

Learning motion through the learning cycle model

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Abstract. Most of the third-grader in MI Darussalam, Caringin, Bandung have not reached the standard score of learning IPA (Science). This occurred due to the teacher-centered method used in this school. The aim of the study is to describe the students' activity during Science subject and to analyze the result of the study after the students were treated using the Learning Cycle model. The subject of this research were 25 third-grader Class A students at MI Darussalam, Caringin, Bandung. Through the observation sheet, the activity and the test result on Science subject are obtained. The result showed that 96% of the students (24 out of 25) have passed the standard score while the other 4% of the students (1 out of 25) have not passed the standard score. The achievement of 96% of the students passing the standard score is categorized as a high-achieving category while the mean of the students' score is 83.08, categorized as excellent. These results mean that the Learning Cycle model can improve students' understanding on the 'motion' chapter.

1. Introduction

In general, science talks about natural phenomena that makes it easier to explain during teaching process [1]. On basic level, basic science is usually considered as the first phase before the students are exposed to further knowledge. Learning basic science helps students to understand themselves and their environment, and to understand further possible prospects for their future life [2]. Hence, science subject is important for students [3]. During Science class, teacher should not encourage students to memorize the materials. Instead, teachers should create a long-term impact to their students that affect their way of learning [4]. The concept of science problem-solving might be applied to science class. Any scientific development will forever be stagnant without the development in science learning [5]. For years, science has been considered as a difficult subject. This led students to be demotivated in learning science and resulted to produce low-qualified students. An effort is needed to retain the quality of science learning and teaching, for example, choosing a proper teaching model to increase the students' science score. Before the main research, a prior research was conducted. Researcher interviewed the homeroom teacher of the third-grader at MI Darussalam, Caringin, Bandung. The teacher told researcher the students' science score were mostly below average, especially in the chapters that need an in-depth understanding. The students themselves did not pay a good attention during the teaching process, which led the students to be underqualified in science subject. These factors triggered the researchers to figure out the best way



to teach science to the students [6]. Using a proper learning model may guide the students to be actively involved and to be more attached to the subject, as it will lead them to grow intellectually [7]. Moreover, using interesting models of learning will strengthen the students' understanding of the materials. Hence, students' score in science will be increased [8]. One of the interesting models of learning is the *Learning Cycle* model [9]. The Learning Cycle model is effective to be used in learning, that researchers assume it will be best applied in science subject [10]. A lot of researchers have been using the same model to teach various subjects, one of them is in mathematics. A research in mathematics used the Learning Cycle method, and the result showed that the students in experimental class (the one using the Learning Cycle model) graded better than those in regular class [11], [12]. Similar method was applied by [13], [14] that the students in experimental class (the one using the Learning Cycle model) graded better than those in regular class. Aside of its effectiveness, using the Learning Cycle model leads to a better classroom involvement [15]. Project-based Learning Cycle may increase students' scientific skills [16]. This research is different with some similar research. This research was conducted to describe the motion learning process through the Learning Cycle model and to analyse the students' grade after the students were given the treatment.

2. Methodology

To analyze the problem, researchers used the classroom research. Classroom research is used to find out the result of the students' understanding after the treatment given in order to track students' progress, skills, and their problems during learning process [17], [18]. The subjects of the research were 25 third-grader at MI Darussalam, Caringin, Bandung. Researchers used observation sheets and the students' test score as the instruments of the research. The learning and teaching activities were recorded in the observation sheet [19]. The test was conducted to obtain the score after the treatment was given [20]. The procedures during the research were based on the Learning Cycle model according to Baybee [21] the first phase of the research is the engagement. Teacher tried to get the students to be involved more in the learning process and helped the students building their curiosity to the material. After the students are engaged to the material, teacher moved to the exploration phase, where students worked in small groups without any direct teaching from the teacher. Stepping up to the phase of explanation where teacher encouraged the students to explain what they observed in their own words. Then the teacher moved to the phase of elaboration where the students are encouraged to expand the concept and their skills in a whole different situation. Last, the teacher evaluated the students. Teacher analyzed the students' understanding and helped the students to evaluate themselves.

3. Results and Discussion

The application of Learning Cycle model started with grouping. Teachers divided the students into 6 groups, each of 4 students. Teachers then motivated the students to do the group project responsibly, build the teamwork nicely, and excel the project. During the engagement phase, the teacher stimulated the students with pictures. The students analysed the pictures about rolling and falling, as shown on Figure 1 and 2.



Figure 1. Rolling



Figure 2. Falling

Through Figure 1 and 2, teachers motivated the students by asking several daily-related questions in connection with Rolling and Falling. The students told their story and answered the questions enthusiastically. In *exploration* phase, the students were allowed to work in group supervised by the teacher. The students tested their hypotheses, write down their analysis and ideas through practices. The students are the representatives of each group, trying to analyze the rolling motion using coins. This experiment was done based on teacher's instruction. In this phase, the students were very excited about the experiment. This research is supported by a prior research, written by Fifatul in 2006, stated that the Learning Cycle 5E model helps increase students' involvement in classroom activity. The next is the *explanation* phase, teacher encouraged the students to try explaining what they analyze by themselves. In *elaboration* phase, students developed the concept through experiment. The teacher spread out a worksheet to each group as a guide to do the experiment. Each group had to prepare the experiment tools such as book, pen, and a piece of HVS paper. The teacher asked every group to do the experiment based on the worksheet they received. The experiment was divided into two sessions. During the first session, each group's representative went into the front of the class to demonstrate the motion of falling. The tools used were a book and a piece of HVS paper. The paper was on their left hand and the book was on their right hand. They were asked to drop both of the paper and the book down at the same time. During the demonstration the rest of the teammate analysed the demonstration. After the demonstration, all team member discussed the analysis and wrote down their analysis. The students seemed enthusiastic during the discussion. This was supported by the result of the research [22]. After writing down their analysis, the students chose one representative to present the result of their discussion in front of all class member. During the presentation, teacher guided the flow of the presentation including conducting a question and answer session. Teacher also helped the students who incorrectly assumed or did not understand the whole concept. After the presentation, the students returned to their respective seat to continue onto another experiment, dropping a book and a pen at the same time from different height. The pen was dropped from the height similar with their chest, while the book was dropped from the height similar from their knee. In *evaluation* phase, the students concluded the day's activities by answering the questions from the worksheet. After that, the teacher concluded the materials and gave the students an access to ask for any further questions. The analysis of students' progress after being treated using the Learning Cycle model is shown on table 1.

Based on the analysis after the Learning Cycle model is applied, the involvement of students in classroom activities was increased. This led to a better achievement on students' understanding, proven by the number of students passing the standard score. This proves that the Learning Cycle model helps increasing the students' understanding and involvement during learning, as proposed by the research of Baviskar [23].

Table 1. Students' Progress after the Learning Cycle Model

Data	Quantity	Percentage (%)
Students' score less than (<) the standard score	1 Student	4%
Students' score equals with (=) the standard score	-	-
Students' score more than (>) the standard score	24 Students	96%
Students' overall score	2077	-
Mean	83.08	-
Number of students passing the standard score	24 Students	96%

Based on Table 1 above, 24 out of 25 students (96%) passed the standard score while 1 out of 25 students (4%) had not passed the standard score. The number of 24 out of 25 students (96%) is categorized as a high-achieving category. The mean of 83.08 is categorized as excellent.

4. Conclusion

The application of Learning Cycle model is done by teacher's engagement to its students, building their interest and curiosity by giving them pictures about falling and rolling. The exploration phase is done by allowing students to do some experiments by themselves. At the explanation phase, teacher encourages the students to present their discussion result in front of the classroom. At the elaboration phase, the students expand their concept and understanding in a whole new situation. And students conclude the activities during the evaluation phase. The mean of students' post-test score is 83.08, categorized as excellent. This shows that the Learning Cycle model helps to increase students' understanding toward a material.

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