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Application of Peer Tutor Learning Methods to Improve Student Physics Learning Activities in Primagama Wonogiri Tutoring Institutions

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ABSTRACT

This study aims to improve student learning activities in Primagama Wonogiri tutoring institutions through peer tutoring learning methods. This research is a Class Action Research with Kurt Lewin model. Data were obtained through observation sheets, activity questionnaires, and interviews. Based on the results of the study, it can be concluded that: The application of Peer Tutor method can increase students' physics learning activities. From the four aspects of learning activities that are the focus of the research, the following results are obtained: (a) Visual Activities can reach 96.29% in cycle II with research targets on this aspect of 80%, (b) Oral Activities can reach 42.77% in cycle II with a research target in this aspect of 40%, (c) Listening activities can reach 81.47% in cycle II with research targets on this aspect of 70%, (d) Writing Activities can reach 77.77% in cycle II with research targets on this aspect of 70%.

Keywords: peer tutor, classroom action research, learning activity

INTRODUCTION

Definition Physics is, "Physics comes from Greek which means nature. Physics is the most fundamental science because it is the basis of all other fields of science (Tipler, 1991). According to Alonso and Finn (1980) Physics is a science whose purpose is to study the material components and their inter-action. By using this inter-action understanding scientists explain the nature of matter in matter, as well as other natural phenomena that we observe. Physics as a theory that describes various natural phenomena as simple as possible and tries to find a connection between reality. The basic problem to solve the problem is by observing these symptoms (Gerthsen, 1996).

Physics is fun, but most students think that physics is a very complicated subject, many formulas, and boring because the lessons are repeated and quite draining. Even though physics is one of the very important subjects because of many things in life related to physics. Just memorizing formulas is not enough, but it requires high understanding and logic to understand about Physics lessons.

This is not only felt in schools but also in tutoring institutions. Physics learning activities of students and the enthusiasm to follow the learning and attention of students in the implementation of learning will be less well implemented if the educator and tentor are still using conventional methods.

One of the causes of the low learning activities of 9th grade students in a tutoring institution is the role of learning strategies that have not run optimally, so students are not actively involved in the teaching and learning process. Based on this, the role of a military officer is needed to motivate and introduce Physics material with more interest, fun and friendliness so that students will be motivated in learning Physics.

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As a follow-up to overcome the problems that occur, it is necessary to conduct action research oriented to improving student learning outcomes through a Class Action Research (CAR) as stated by Nonoh (2012: 45). In classroom action research, the teacher collaborates with other researchers from universities or colleagues. Collaboration among its members will enable the classroom action research process to run smoothly, effectively and efficiently.

Actions taken in an effort to improve the learning activities of grade 9 students are pursued by the use of interesting and interactive learning methods. Today the learning process is demanded to always adjust to the dynamics of society, because static and conventional learning tends to make students bored and not motivated to learn. Therefore, a new breakthrough in learning is needed that allows a tentor to teach a material to students interestingly, one of which is the Peer Tutor method.

In one class the age difference between one student and another student is certainly relatively small or almost the same, so there are groups of peers who interact between students with each other. In this interaction does not rule out the possibility of one student to another helping and needing each other. In learning to get better learning outcomes and activities. Peer tutor learning is student-centered learning, in this case students learn from other students who have age status, maturity / self-esteem that is not much different from themselves, so they do not feel so forced to accept the ideas and attitudes of their "teacher" "Who are none other than their own peers.

In peer tutors, friends who are smarter provide learning assistance to their classmates in a tutoring institution. Learning assistance by peers can eliminate awkwardness. Peer language is also easier to understand, besides that with peers there is no reluctance, low self-esteem, shame, and so on, so it is hoped that students who lack understanding do not hesitate to express the difficulties encountered (Suherman, 2003).

LITERATURE REVIEW

Learning Methods

The method comes from the Greek "methodos" which means the way or path taken. Associated with scientific efforts, the method involves the way of working to be able to understand the object that is the target of the relevant science (Hamalik, 2001). The term method in a popular scientific dictionary is a regular and sigmatic way of doing things or ways of working (Partanto et al., 1994). Methods are ways that can be used to implement learning strategies (Sanjaya, 2010). While the notion of learning is an activity designed to help someone learn a new ability or value (Sagala, 2005).

Learning is learning to use the principles of education. Learning is the process of creating learning conditions so that better behavior changes occur so that learning objectives can be achieved. From the understanding of the method and learning it can be concluded that the understanding of the learning method is everything that can be used to channel messages from teacher to student so that it can stimulate students' feelings, thoughts, interests and attention so as to create effective and efficient learning conditions.

Peer Tutor

Hamalik (2003) suggests that the tutorial is learning guidance in the form of providing guidance, assistance, guidance, direction, and motivation so that students can be efficient and effective in learning. Subjects or personnel who provide guidance in tutorial activities are known as tutors. Tutors can come from teachers or instructors, trainers, structural officials, or even students who are selected and assigned by teachers to help their friends in class. Tutoring teaching is teaching through groups consisting of one student and one teacher (tutor, mentor) or may be a student able to hold the task as a mentor, even to some extent can be a tutor (Winkel, 1996). Tutors function as masons or teaching implementers whose teaching methods have been prepared specifically and in detail. To bring about a competitive atmosphere, each group must continue to be encouraged to become the best group. Therefore, in addition to the activities of group members, the role of group leader or tutor greatly influences the success of the group in learning the teaching material presented (Muntasir, 1985).

Furthermore, it is stated about the understanding of Peer Friends. Peers are children with a level of maturity or more or less the same age. One of the most important functions of peer groups is to provide a source of information and comparison about the world outside the family. Through groups of peers children receive feedback from their friends about their abilities. Children judge what they do, whether they are better

than their friends, the same, or worse than what other children do. This will be difficult in the family because siblings are usually older or younger (not their age) (Santrock, 2004: 287).

Some of the above have been mentioned regarding the meaning of tutors and peers. Next explained about the understanding of peer tutors. Peer tutor is a group of students who have completed the learning material, providing assistance to students who have difficulty understanding the learning material they learned (Suherman, 2003). Peer tutor is a person or several students who are appointed by the teacher as an assistant teacher in conducting guidance to classmates.

Tutors can be accepted (approved) by students who have a repair program so that students do not have fear or are reluctant to ask him. Tutors can explain the repair materials needed by students who receive a repair program. Tutors have enough creative power to provide guidance, which can explain lessons to friends. The tutorial model is a way of delivering learning material that has been developed in the form of modules for students to learn independently (Martinis, 2007).

Based on this understanding, it can be concluded that the understanding of Sebaya's Friend Tutor is a learning strategy that utilizes students who have special abilities and skills in the classroom to help provide explanations and direction to students who are somewhat lacking or slow in receiving lessons that are almost the same age or class .

The peer tutoring method is part of the cooperative learning model. Cooperative learning models have been widely used in various studies. students work using peer tutoring methods during group work, cooperative learning also trains students' ideas in learning to create creative and innovative learning. The use of cooperative models in learning will improve the quality of learning, increase positive enthusiasm for teachers and students in the teaching and learning process (Balz Wolfensberger, 2015).

Learning Tutoring

Learning is an intentional activity carried out by an individual so that there is a change in self-ability, by learning that a child who was not able to do something, being able to do something, or a child who was not skilled at being skilled (Siddiq et al., 2008: 1- 3). Whereas according to Dimyati and Mudjiono (2002: 7) learning is an act of complex student behavior. As an action, learning is only experienced by students themselves. Students are determinants of the learning process. Learning is a process of behavioral change as a result of interaction with the environment in meeting their needs. Can also be defined as a business process carried out by a person to obtain a new behavior change as a whole as a result of his own experience in interaction with his environment (Slameto, 2003).

Furthermore, the understanding of learning guidance was expressed. Tutoring is an important form of guidance service held in schools. Experience shows that failures experienced in learning are not always caused by ignorance or low levels of intelligence but occur because they do not get adequate guidance services (Prayitno, 2004). Tutoring is guidance in finding the right way of learning, choosing an appropriate study program and overcoming the difficulties that arise related to the demands of learning in an educational institution (Winkel, 1996). Tutoring is guidance that is directed to help individuals deal with and solve academic problems (Nurihsan, 2010). Tutoring is guidance that is directed to assist students in developing understanding and learning skills in problem solving (Syamsu Yusuf, 2010).

From some it can be concluded that tutoring is a process of assistance given to individuals to overcome the problems they face in learning in order to achieve better learning outcomes in accordance with the talents and interests of each individual.

Learning Activities

In principle learning is doing to change behavior. In the learning process, the activities of students are very important and need to be considered by the teacher so that the learning process gets optimal results. According to the Big Indonesian Dictionary (2008: 31), "Activity means activity, activity, busy work or business." Meanwhile, according to Sardiman (2007: 97), "Without activity, the learning process is impossible". So that people who are said to learn if active in teaching and learning activities.

Learning is very much needed for activities, because without the learning process activities may not take place properly. In the process of learning activities must involve all aspects of students, both physical and spiritual so that changes in behavior can change quickly, precisely, easily and correctly, both related to cognitive aspects of affective and psychomotor (Hanafiah, 2010: 23).

In designing the learning, a teacher must be able to direct and optimize the activeness that every student has. Many types of activities can be done by students at school. Student activity is not enough to just listen and record as is commonly found in traditional schools.

According to Paul B. Diedrich, cited by Sardiman (2010: 101) makes a list of student activities classified into 8 activities including; Visual activities include reading activities, paying attention to pictures, demonstrations, experiments, or other people's work; Oral Activities include expressing opinions; Listening activities include listening to descriptions, conversations, discussions, music, speeches; Writing activities include writing essays, stories, reports, questionnaires, copying; Drawing activities include drawing activities, making graphs, maps, diagrams; Motor activities for example: conducting experiments, making construction, repairing, playing, gardening, raising livestock; Mental activities such as responding, remembering solving problems, analyzing, seeing relationships, making decisions and activities; and Emotional activities, including interest, joy, enthusiasm, passion, courage, tension.

Student learning activities influence the intellectual process and mental state in the learning process and activate cognitive processes that exist in students (Prokhorov, 2016).

RESEARCH METHODOLOGY

Research Goal

This study aims to improve student learning activities in tutoring institutions through peer tutoring learning methods.

Research Subjects

Subjects in this study were 27 students consisting of 12 students of class 9A, and 15 students of class 9B in Primagama Wonogiri Tutoring Institutions.

Types of Research

This study uses Classroom Action Research (CAR) which is one way to solve problems in a practical and contextual manner that aims to improve the quality of learning. Broadly speaking, there are four stages in the classroom action research model, this study follows a model developed by Kurt Lewin consisting of four components, namely: (1) Planning, (2) Implementation of Action, (3) Observation, and (4) Reflection (Nonoh, 2012).

Data Collection

The main data sources in this study were observation sheets, activity questionnaires, and interviews.

Activity Instruments

To measure students' physics learning activities researchers used observation sheets. In this study the researcher determined 4 aspects measured from 8 aspects of learning activities, namely: Visual activities, Oral Activities, Listening activities, and Writing activities. Of the 4 aspects, the researcher made the indicators measured, overall from the 4 aspects measured, the researcher determined 9 indicators used.

Data Analysis

Data analysis in the study was carried out using the flow method. Data from research results in the field were processed and analyzed qualitatively qualitative. Qualitative descriptive analysis technique refers to the analysis model of Miles and Huberman (1992) in Sugiyono (2010) which is carried out in three components, namely data reduction, data presentation and conclusion drawing and verification.

Research Performance Indicators

There are 2 indicators of research performance in this study, namely the assessment of each indicator described in **Table 1** and indicators of the success of student learning activities described in **Table 2**.

Table 1. How to Evaluate Each Indicator

Aspect	Indicator	Assessment Method
Visual Activities	Students who attention to the whiteboard / learning media during the teacher presentation.	$= \frac{\sum \text{students whoattention}}{\sum \text{students}} \times 100\%$
	Students read physics books or modules	$= \frac{\sum \text{students whoread}}{\sum \text{students}} \times 100\%$
Oral Activities	Students give ideas / ideas to solve problems in group discussions	$= \frac{\sum \text{students whogiveideas}}{\sum \text{students}} \times 100\%$
	Students ask the teacher if there are things that are not clear.	$= \frac{\sum \text{students whoask}}{\sum \text{students}} \times 100\%$
	Students answer questions posed by the teacher without being appointed.	$= \frac{\sum \text{students whoanswer}}{\sum \text{students}} \times 100\%$
	Students respond to friends' opinions.	$= \frac{\sum \text{students whorespond}}{\sum \text{students}} \times 100\%$
Listening activities	Students discuss about learning material	$= \frac{\sum \text{students whodiscuss}}{\sum \text{students}} \times 100\%$
Writing Activities	Students write results of problem solving in discussions	$= \frac{\sum \text{students whowritetheresultsofthediscussion}}{\sum \text{students}} \times 100\%$
	Students record material presented by the teacher	$= \frac{\sum \text{students whorecordmaterial}}{\sum \text{students}} \times 100\%$

Table 2. Indicators of Success of Student Learning Activities

Aspects of	Assessment Method	Accomplishment (%)
Visual Activities	$= \frac{\sum \text{TheValueofeachindicator}}{\sum \text{Indicatorofeachaspect}} \times 100\%$	80
Oral Activities	$= \frac{\sum \text{TheValueofeachindicator}}{\sum \text{Indicatorofeachaspect}} \times 100\%$	40
Listening activities	$= \frac{\sum \text{TheValueofeachindicator}}{\sum \text{Indicatorofeachaspect}} \times 100\%$	70
Writing Activities	$= \frac{\sum \text{TheValueofeachindicator}}{\sum \text{Indicatorofeachaspect}} \times 100\%$	70

RESULT AND DISCUSSION

In this study using a cooperative learning model type peer tutoring method. Based on the results of observations and interviews, learning using the Sebaya Friends Tutor method encourages students to be actively involved in the learning process. Students actively ask questions, answer, work on questions without being appointed and discuss in groups to solve problems.

Group discussion carried out by students can be a meaningful experience because it allows students to master a concept or solve a problem through a process that gives the opportunity to think, interact socially and practice being positive. **Table 3** shows the results of observation of student learning activities that are increased seen from several aspects measured in terms of each indicator.

Table 3. Observation Results of Student Learning Activities Reviewed Each Indicator of Learning Activity

Aspect	Indicator	Achievement Percentage		
		Pre-Cycle	Cycle I	Cycle II
Visual Activities	Students who attention to the whiteboard / learning media during the teacher presentation	66.67%	74.07%	94.44%
	Students read physics books or modules	62.96%	70.37%	96.29%
Oral Activities	Students give ideas / ideas to solve problems in group discussion	0%	53.69%	72.22%
	Students ask the teacher if there are things that are not clear	7.40%	20.36%	27.77%
	Students answer questions posed by the teacher without being appointed	14.81%	27.77%	35.18%
	Students respond to the opinions of friends	3.70%	18.51%	25.92%
Listening activities	Students discuss about the material learned	0%	59.25%	81.47%
Writing Activities	Students write the results of problem solving in discussions	0%	62.96%	72.22%
	Students record material delivered by the teacher	55.55 %	57.40%	83.33%

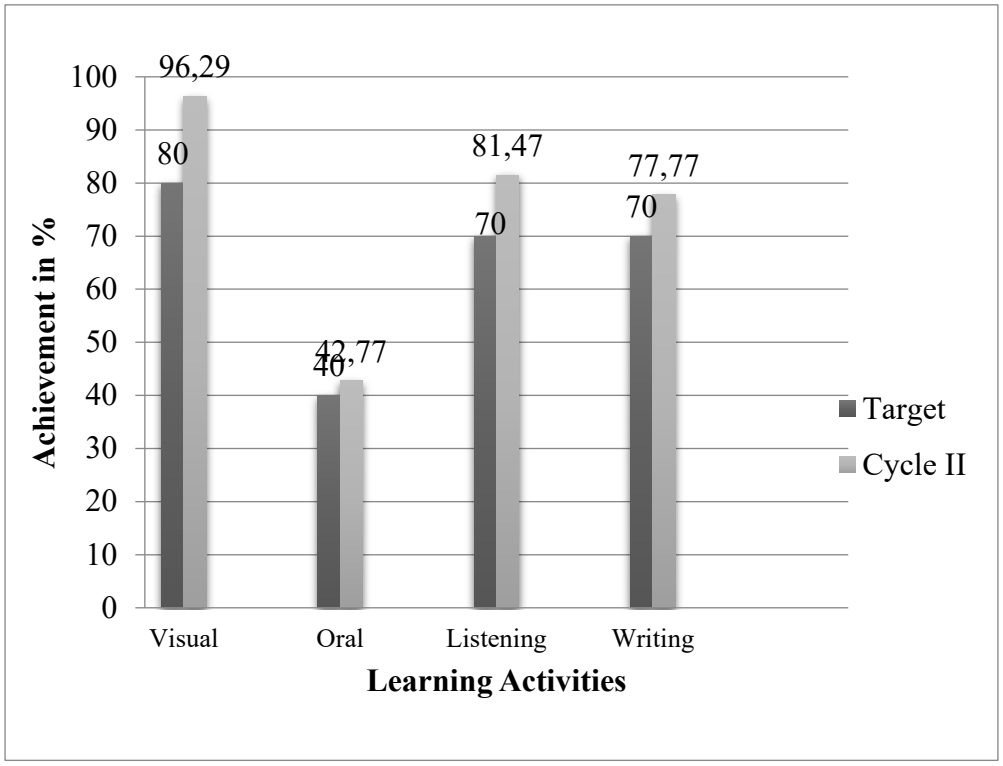

Figure 1. Histogram percentage of Research Target Learning Activity and Cycle II

Figure 1 shows all of the targets planned for this study have all shown success. If observed from every aspect of activity, all aspects of activity have met the set targets. The achievement of each aspect of activity has exceeded the specified target. Classically the learning activities of students in the second cycle had reached the planned target. So learning can be limited to two cycles.

CONCLUSION

Based on the data above that has been adjusted to the theory it has been found that teaching methods can be used as references and variations, the method is peer tutor by using cooperative learning models.

Table 4 shows that from the four aspects of learning activities that are the focus of the research, the following results are obtained: (a) Visual Activities can reach 96.29% in cycle II of 64.81% in pre-cycle and 72.22% in cycle I with research targets on this aspect amounting to 80%, (b) Oral Activities can reach 42.77%

Table 4. Results of Observation of Student Learning Activities Reviewed by Every Aspect of Learning Activity

Aspects of	Percentage of Achievement		
	Target	Cycle I	Cycle II
Visual Activities	80%	72.22%	96.29%
Oral Activities	40%	30.08%	42.77%
Listening activities	70%	59.25%	81.47%
Writing Activities	70%	60.18%	77.77%

in cycle II of 6.47% in pre cycle and 30.08 in cycle I with research targets on this aspect of 40%, (c) Listening activities can reach 81.47% in the second cycle from 0% in the pre cycle and 59.25% in the first cycle with the research target in this aspect of 70%, (d) Writing Activities can reach 77.77% in the second cycle of 38.88% in the pre cycle and 60.18% in the first cycle with a target of 70% in this aspect.

If observed from every aspect of the activity, all aspects of the activity have fulfilled the targets set. The achievement of each aspect of the activity has exceeded the specified target, the research was stopped in cycle II.

So it can be concluded that increasing student learning activities can be achieved in accordance with the targets set in cycle II. This research can be concluded successfully because each indicator of student learning activities that are observed and measured has reached the target set. From the results of observations and discussions, it can be concluded that the application of the peer tutoring method can increase students' physics learning activities in tutoring institutions.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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