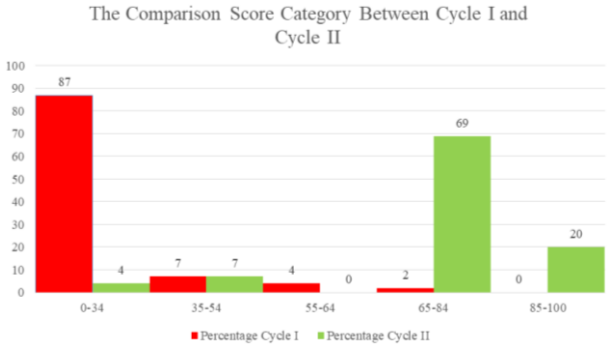

Figure 13. The Score-Category Comparison of Mathematics Learning after implementing the P.O.W.E.R model in Cycle I and Cycle II.

It can be seen that there was an increase from cycle I to cycle II. The most significant increase was in the very high category, where in the first cycle, no one got a very high score or 0% to 20% in the second cycle.

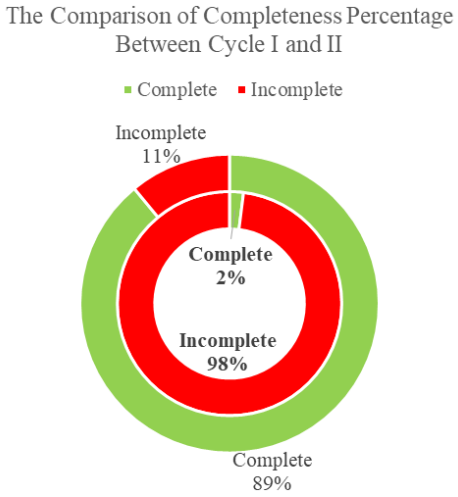

Figure 14. The Comparison of Mathematics Learning Outcomes Completeness Scores after the Application of the P.O.W.E.R model in Cycle I and Cycle II.

If categorized based on the Minimum Completeness Criteria (KKM), then from the 45 students who took the test in the first cycle, 98% of the students in the incomplete category decreased to 11% in the incomplete category in the second cycle. While in the complete category, 2% to 89% in the first cycle in the second cycle.

Students' low mathematics learning outcomes in the first cycle were caused by students who were not ready to accept the test. Because sports lessons precede mathematics lessons' schedules, students are still tired and do not concentrate on learning. In addition, they do not understand the material on composition functions and inverse functions with the new model. The increase in learning outcomes in cycle II was because students were ready and able to understand the material of composition functions and inverse functions well, especially with the model applied by the researcher. In addition, students are also very interested in the mathematics games given.

Based on the data, it can be concluded that the application of the P.O.W.E.R learning model with modules in cycle I and cycle II can improve mathematics learning outcomes of Grade XI IPS MA Syekh Yusuf Sungguminasa students. This can be a measure of success in the learning process.

4. CONCLUSION

The results obtained before applying the P.O.W.E.R learning model with modules in grade XI IPS MA Syekh Yusuf Sungguminasa are the average score of 11.02 mathematics learning outcomes. While the completeness is 0% complete.

The results obtained after applying the P.O.W.E.R learning model with modules in grade XI IPS MA Syekh Yusuf Sungguminasa are the average score of mathematics learning outcomes in the first cycle is 17.67 while in the second cycle is 70.00. The completeness in the first cycle is 2% complete; then, it becomes 89% complete in the second cycle.

During learning, the activity results also showed a positive trend in student activity and a decrease in negative factors such as frequent going in and out of class and students doing other activities during learning.

Furthermore, there is an increase in mathematics learning outcomes for students of grade XI IPS MA Sungguminasa after applying the P.O.W.E.R learning model with modules.

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