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Increasing Students' Cognitive Absorption Through Remedial Learning in Physics

Asmawati Asis[1], Chin Peng Ching[2], Witsanu Suttiwan[3]
[1] Department of Physics Education, Universitas Islam Negeri Alauddin Makassar, Makassar, Indonesia
[2] School of Physics, University of Science Malaysia (USM), Malaysia
[3] Science Education, Faculty of Education, Valaya Alongkorn Rajabhat University, Thailand

Article Info

ABSTRACT

Purpose of the study: To determine whether there is an increase in junior high school students' absorption of physics subjects after participating in remedial learning.

Methodology: This type of research is classroom action research. Junior high school students as subjects subjected to action in this study. The sampling technique in this study used purposive sampling. The instruments used in this study were diagnostic tests, final tests, observation guidelines. The collected data were analyzed using quantitative analysis.

Main Findings: The application of remedial learning has been able to help students increase their cognitive absorption from one cycle to the next.

Novelty/Originality of this study: The novelty of this research is that teachers can find out one of the learning methods to increase students' absorption and add insight into learning strategies.

Corresponding Author:
Asmawati Asis,
Jurusan Pendidikan Fisika, Universitas Islam Negeri Alauddin Makassar, Jl. Sultan Alauddin No.63, Romangpolong, Kec. Somba Opu, Kabupaten Gowa, Sulawesi Selatan 92113, Indonesia
Email: asmawatiasis876@gmail.com

1. INTRODUCTION

The learning process involves all aspects of student psychology, both physical and spiritual, in order to accelerate changes in behavior that can occur quickly, precisely, cheaply and correctly, both related to cognitive, affective and psychomotor aspects [1]–[3]. Thinking skills have become a generic expression, including the process of learning and solving problems. Efforts that teachers must make to develop students who are good at thinking are to create conducive environmental conditions, both in the classroom and outside the classroom [4], [5]. Teaching strategies show more problem solving skills than conveying knowledge. Teachers must be aware of the definition of thinking and the differences in the ways of thinking of one student and another. This difference can be seen in each lesson they are studying, they use certain thinking strategies in studying their subjects at school. The teacher functions as a director, meaning that the teacher is tasked with shifting their ways of thinking into better ways of thinking, namely creative and critical ways of thinking [6], [7]. Teachers guide students who are skilled at planning independently, monitoring and reviewing their thinking processes carefully.

In general, most teachers teach students to think, very rarely teach students about and about thinking, even though according to their needs students really need to have skills about and about thinking. In remedial learning, what is cured is the entire teaching and learning process which includes teaching methods, teaching methods, subject matter, learning tools and the environment that supports the learning process. With remedial

learning, students who experience learning difficulties can be corrected, cured or repaired so that they can achieve the expected results according to their abilities [8].

Physics is one of the basic sciences that is taught at all levels of primary and secondary education [9]–[11]. In learning physics, teachers are required to carry out efforts to improve learning, both in terms of material and learning methods so that they can pass on knowledge to students [12]–[14]. The success of an educator in teaching physics can be seen from one of the indicators, namely the absorption obtained by students, both individually and classically [15]–[17]. One of the efforts made to improve student learning outcomes in physics is remedial learning.

The low absorption of students towards a subject is caused by students experiencing difficulties in learning, the factors of which consist of: First, internal factors which include: lack of basic skills possessed by students, lack of special talents that underlie certain learning activities, lack of motivation or encouragement to learn personal and emotional situations experienced by students, physical factors and innate factors [18]–[20]. Second, external factors include: school environmental factors that do not support the learning process, situations in the family that do not support the learning process and an inadequate social environment [21]–[23].

If an educator wants to be successful in carrying out his duties, he must be able to diagnose the causes of learning difficulties experienced by his students so that these difficulties can be overcome. Symptoms of learning difficulties stated by Ilyas are as follows [24]:

1. Shows low learning outcomes (below the average value achieved by the class group).
2. The results achieved are not balanced with the efforts that have been made.
3. Slow in carrying out the tasks of learning activities.
4. Shows unnatural characteristics.
5. Shows behavior that is not fair.
6. Shows unusual emotional symptoms.

In this research, the diagnosis of learning difficulties is only limited to students' cognitive aspects. Remedial learning is given after going through diagnostic tests, namely daily tests so that a teacher can diagnose students' learning difficulties from a cognitive perspective. Formative tests are assessments carried out with the aim of monitoring and improving the learning process, as well as evaluating the achievement of learning objectives [25]. The formative test is a tool for diagnosing a student's mistakes and deficiencies so that he or she can correct them [8]. Formative tests help students better understand their strengths and limitations and how they can improve in those areas while also allowing teachers to see where their students are having difficulty and take quick action to help them [26], [27]. According to the researchers themselves, the absorption capacity referred to is that after teaching and learning process activities occur within a certain time period, students have the ability to fully understand the learning material, with one indicator being looking at the results of daily tests, whether they have achieved learning completeness or not.

Based on experience in the learning process, teachers or researchers often assume that students have understood the material being taught by looking at the activeness of students or if most students are able to work on application questions in each lesson plan. The fact that is faced in giving daily tests, students' absorption never reaches the target of classical learning completeness. Even so, researchers rarely provide improvements because they are required to complete the curriculum targets set in each semester. This research aims to obtain an overview of students' cognitive absorption abilities through remedial learning for junior high school students. The urgency of this research is for future educational development. However, the implementation of this research is not only to meet practical needs but is also intended to provide study material in the development of educational science. In other words, this research is expected to provide benefits, especially to teaching staff. By conducting this research, teachers can find out one learning method to increase students' absorption capacity and increase insight into learning strategies as well as gain experience in conducting classroom action research (Classroom Action Research), especially for researchers themselves.

2.   RESEARCH METHOD

This type of research is class action research (classroom action research), in which the researcher applies the treatment carefully, while following the treatment process, with the stages of implementation including planning, action implementation, evaluation and reflection directly, then these stages are arranged in one activity cycle [28]. This research was conducted in two cycles (cycles I and II), between cycles I and II were interrelated. In a sense, the implementation of cycle II is a continuation and improvement of the implementation of cycle I.

The researcher determined that class VII students of Mts Madani Alauddin Pao-Pao, Gowa Regency and class VII students of SI Kuala Lumpur Middle School Level as subjects who were subjected to action in this study. The sampling technique in research II used purposive sampling. The reason for choosing research subjects in this class is because class VII Mts Madani Alauddin Pao-Pao, Gowa Regency has a high level of homogeneity.

The instruments used in this study were diagnostic tests (preliminary tests), posttests and observation guidelines. The procedure for collecting research data was designed as follows, collecting quantitative data: data

regarding the level of students' absorption obtained from test results, both diagnostic tests and final tests. Qualitative data collection: data collection using observation guidelines. The collected data were analyzed using quantitative analysis.

3.   RESULTS AND DISCUSSION

The absorption power of class VII physics learning at MTs Madani Alauddin Pao-Pao before and after the application of remedial learning can be seen in the following table and graph:

Table 1. Absorption of Class VII Physics Study Results at MTs Madani Alauddin Pao-Pao

Data	Before Deployment	After Deployment		
	I	II	III	IV
subject	27	27	27	27
The highest score	65	100	100	100
Lowest value	7	30	60	62
Mean	34,75	72,68	80,41	83,77

Based on the analysis of data and observations that have been obtained, the absorption capacity of student learning outcomes is as follows:

In Cycle I, the absorption of learning outcomes was obtained with an average score of 34.75 from the results of the pretest before remedial teaching, while the completeness of student learning outcomes obtained 96.29% of the total students categorized as incomplete and 3.71% of the total students categorized as complete. And these results can be stated that the classical mastery of student learning has not been achieved, so it is necessary to carry out the next stage, namely cycle 2 by providing remedial learning.

In cycle II the absorption of learning outcomes was obtained with an average value of 72.68 and the results of the post test after remedial teaching. Obtained completeness of student learning outcomes 22.22% for the number of students categorized as incomplete and 77.78% of the number of students categorized as complete. From these results it can be stated that the classical mastery of student learning has not been achieved so that the research is continued to the next cycle.

In cycle III the absorption of learning outcomes was obtained with an average value of 80.41 and the results of the post test after remedial teaching. Obtained completeness of student learning outcomes 11.11% for the number of students categorized as incomplete and 88.89% of the number of students categorized as complete. From these results, an illustration is obtained that research needs to be continued to the next cycle so that maximum results are obtained.

In cycle IV the absorption of learning outcomes was obtained with an average value of 83.77 and the results of the post test after remedial teaching. Obtained completeness of student learning outcomes 4% for the number of students categorized as incomplete and 96% of the number of students categorized as complete. From these results it can be stated that the classical mastery of student learning has been achieved. Here's a graph of the increase.
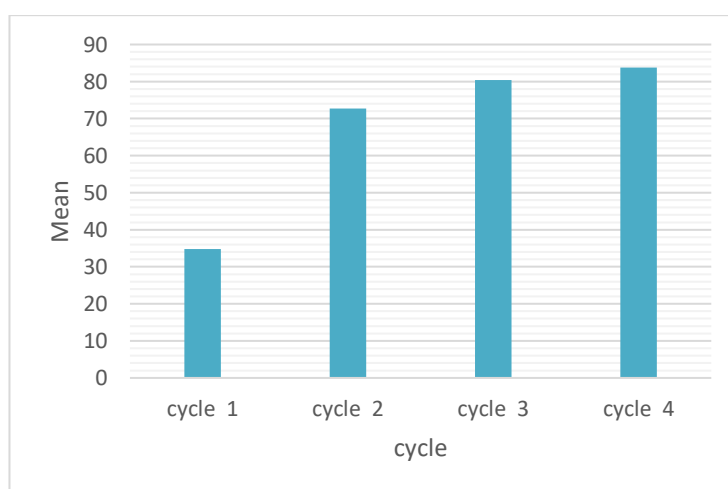

Figure 1. Graph of Increasing Absorption of Physics Learning Outcomes for Class VII MTs Madani Alauddin Pao-Pao

Furthermore, the absorption power of physics learning outcomes for class VII SI Kuala Lumpur Junior High School Level before and after the application of remedial learning can be seen in the following table and graph:

Table 2. Absorption of Class VII Physics Learning Outcomes at SI Kuala Lumpur Junior High School Level

Data	Before Deployment	After Deployment		
	I	II	III	IV
subject	27	27	27	27
The highest score	67	100	100	100
Lowest value	6	45	65	70
Mean	31,75	74,68	82,41	85,70

Based on the analysis of data and observations that have been obtained, the absorption capacity of student learning outcomes is as follows:

In Cycle I, the absorption of learning outcomes was obtained with an average score of 31.75 from the results of the pretest before remedial teaching, while the completeness of student learning outcomes obtained 95.30% of the total students categorized as incomplete and 4.70% of the total students categorized as complete. And these results can be stated that the classical mastery of student learning has not been achieved, so it is necessary to carry out the next stage, namely cycle 2 by providing remedial learning.

In cycle II the absorption of learning outcomes was obtained with an average value of 74.68 and the results of the post test after remedial teaching. Obtained mastery student learning outcomes of 21%. From the number of students categorized as incomplete and 79% of the number of students categorized as complete. From these results it can be stated that the classical mastery of student learning has not been achieved so that the research is continued to the next cycle.

In cycle III the absorption of learning outcomes was obtained with an average value of 82.41 and the results of the post test after remedial teaching. Obtained mastery student learning outcomes of 12%. Of the number of students categorized as incomplete and 88% of the number of students categorized as complete. From these results, an illustration is obtained that research needs to be continued to the next cycle so that maximum results are obtained.

In cycle IV the absorption of learning outcomes was obtained with an average value of 85.70 and the results of the post test after remedial teaching. The completeness of student learning outcomes was 3.92% for the number of students categorized as incomplete and 96.08% for the number of students categorized as complete. From these results it can be stated that the classical mastery of student learning has been achieved. The following is a graph of the increase in each cycle:
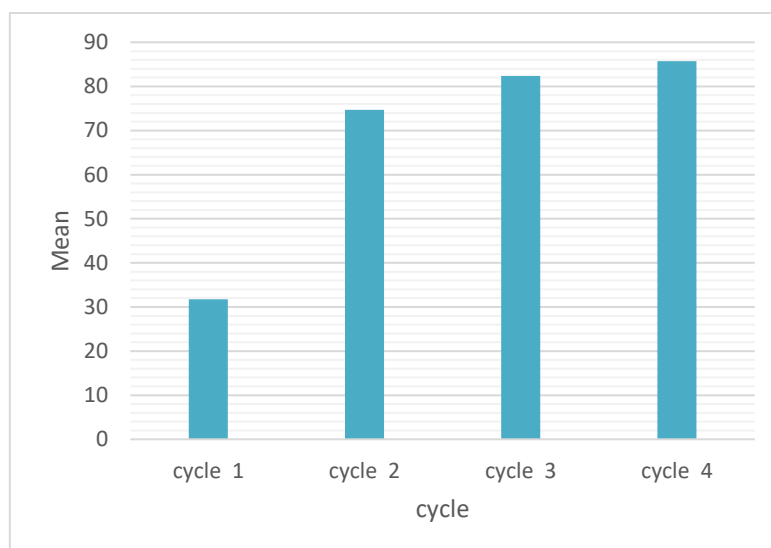

Figure 2. Graph of Increasing Absorption of Class VII Physics Learning Outcomes at SI Kuala Lumpur Junior High School Level

Remedial teaching is carried out in cycles II, III, and IV after analyzing the pre-test in cycle I. Before the remedial teaching takes place the researcher provides motivation in entering the lesson and conveys that what will be taught at that time is really paid attention to because after the remedial teaching is completed in Each cycle will be given another test and the material will include what was studied at that time. The students' reactions were very

positive and they seemed enthusiastic about following the lesson. Next, the researcher began to enter the lesson with the initial step of explaining the concept of the material again, then discussing the questions until complete. After this step, the students then gave the opportunity to ask questions or provide responses, the researcher also provided motivation that they should not be reluctant to ask questions, then the researcher gave questions that were similar (parallel) to the questions found in the previous test.

In previous research, it was found that the remedial program implemented was proven to be effective by recovering ninety-four percentages of students in Tamil and ninety-three percentages of students in Mathematics [29]. As a generalization of previous research, this research was carried out with the latest findings that the application of remedial learning has been able to help students increase students' cognitive absorption from one cycle to the next, this is proven by an increase in the average score obtained, an increase in the percentage of student learning, by category low to high categories and increasing the completeness of student learning outcomes. Research has had an impact through the application of remedial learning which has been able to help students increase their cognitive absorption from one cycle to the next, this is proven by the increase in the average score obtained, the increase in the percentage of student learning, in categories from low to high category and increased completeness. Apart from that, other improvements also occurred, namely student creativity in learning. From the research results obtained, it is hoped that teachers, especially physics subject teachers, will be able to implement remedial learning to further increase students' absorption of the physics subjects being taught. Recommendations for further research are expected to develop this research to make it easier to understand the material being taught so that students' cognitive absorption capacity increases.

4.   CONCLUSION

The application of remedial learning has been able to help students improve students' cognitive absorption from one cycle to the next, this is evidenced by the increase in the average score obtained, the increase in the percentage of student learning, with categories from low to high categories and increased completeness of student learning outcomes. In addition, another increase also occurred, namely student creativity in learning. Recommendations for further research are expected to develop this research to make it easier to understand the material being taught so that students' cognitive absorption capacity increases.

ACKNOWLEDGEMENTS

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