

Problem Based Learning as an Alternative Method to Instill Cooperation: a Research Study

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Abstract— Implementation of learning process ideally does not only cover the cognitive but affective aspects also need to be considered. The attitude or character of the student needs to be applied in learning process. Among the characters that need to be applied is the cooperation character. Problem Based Learning (PBL) is one of cooperative learning model that can develop the cognitive and affective aspects of students in learning. This study discussed that the PBL can improve students' cognitive competence while applying the cooperation character to the students. This study explains the benefits of PBL in learning, the opportunities to be applied in learning and the maturation that teachers face in applying PBL to build cognitive as well as student co-operation

Keywords— learning, PBL, cooperation .

I. INTRODUCTION

Nowadays education is more likely to lead to cognitive development. While the demands of education in life in this century higher. The progress of this era has had a great impact on life. In addition to the cognitive abilities required cognitive skills or attitude is needed in life. It describes the abilities needed in life in the 21st century: 1) the skills to learn and make innovations; 2) the ability to work and survive 3) the ability to get information through media, and access technology[1]. Thus, to achieve it all needed cooperation so that all can be achieved.

In cooperative learning should be taught through learning processes so that students can be unbeatable. Cooperation should be instilled to students so that students can build interaction relationships and reduce the problems that arise in relation to student co-operation. With such habits students are expected to understand the importance of cooperation in life and begin to get used to working with others in life.

Among the learning models that can improve cognition as well as improve the character of students is a model of Problem Based Learning (PBL). Some experts reveal that the various advantages of PBL are improving the cognitive aspect of students and building student cooperation in learning.] explain that using PBL in learning process make students easily

work with classmates to solve problems that help developing knowledge and problem solving, reasoning, communication, and self-assessment skills [2]. Agreed with explains that PBL motivates students to collaboratively learn to find solutions in solving real-world problems and in the process of learning, PBL encourages cognitive development and critical thinking [3].

This article aims to understand the role of PBL in instilling student cooperation attitude in learning and also apply it so that the influence of PBL in giving student cooperation is revealed. Furthermore, the definition of PBL will be explained further, this article will offer some solutions that can be used as a learning method and know the effect of PBL on student cooperation The advantages and disadvantages of each PBL will be discussed to see the suitability with the setting and type of learners

II. RELATED WORKS

A. The Definition of PBL

Problem based learning is a student-centered method that is constructivism and integrates real problems into learning resources. "Problem-based learning is a student-centered approach that organizes curriculum and instruction around carefully crafted "ill-structured" and real-world problem situations" [4]. The point is learning with PBL is the learning that uses problems in everyday life as a learning resource and is student centered. Furthermore, explaining problem-based learning is student-centered learning that conforms to the principles of constructivism [5]. The above opinions are supported which explains that PBL is a learning model that allows students to learn while actively engaging with problems. Usually, the problems used are problems that exist in everyday life [6].

From the various explanations of experts above, it can be concluded that PBL is a problem-based learning that requires students to think creatively in searching for solutions. Problem based learning is a model of student-centered cooperative learning and is

expected to be able to systematically analyze through the knowledge gained.

B. Benefits of PBL

Problem based learning, which is a model of cooperative learning, has many benefits. Problem-based learning has a great influence on student achievement in two important areas of understanding of scientific methods and creativity [4]. The point is that with PBL students are able to have a good achievement in learning. Furthermore, PBL can provide learning experiences so that students are able to think systematically and foster creativity.

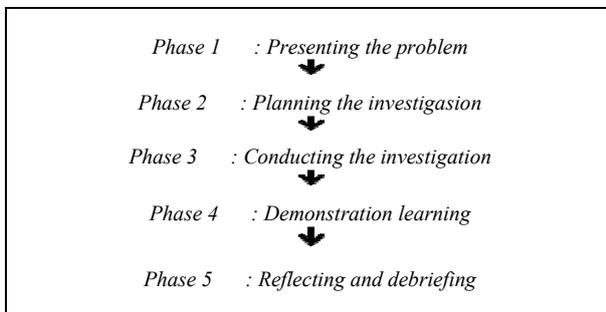
In addition to the above benefits, PBL also has other benefits. The benefits of PBL are explained, such as: 1) being able to think critically, 2) being able to solve problems in the real world 3) being able to find, evaluate and use learning resources well, 4) being able to work together in group, 5) skilled in communicating orally or in writing 6) have an interest to learn continuously [7]. Furthermore, Problem based learning (PBL) is explained is a learning that provides inquiry and communication skills, mutual cooperation with other students and involves research to solve real problems [8].

From the above experts' explanations, we can conclude that learning using PBL besides can increase learning achievement, systematic thinking and problem solving, problem based learning can also train students' soft skill in communicate and cooperate in group.

C. Steps of PBL in learning

Stages of PBL learning models: (1) Presenting the problem, (2) planning the investigation, (3) conducting the investigation, (4) demonstration learning, and (5) reflecting and debriefing [4]. For more details, PBL exposure is presented in table 1.

TABLE I. SINTAK PROBLEM BASED LEARNING



For detail information about the learning steps can be seen in table 2.

TABLE II. STEPS OF PROBLEM BASED LEARNING

Steps	Activities
Presenting the problem	Introducing the problem, dividing the group, discussing what they already know about the problem, making a list of questions, and writing their initial thoughts and hypotheses about the problem.
Planning the investigation	Students are asked to work in groups to plan inquiries and additional tutorial teachers to help students plan an investigation.
Conducting the investigation	Students seek information and report to groups
Demonstration learning	group presentations or final product displays
Reflecting and debriefing	Explain again about learning

D. The Definition of Cooperation

In life, not everything can be done alone without the help of others. To do activities that cannot be done alone, it needs cooperation with others. Cooperation is an effort undertaken by humans to achieve common goals. Cooperation is an effort to achieve goals together [9]. Cooperation is a joint effort between individuals or groups to achieve certain goals. The point is that in achieving a common goal and to make it easy in accomplishing the goals, there should be efforts made jointly [10].

Cooperation arises because of the same interests among people so that they strive to achieve goals together. Johnson 81 defines co-operation as an activity in which individuals within it have mutual interests and are interrelated so as to create a positive relationship. Cooperation consists of positive goal interdependence [11]. That is, cooperation can be done by working toward a common goal, or cooperation can be done with the actions of all group members to achieve their goals.

In the learning process, cooperation aspect is necessary. Cooperation which is meant in the learning process is cooperation with the group so that students can complement each other's ideas with the idea of a group of friends for the better. Cooperative learning defined as learning by using small groups so that students can work together to maximize individual learning and group members' knowledge [12]. The point is to learn in groups of students will help each other between friends so that knowledge of students can be more developed because in the group there is a discussion among group members. The main purpose of cooperation is to achieve the common goal with the group and in the process to be better because it is complement. Cooperation is to give a positive effect because in it there is a transfer of knowledge from friends or members of a complementary group [13].

From the experts' opinions above, it can be concluded that cooperation is an effort made by a group of humans to achieve common goals. Cooperation can also be interpreted as an activity that aims to be able to achieve the goal.

E. The importance of cooperation in learning

In the learning process, cooperation aspect is necessary. Learning activities undertaken with cooperation are expected to improve students' attitude and knowledge skills. Cooperation is indispensable in human society, and much progress has been made to understand human decisions [14]. The above opinion explains that cooperation is an important element in life so it should always be improved. Cooperative efforts are more positive than competitive and individualistic, cooperation brings students to a higher level [15].

Another reason for cooperative learning to be improved is the number of negative impacts resulting from frequently used competition by the teacher in the classroom. Generally, competition occurs because learning is individualistic and competitive. In the competitive type of learning, there are a lot of unfair and ineffective competitions in the class [16]. This means that in the classroom student try to show the best, without caring about other friends.

Here is a comparison of cooperative and competitive learning [17].

TABLE III. COMPARISON OF COOPERATIVE AND TRADITIONAL LEARNING

Cooperative learning	Traditional learning
<ul style="list-style-type: none"> • Support • Redirect the question • Teach social skills • Manage conflict • Structure of interdependence • Help students evaluate group work • The structure of the controversy • Provide resources 	<ul style="list-style-type: none"> • Direct • Question answer • Make rules • Discipline • Encourage self-reliance • Individual evaluation • Navigate readings and discussions • Serves as the primary source

F. The indicators of cooperation

Cooperation has several components inherent in it and inter connect between individuals in groups to achieve goals. There are five important factors in cooperation: (1) positive interdependence, (2) direct communication (3) individual roles (4) small group & interpersonal skills, and (5) self and group evaluation [18]. This opinion is supported The cooperation has five characteristics, that is: (1) positive interdependence, (2) face-to-face promoting interaction, (3) individual accountability and personal responsibility, (4) interpersonal and small group skills, and (5) group processing [19]. Referring to the experts' opinions above, the indicators that can be taken are: (1) positive dependence, (2) direct interaction or face to face, (3) individual responsibility and personal responsibility (4) interpersonal skills in small groups, and (5) group processing.

G. Opportunities and challenges of PBL in growing student cooperation

PBL opportunities to grow and improve student co-operation are promising, because PBL learning is cooperative learning. Cooperative learning is a structured work system or learning-group that expects students to learn together with small groups. Philosophy of PBL is learning is a constructive, independent, collaborative and contextual activity [6]. Because in PBL learning that is cooperative and collaborative, the opportunity of PBL in growing and improving student cooperation is very big, because success or not PBL learning process is determined by cooperation between teacher and student and also cooperation among student in group. By studying in small groups, students will be more accustomed to working with other students. From that habit, students are expected to implement cooperation in everyday life and make cooperation is an important element in life.

In a study conducted explained that problem-based learning can enhance cooperation and collaboration between students [20][21][22][23]. In another observed study explained if PBL can improve student cooperation in group to solve the problem proved by increasing of student learning percentage in terms of cooperation which originally 77,63% become 86,25% [24]. Cooperation is important in group work in learning; PBL also encourages students to study alongside their group members [25].

While the challenge of PBL learning is teachers are required to be innovative and always present the latest problems and must be able to manage the class. Teachers should be able to group students into small groups. If the division of student groups is not considered, cooperation in PBL learning will be difficult to happen. In addition, learning with PBL also requires considerable time. Teachers should be able to manage learning well so that PBL learning can work effectively. Another obstacle that may be another challenge is that teachers should be able to provide an explanation of the importance of solving problems learned so that students are not bored and students become more enthusiastic.

III. CONCLUSION AND SUGGESTION

1. Problem based learning is a model of cooperative learning which is focused on students, and it uses real problems as learning resources.
2. The benefits of PBL include developing students' ability to think critically, training students to think systematically, improving communication, increasing group collaboration.
3. The steps of PBL at least meet the following stages: Presenting the problem (2) planning the investigation, (3) conducting the investigation, (4) demonstration learning, (5) reflecting and debriefing.

4. Cooperation is an effort made by humans to achieve goals together.
5. Cooperation has an important element in it that cannot be separated, which are: (1) positive interdependence, (2) face-to-face promoting interaction, (3) individual accountability and personal responsibility, (4) interpersonal and small group skills, (5) group processing.
6. Problem based learning has a great opportunity to foster student cooperation attitude because students are required to study with small groups. Behind the opportunity, the PBL also has challenges to be solved so that learning can be effective, including teachers are required to be innovate and update the progress of the problem to be addressed, the PBL takes a lot of time and the teacher's ability to explain the importance of the problem to be solved.

In the learning process, it will be better if problem based learning can be more effective again to optimize learning process. Problem based learning can also provide other positive effects such as improving cooperation and other social aspects because students can interact with friends in the middle of learning process. In addition, PBL is expected to be examined further so that it can be known the benefits of problem based learning even further.

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