# Improvement of primary school students' activeness and outcome using discovery learning model in mathematics

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## Abstract

*This study aims to determine the increase in activity and learning outcomes of 5th grade students of SD Negeri Randuacir 02 Salatiga Semester II Year 2018/2019 using the discovery learning model. This type of research is classroom action research (CAR). The research subjects were 29 students in grade 5. Procedure for classroom action research in the form of planning, implementation, observation and reflection. The action was carried out in two cycles with each cycle of three meetings. Data collection techniques in this study used observation and tests. The data analysis technique is done by using descriptive comparative analysis in the form of a percentage comparison in the initial conditions before the action is taken, the results of the first cycle, and the results of the second cycle. The results showed an increase in the activeness and learning outcomes of mathematics through the implementation of the discovery learning model. This is evidenced in the rubric of the activity of the first cycle, the average value is 29.66, the criteria are quite good, increasing in the second cycle with the average score being 45.03 criteria very good. The learning outcomes with the KKM provisions are 70, in the pre-cycle only 17.24% were completed, in the first cycle it increased to 55.18%, and in the second cycle the action increased to 72.41%.*

*Keywords: discovery learning model; activeness; learning outcome; mathematics*

## Introduction

Mathematics taught in elementary school consists of 3 main material, namely numbers, geometry and basic statistics. Therefore, mathematics has an important role both in the world of education and in our daily lives. Students' attention in carrying out mathematics learning can be conditioned by allowing students to get used to learning. In general, the division of time in mathematics learning is very lacking because mathematics is one of the subjects with high repetition intensity. Many students are overwhelmed in facing mathematics learning. In the implementation of learning, students still have not actively participated because conventional learning methods such as lectures still dominate. It appears that the teacher is still teaching orally without giving a media as a tool in learning. In addition, students are also busy themselves, do not listen or respond to what is conveyed by the teacher, so the classroom atmosphere is so passive and there is no reciprocity between the teacher and students and students with the teacher. This certainly has an impact on student activity and learning outcomes.

Activity is a motor in learning activities and learning activities, students are required to be physically, intellectually, and emotionally active. Sardiman (2001) argues that

activeness is an activity that is both physical and mental, that is acting and thinking as a series that cannot be concluded. According to Hartono et al. (2015) the activity of learning an activity that can bring change to everyone in a better direction. According to Pamungkas (2018) student learning activeness is a learning process that makes students active in learning activities.

Salim (2000) suggests that learning outcomes are mastery of skills knowledge on subjects as evidenced by test results. According to Kristin (2016), learning outcomes are the culmination of learners' learning success towards predetermined learning goals, which include cognitive aspects (knowledge), affective (attitudes), and psychomotor (behavior). Slameto (2010) suggests that learning outcomes are a process of changing behavior as a result of interaction with the environment in meeting their needs, these changes will be evident in all aspects of behavior. Learning outcomes are a large part of activities or behaviors that are shown by someone (Anugraheni, 2017).

Various models have been obtained by researchers, one of them is the discovery learning model. discovery-based learning model (discovery learning) encourages students to ask questions and draw conclusions from general principles based on experience and practical activities. The discovery learning learning model is used to develop active learning methods by finding oneself, investigating on their own, then the results that will be obtained last a long time in memory so that they are not easily forgotten by students (Kristin, 2016). According to Maharani & Hardini (2017), discovery learning is a learning process where the delivery of material is not intact, because the discovery learning model requires students to be actively involved in the learning process and find out for themselves a concept of learning. Discovery Learning Model is defined as a learning process that occurs when students are not presented with lessons in their final form, but are expected to organize themselves, understand concepts, meanings, and relationships, through an intuitive process to finally arrive at a conclusion (Budiningsih, 2005). Discovery learning helps the students to improve their cognitive and affective aspect (Balım, 2009), avoid misconception (Tompo, Ahmad, & Muris, 2016), communicate better (Saab, Joolingen, & Hout-wolters, 2005), and work in a team (Behzadan & Kamat, 2013; Gijlers & Jong, 2005). This method also works well with a difficult subject, for instance mathematics (In'am & Hajar, 2017; Prasad, 2011; Tran et al., 2014).

Based on the description stated above, the researcher will apply the discovery learning model in primary school mathematics learning to determine the improvement of student activity and learning outcomes.

## Materials and Methods

This classroom action research (CAR) was conducted in SD Negeri Randuacir 02 Salatiga, with research subjects 29 students in grade 5. From the initial observation, students who completed learning were only 17.24%.

This research was conducted using discovery learning learning models. Discovery learning model is a learning process by the way students are required to organize their own ways of learning in finding concepts. So, using this model students become more active. Students are given stimulation first, then they can identify problems, collect data, process data, prove, and make conclusions. This class action research consists of cycle I and cycle II.

Each cycle was held for three meetings. Procedure for classroom action research in the form of planning, implementation, observation and reflection. Data collection techniques in this study used observation and tests. Observation is used to find out directly the learning process both by students and teachers. Tests are used to measure what students have achieved during the learning process. The data analysis technique was carried out using comparative descriptive analysis in the form of a percentage comparison in the initial conditions before the action was taken, the results of the first cycle, and the results of the second cycle.

## Results and Discussion

In the first cycle, 16 students (55.18%) completed the learning. After the second cycle there was an increase to 21 students (72.41%). Thus the improvement of learning with the discovery learning model was successful because learning outcomes reached the achievement indicators of 72.41% (Table 1).

Tabel 1. Learning outcome in each cycle

| Category | Cycle I | | Cycle II | |
|---|---|---|---|---|
| | Frequency | (%) | Frequency | (%) |
| Complete | 16 | 55.18 | 21 | 72.41 |
| Not complete | 13 | 44.82 | 8 | 27.59 |
| Max | 100 | | 100 | |
| Min | 30 | | 57.5 | |
| Average | 66.89 | | 80.1 | |

Student learning outcomes in the first cycle have not reached the planned achievement indicators, namely 70% completeness because students are not ready to start learning. Some students do not bring source books that have been given by the school, students do not dare to express their opinions or ask if they do not understand the material, have not been able to exchange ideas in solving problems with groups, and do not respond (ignore) the work of other groups. Because in the first cycle there are still some shortcomings and have not reached the completeness of the completeness indicator, the researcher will take corrective actions in the second cycle.

In cycle II, teachers and students started to implement the discovery learning model well. When the teacher gave a question in the beginning to attract students to find answers, active students answered fearlessly and bravely raised their fingers even though some answers were incorrect. In groups, it appeared that students showed enthusiasm to work together to discuss and found answers to the problems thus they would presented the results of group work in front of the class. After making improvements in the second cycle there was an increase in both student activity and learning outcomes.

The activity of students in cycle I and cycle II showed improvement by applying the discovery learning model. Pamungkas (2018) said that student learning activeness was a learning process that made students active in learning activities. The implementation of the discovery learning model in this study, especially in the stimulation stage, stimulated the students to actively ask questions.

In addition to the increasing student activity, student learning outcomes were also increased. Table 1 showed that the student learning outcomes with KKM provisions was 70 indicated student completeness after making improvements by applying the discovery learning model from 5 students in the pre-cycle, 16 students in the first cycle, and 21 students in the second cycle which reached the planned achievement indicators. Kristin (2016) revealed that learning outcomes were the culmination of the learning success of students towards predetermined learning goals. Learning outcomes of students were included cognitive aspects (knowledge), affective (attitude), and psychomotor (behavior). In this study, in addition to changes in knowledge, students had also experienced changes in attitudes and behavior.

Based on the results of classroom action research by using the Discovery Learning model to improve the activity and learning outcomes of mathematics learning in primary school grade 5 of SD Negeri Randuacir 02 Salatiga can be said to be successful. Supriyanto

(2014) also concluded the improvement of primary school student learning outcomes in mathematics lessons by implementing discovery learning.

**Conclusion**

The discovery learning model can improve student activity and learning outcomes on math subjects in primary schools. By implementing the model, the teachers are no longer use the lecture method but also plays or learns while playing by finding answers to questions or problems given by the teacher in groups or individually. Students were active when giving responses, solving each question, presenting in front of the class, and understanding the material explained by the teacher.

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