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Impact of Problem-Based Learning on Student Achievement in Economics Course

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Abstract

The purpose of this study investigated and understand impact of Problem-Based Learning on students' achievement in the economic course through lesson study. This kind a classroom action research in the subject of money and bank in order to participate in solving problems related materials. The Subject of this study is Grade 9 student in academic year 2016/2017. The implementation classroom action research conducted in two cycles comprising Planning, Implementation, observing, and reflection stages. The result of this study that Problem-Based Learning through lessons has been well implemented including the completeness of the learning tools and preparing the Lesson Plans before teaching on each teaching material. Based on the results of the implementation of lesson study using Problem-Based Learning model can be concluded that Problem-Based Learning through on the learning can improve student achievement.

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INTRODUCTION

Student achievement has become a hot topic in education today, especially with increased accountability for classroom teachers. The ultimate goal for any teacher is to improve the ability level and prepare students for adulthood. Defining student achievement and factors that impact progress is critical to becoming a successful teacher (Pooja, 2017).

Refers to the Curriculum 2013 that a curriculum has just been enacted by the government starting the academic year 2013/2014 which has the goal of preparing Indonesian people to have the ability to live as individuals and citizens who believe, productive, creative, innovative, and affective, and able to contribute to the life of society, nation, state, and civilization of the world (Permendikbud No. 69 Year 2013).

Student achievement measures the amount of academic content a student learns in a determined amount of time. Each grade level has learning goals or instructional standards that educators are required to teach. Standards are similar to a 'to-do' list that a teacher can use to guide instruction. Student achievement will increase when quality instruction is used to teach instructional standards (Gray, 2017). Student achievement is group of elements or measuring student success. For the purposes of this study, student achievement is measured by high-stakes test scores, high school graduation and dropout rates, and the percentage of students who attend post-secondary educational institutions (Sable, 2016).

There are many variables that can impact successful student achievement, but the most critical are classroom instruction and learning disabilities. It is important to remember that all students do not learn the same way or at the same rate. Students are like leaves on a tree; there are no two exactly the same. Just as a leaf comes in unique colors, shapes and sizes, each student has their own unique learning style. You must use a variety of teaching methods and understand the background and individual needs of each student (Carter, 2017).

Student achievement is impacted on numerous levels including students' personal factors, their interactions with others such as parents, teachers, and administrators, and lastly the larger systems that surround the student e.g. school districts, neighborhoods, local economy, political policy, and multicultural relations (Bertolini et al., 2012).

Interaction between students and teachers also impact on student achievement related summative assessments to measure learning goals, models and criteria are shared in advance, assess before the instruction begins, offer choices for mastery, provide feedback, teach students to critically develop their own learning goals and measure their own progress, allow new evidence of learning to replace the old samples (Bertolini et al., 2012; Blankstein, 2010), Cooperative learning (Marzano et al., 2001; Slavin, 1991), Differential Instruction for students (Tomlinson & McTighe, 2006).

Currently, in the context of education, students are required to further explore knowledge and information beyond the material provided by teachers and more independent in the learning process. Economic subjects is one of the subjects that are always experiencing growth so that students also have to update the latest developments of the material being studied. Therefore, it is necessary for creativity by finding and applying various teaching techniques so that students can absorb more subject matter. As a life skills, economics should not only be

memorized and forgotten but also be understood so it can be applicable in daily lives (Wulandari & Narmaditya, 2017). Lessons prioritize the development of capabilities and information processing. For that student activity needs to be improved by taking an active role in completing the task of learning by working small groups and explain ideas to others.

Teaching and learning process does not only increase student's knowledge but also develop student's creativity, critical thinking skill, characters which are included the character to has responsibility, social skills, tolerance, productivity, and adaptive skills. Wulandari & Narmaditya (2016) suggest to using interactive model to understand difficult concept in economics, such as, simulation and role playing and other learning model. Sato (2014) states that what is required to develop learning is authenticity, which means that learning should be adjusted to the characteristics of the learning itself.

In order to improve learning quality, teacher can implement Problem-Based Learning (PBL) which carried out through Lesson Study (Ashari et al., 2015). Lesson study is an effort to improve learning processes which is conducted by a group of teachers or lecturers collaboratively and continuously in planning, doing, observing, and reporting the learning outcomes (Cerbin & Kopp, 2006; Ono & Ferreira, 2010).

Problem-Based Learning is teaching and learning model that provide contextual problems to the classroom, so that teacher can stimulate students to learn (Sutirman, 2013). Problem-Based Learning is a teaching and learning model that present many authentic problems and meaningfull to the students (Arends, 2012). Teaching and learning process using Problem-Based Learning challenges students to learn, work in group to look for the solution in contextual problem. Teaching and learning process is directed to student in order to develop student's ability in making solutions systematically.

Problem-based learning is an approach to teaching and presenting materials such that the student is given a 'situation' (e.g. a problem) that he or she must solve. problems are framed in the context of a particular subject in economics, for example and presented in conjunction with a set of core theories and models supply and demand, elasticity of demand, comparative advantage, monetary and fiscal policy-dependending on the problem. Each unit starts with an entry document that places the student in a position to enact policy (or advise those who will enact policy) and then presents the student with a 'problem' that they are now facing (Smith & Robert, 2007).

As a learning model, Problem-Based Learning has several aspects, or strategies, that support its popularity. Problem-Based Learning focuses on students learning in a hands-on way instead of memorizing facts. It also urges children to use high-level thinking skills, which require them to analyze, create, defend, or evaluate. Students are socially active and learn to work as part of a group, asking and answering questions and supporting others' thoughts. They also find Problem-Based Learning experiences more engaging, motivating, and fun (Linde, 2017).

Problem-based learning begins with the teacher assigning an open-ended problem with more than one variable solution. Students then investigate the problem, often within small groups, with support from the teacher. Problem-based learning can vary in length from one class to an entire semester, depending on the

complexity of the problem. Problem-based learning, first used in medical school, now is used throughout all levels of education. Here are examples of problem-based learning at various levels (Gardland, 2017).

Problem-Based Learning is a great tool to use to help students delve deeper into the topic that you are teaching them. It also allows the student to connect the real world to the concept that you want them to learn. When the student is confronted with a real problem to solve (or try to solve), it also helps develop critical thinking skills. It also creates a new level of student motivation because the student 'owns' the problem that is presented to them, and finding the solution to the problem becomes important to them. Additionally, it might be helpful to remember that Problem-Based Learning doesn't necessarily mean that the problem has to be solved. Sometimes Problem-Based Learning is used to help the students think differently about a problem or to engage higher ordered thinking skills.

Problem-Based Learning has five characteristics that need to be considered by teachers before designing the lesson plan using PBL model. The first characteristic is presenting essential question that is included problems. The others characteristic are PBL focuses on the relationship between interdisciplinary study, authentic investigation, publication of the artifact, and collaboration. There are five operational steps from PBL, (1) giving orientation about the problem that will be discussed by student, (2) organizing students to do research, (3) helping students to investigate the problem, (4) developing and exhibiting the artefact, and (5) analysing and evaluating problem solving process (Sutirman, 2013).

Through the use of Problem-Based Learning instruction that is organized and driven by real life contexts as in Context Based Learning (Overton, 2007). Problem-Based Learning is a learning method that uses problems as a basis for students to improve their problem-solving skills and to obtain knowledge (Inel and Balim, 2010). Problem-Based Learning allows students become active learners and makes students responsible for their learning (Hmelo & Ferrari, 1997). PBL group gained higher conceptual learning than the traditional group. However, there was no difference between their attitudes (Sahin, 2010).

Tarhan and Acar (2007) studied the effects of problem-based learning method upon eleventh-grade students' academic success. This study also revealed a significant difference between the students' academic success in favor of the experimental group. Gordon et al. (2001). stated that problem-based learning, which is a constructivist method, is a valuable instrument that can be used to enhance elementary school students' success. The previous studies on the problem-based learning method, Chang (2001) noted in a study that if applied well, the problem-based learning method may have positive effects on students' learning or improvement of their academic achievement.

METHOD

This type of research is a classroom action research based on Lesson Study. This research using qualitative descriptive approach. Classroom action research defined as one of the problem-solving strategies that utilize concrete actions and capacity building processes in detecting and resolving problems. This research was conducted in two cycles through four stages: action plan, implement, observe, and reflection. The subjects of this study were students of Grade 9

SMPN 5 Kediri in the subject of money and bank. The data collection tool uses, observation sheets, field note sheets, test questions, questionnaires, and documentation.

Data collected by using test questions, interviews, observation sheet. Data analysis can be done in the following way: (1) Classify data by grouping, selecting, focusing, and simplifying data according to its type from the beginning of data collection to the preparation of reports; (2) Presentation of data that has been selected and will be presented in the form of simple information. The information in question is a description of the learning process and the results obtained from the combination of observation and interview data; (3) Conclusion. From the exposure of the data will be obtained conclusion in the form of a short sentence but has a broad meaning. From the results of the conclusions are used to test the truth and match the meaning of the data obtained in the field.

Assessment of student achievement obtained from the cognitive test score at each end of the cycle. To know the improvement of student learning outcomes seen from the completeness of student learning outcomes in each cycle consisting of individual completeness and classical completeness. Students expressed (individually) in learning when the final grade reaches ≥ 70 . On classical completeness expressed when the value of classical completeness reaches 85%.

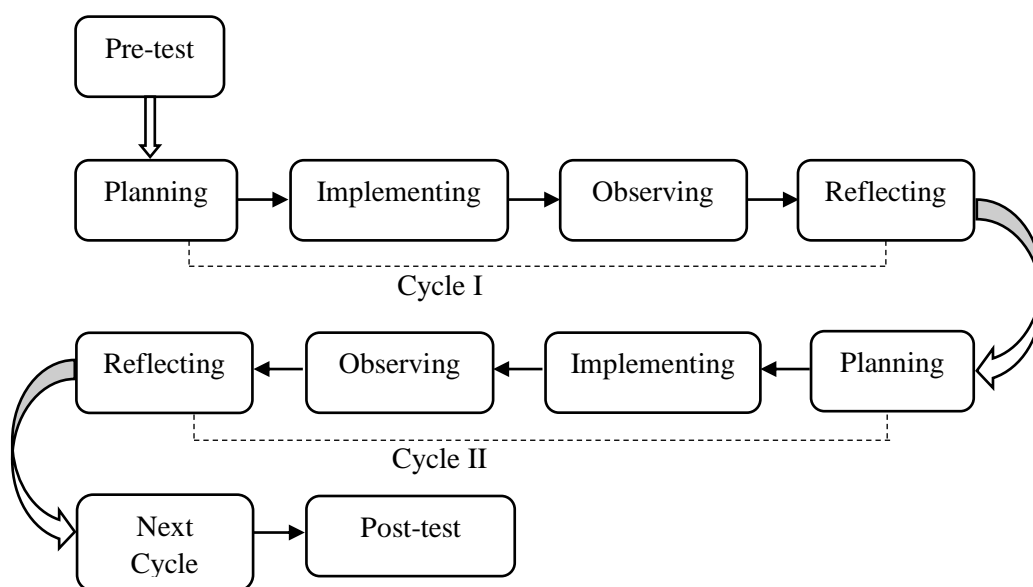


Figure 1: Research Design

RESULT AND DISCUSSION

Implementation Problem-Based Learning through Lesson Study

The implementation Problem-Based Learning through lesson study conducted by four cycles. The learning activities stages consisted of: identify topic, develop and present the report, analyse, and evaluate the Problem-Based Learning. The learning process through lesson study presented in this table.

Table 1. Schedule implementation through lesson study

No	Cycles	Stage Plan	Do	See	Learning Materials
1.	I	Plan I, September 8, 2016	Do I, September 9, 2016	See I, September 9, 2016	Money
2.	I	Plan II, September 15, 2016	Do II, September 16, 2016	See II, September 16, 2016	Bank
3.	II	Plan III, September 20, 2016	Do III, September 21, 2016	See III, September 21, 2016	Bank
4.	II	Plan IV, September 22, 2016	Do III, September 23, 2016	See III, September 23, 2016	Other Financial Institution

The implementation of lesson study started from the plan stage of discussing the lesson plan together with observed for advice and feedback. In the plan stage follow lesson plan material about money and banking, learning sheet, instrument for Lesson Study, and teaching materials. The prepared format includes the observation format and order of implementation Lesson study. This format is structured to document all lesson study activities so that accurate reflection can be done. In addition, lesson study team members also plan and develop complete learning tools and instruments for the purpose of the implementation phase (plan), namely the preparation of lesson plans, material handouts, Student Activity Sheets, observation sheet of teacher activities and students in Problem based learning.

In the next stage is implementation phase (do) by teacher model implementing lesson plan before. The preliminary in this stages suggest a teacher model giving perception, motivation, and explain the learning model. The implementation of learning is divided into five activities namely the initial activity core activities consisting of stages of student orientation to the problem; organize students to learn; guide individual and group investigation; develop and present the work; and analyze and evaluate the learning process; and the final activities. This is in accordance with the lesson plan with the problem based learning model, with the help of three members of the lesson study team will observe activity undertaken by teachers and students in the learning process.

At the reflection (See) stage, reflection on learning outcomes is conducted in accordance with the implementation of lesson study activities and analyzing the overall learning that is done. At this stage jointly implemented by all the components that are present both groups of subject teachers and observers, because the results of discussion and analysis can be used as input to improve or revise the next lesson.

Based on the observation result, the learning process did not found the basic problem among the implementation. Challenges in implementation of lesson study, especially for grade Junior High School, the students were still less active in group discussions and class discussions. Students are still less familiar with group learning especially with groups that are not in accordance with the wishes of students. Students are still inclined to work individually and ask for immediate

difficulties to the teacher instead of being discussed first with group members. Timing of activities by teachers has not been effective, especially for discussion time and time for presentation. During the discussion, the teacher did not give the confirmation of the time given for the discussion, so the students stalled during the discussion. The teacher does not provide time settings so that there are empty times that students use to joke themselves. Students are still difficult to express the reasons for the answers given, still ashamed to ask questions, answer questions or respond.

A learning process through Lesson Study that was conducted in this study was the second experience. Through Lesson Study, we learn much from learning facts found. Lesson Study becomes a means to improve learning process and functions as a means of learning for lecturers who are involved in the process, from planning the lesson plan until implementing the planned lesson plan (Asyari et al., 2015).

Impact Problem-Based Learning on Student Achievement

Problem-based learning is defined as learning as a result of a study process to comprehend or solve a problem (Dabbah et al., 2000). In this process, students are in charge of their learning and gain access to knowledge through research and exchange of ideas with their peers (Inel and Balim, 2010). The implementation of this study can be seen in the table below.

The implementation of Cycle I is conducted in two meetings. Based on of the preliminary study, pre-test conducted by students at the beginning of learning (before action) obtained data as follows:

Table 2. Students' score before action

Pre Test	Score
Average Score	68,80
Percentage of mastery	50,6%

Source: Data Processed, 2017

While the post test results conducted by students after the following actions:

Table 3. Post-test after action

Post Test	Score
Average Score	80,70
Percentage of mastery	70,25%

Source: Data Processed, 2017

From the above data it can be seen that the average student's post test score is 80,70. In addition, the percentage of students' completeness in post-test cycle I is 70,25. This means that the percentage of classical completeness in cycle I is still not reached 85%. To measure the achievement of learning through problem-based learning done with three observers.

Comparison of Cycle I and Cycle II

Based on the results of observation on the achievement of teacher action in applying the lesson with problem-based learning model and student achievement in learning activity during cycle I and cycle II, as well as data that has been collected and analyzed, the percentage of student achievement showed improvement. The implementation of action research activities in the application with problem-based learning model can be seen below:

Table 4. Comparison of cycle I and cycle II

Cycle	Achievement of action implementation	Percentage improvement in achievement of action
I	88%	12%
II	100%	

Source: Data Processed, 2017

Based on the results of preliminary observations conducted by researchers, it is known that the daily test score of many students under the minimum completeness criteria set at SMPN 5 is ≥ 70 . Teachers have used learning models of discussion, lectures varied, and practice questions. However, student learning outcomes are still not satisfactory and meet the Minimum Criteria of Completeness (*KKM*) that has been established.

In group discussion activities there are still many students who joked with other group members. Discussion activities only dominated by certain students only so that other students are still less daring to express their opinions. At the end of the first cycle of learning when the teacher gives the test (post-test) many students who are not ready to carry out the test it is seen from the many students who were caught cheating the answer of his friend. To understand the subject matter of economics, students do it by memorizing. How to learn students will affect the learning outcomes to be obtained. Learning outcomes obtained by students are not only influenced by the way students learn, but also influenced by how to teach teachers that can include learning methods, resources and learning media used.

Tarhan & Acar (2007) studied the effects of problem-based learning method upon eleventh-grade students' academic success. The previous studies on the problem-based learning method by Chang (2001) noted in a study that if applied well, the problem-based learning method may have positive effects on students' learning or improvement of their academic achievement.

CONCLUSION

The result of observation of the implementation in cycle I in good category while the observation result of the implementation of the second cycle on the category is very good. Implementation of Problem Based learning through lesson study can improve student achievement, this can be seen from the increase of observational student achievement cycle I and cycle II. Problem Based Learning through lessons has been well implemented including the completeness of the learning tools and preparing the Lesson Plans before teaching on each teaching

material Based on the results of the implementation of lesson study using the model of learning Problem Based Learning model can be concluded that the use of lesson study using Problem Based Learning model on the learning can improve student achievement.

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