Implementation of Problem Based Learning Model on Social Science Subject on Junior High School Students in Semarang, Indonesia

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Abstract---The aim of this study is to notice the effectiveness of problem-based learning method applied on students at seventh grade in Junior High School 25 Semarang on Social Science subject. Data was gathered through observation, interview, questioner, documentation and student test result. Responds analysis used quantitative descriptive analysis while test result analysis employed t-test. The result of this study showed that problem-based learning method was profoundly beneficial and enjoyable for students. This was demonstrated by the high score shown in student responds indicators encompassing interest, learning responds, cooperation, responsibility, activeness, understanding, and student knowledge after learning process conducted as well as in student achievement which presented a rise. Average score achieved in factual learning was 74.59 while problem-based learning recorded 86.56. The average deviation from those learnings was -11.969. Thus, due to sig> 0.001, there was a deviation on students' achievement in between factual and problem-based learning.

Keywords--- *Problem-Based Learning Implementation, Social Science Subject, Students Respond, Student Achievement*

I. INTRODUCTION

Social Science is a primary subject in every education level conveying that every student on elementary even secondary level should learn Social Science. This is because of the skills required in everyday life are provided by the subject. To achieve that purpose, effective and efficient learning process is demanded [1]-[3]. Learning process is a process involving a set of educative activities conducted by teacher and student. Social Science subject at school develops student potential to become a citizen who has adequate attitude, skill, and knowledge to take part in social life [5], [6]. That is why Social Science subject should be revitalized to make it varied in terms of learning model and strategy that will result in active learning.

Learning process has tended to centralize on teachers (teacher oriented) valuing them as the only primary reference who know everything while students have just accepted what teachers inform, causing lecture considered

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as the only most suitable learning strategy [7]. This is what fails learning expectation. Students get much theoretical knowledge and they behave passively whereas teachers act actively on providing information. [8]–[11]. Actually, this situation exerts an effect on student cognitive achievement. Planning of Social Science subject is expected to accomplish satisfying result in both quality and quantity.

Social Science subject is supposed to vary in learning model and strategy to optimize student achievement. So, appropriate learning strategy and approach is required to achieve the Social Science learning objectives [12]. One of the learning models that can be applied to produce active and meaningful learning is Problem-Based Learning. From a few student-centered learning models, active learning is the one that can actively involve student on learning process. Samadhi [13] claimed that active learning is all kinds of learning form that enable students to play an active role by themselves both in peer or with teacher interaction.

Learning process with Problem-Based Learning is considered to be the upmost effective for Social Science subject. It fosters student's understanding, curiosity, critical thinking, and new knowledge finding. Students do not just learn what teachers provide them, but also have an ability to conduct peer discussion and find solution as they are capable of working together with others, delivering their argument, and asking about what they have not comprehended yet during study. Besides, a teacher can assess how student can identify a problem as well as their problem-solving skill [1], [3].

Several results of study related to the application of Problem-Based Learning revealed that this model can encourage students to achieve the learning objective. From Dhany [14], it was concluded that through Problem-Based Learning, student's problem-solving skill on exceeding the minimal criterion of study completeness fulfills valid and effective criteria. From Ratna study [15}, a conclusion that Problem-Based Learning with interactive CD can lead students to achieve study completeness beyond the minimum criterion established on desirable themes of study was got.

Innovation of Problem-Based Learning on this study would be constructed from learning principles that will encourage desirable values on social life such as interaction, creativity, innovation, teamwork, communication, and presentation skill [9], [12], [16]. According to Handayani [17] Problem-Based Learning is a learning that employs real problem as a context for student to learn how to think critically, and solving problem skill as well as to grasp knowledge and essential concept of subject.

As a model, Problem-Based Learning is a kind of classroom learning which is student oriented by giving them a chance for finding new knowledge. It is a learning model that involves students on solving certain problem through stages of scientific model, empowering student to learn knowledge correlated with such problem while having skill on solving problem as teacher gives lesson and plays a role as a facilitator. The cohesiveness of Problem-Based Learning focuses on social environment because students are demanded to think critically based on reality on solving problem. Social environment is a media for interaction between society and their surroundings. Social environment will provide different influence towards environment [18]. Based on this, authors consider the significance of introducing an innovation for the implementation of Problem-Based Learning on Social Science subject that is effective and comfortable for students. By doing so, students' enthusiasm on learning the subject can be aroused as well increasing achievement of Junior High School students in Semarang, Indonesia.

II. LITERARURE REVIEW
Problem Based Learning Definition

Barr and Tagg on Miftahul [19] defined Problem Based Learning as a learning achieved by process towards a recognition of an issue resolution. It is one of shifting forms from teaching to learning paradigm. Hence, the focus is on the student learning not the teacher instruction.

Arends [20] stated that essentially Problem-Based Learning has provided a variety of problem situations which are authentic and meaningful for students that can be operated as a milestone for investigation and research. This learning is designed to help students advancing their reasoning and problem-solving skill, mastering adult's roles, and becoming an independent student. This model provides an interesting alternative for teachers who want to step forward beyond other approaches that are more teacher oriented to challenge students with active learning aspect using Problem-Based Learning.

Problem Based Learning Objective

There three objectives of learning based on problem are facilitating students on developing research and problem-solving skill, providing a chance for them to learn and experience role of adults, and enabling them to enhance their reasoning by themselves and become independent student. As for Rusman [21], the objectives of Problem-Based Learning are study content mastering of heuristic discipline and problem-solving skill development. Problem-Based Learning is also associated to learning about wider life (lifewide learning), skill on interpreting information, collaboration and teamwork, and skill of reflective and evaluative thinking.

Trianto [22] claimed that the aim of Problem-Based Learning is to help students develop their reasoning skill and problem-solving skill, study adults' authentic role, and become a self-reliant student. Not in contradiction with the preceding opinion, according to Mulyasa [23], problem solving is a strategy of learning based on problem where teachers assist students to study how to solve problems through their learning experiences.

Application of Problem-Based Learning

Based on Tan [24], the implementation of Problem-Based Learning covers: (1) formulating the study objective; (2) acquiring new information through independent learning; (3) applying new strategy or model on analyzing problems; (4) proposing solution of problems; (5) researching and evaluating applied solution. Learning by this model can be conducted more effectively if students can identify the problem and have observation skill. Gathered information should be processed and delivered using association ability and interlaced with social environment (networking).

III. DATA COLLECTION

Data on this research were collected through several instruments, which are:

1. Observation. It was by executing a direct observation towards students of VII A class in State Junior High School 25 Semarang. Observation was held for finding out student activity on ongoing learning process. Besides that, researchers performed an observation regarding to the learning model that had been implemented all this time.

2. Interview. Interview was performed towards Social Science teacher, the principal, and some students to support initial finding of the study and to access information about the initial condition of learning at State Junior High School 25 Semarang.

3. Questioner. This was employed to see teachers responds towards the implementation of Problem-Based Learning. Student respond questioner was for measuring student responds towards the implementation of the learning model. They were asked to fill student respond questioner after completing the study with Problem-Based Learning model on Social Science subject.

4. Documentation. Documentation was in form of a list of class VII student achievement on Social Science subject from even mid-semester exam to notice student achievement, and student worksheet as well as handbook that had been used on State Junior High School 25 Semarang and as reference for Problem-Based Learning

5. Test. It was performed to know the student achievement after the implementation of Problem-Based Learning. The use of questions to measure student cognitive achievement was related to the lesson.

IV. DATA ANALYSIS

Data collected from this research were then categorized into two which are student responds and student achievement. Those were then analyzed as:

1. Student responds. Problem-Based Learning which is oriented on social environment is said to be fruitful if students provide positive respond towards the learning activity. Data was gathered from assessment result of student responds after studying with Problem-Based Learning. Aspects of student respond consisted by six indicators namely: (a) interest, (b) respond, (c) cooperation, (d) responsibility, (e) activeness, (f) understanding. Student respond analysis was as measurement of attitude object. Subjects gave respond by four attitude categories which were: (i) very agree (VA); (ii) agree (A); (iii) disagree (D), (iv) really disagree (RD). The result of student respond analysis was in percentage based on each indicator before it was explained with descriptive quantitative analysis.

2. Student achievement. Problem-Based Learning implementation is claimed to be successful if student achievement shows completeness which is obtaining above 75 score. Data of student achievement were collected from a total score of presentation, discussion, problem identifying, and test for the end of chapter about Problem-Based Learning. Achievement was acquired by giving Problem-Based Learning pre and posttest, and then t-test was conducted to know the difference of both tests.

V. STUDY RESULTS, SUMMARY AND CONTRIBUTION
Data of limited scale test result

This trial was stated as limited trial conducted on students who were different with students on the second trial. 10 students of different ability from 7A, 7B, and 7C class were involved on the first trial. The results revealed that not many issues found. Subjects experienced no difficulty on discussing and answering problems. The results of research when limited trial was held were:

1. The advantages of Social Science learning using problem based learning were: (a) lively class atmosphere; (b) training problem solving skill; (c) very active students during learning process; (d) students' high interest on lesson; (e) increasing of student motivation to learn Social Science; (f) becoming more creative and capable of high level reasoning for students.

2. Teacher' expectations towards the implementation of Problem-Based Learning were: (a) need to be developed; (b) a need for exercise; (c) ability to be refined on other lessons or on the next semester.

3. If it was compared with factual learning, the striking differences of Social Science learning adopting Problem-Based Learning were: (a) lesson discussed was directly related with reality. Lesson of primary economic activities including consumption, production, and distribution was suitable to be applied using Problem-Based Learning that was social environment oriented, (b) there was an improvement on problem solving skill.

4. On Problem-Based Learning, issues that were challenged were: (a) required longer time, fairly exceeded the time limit which was 50 minute by taking 60-minute time; (b) required long preparation; (c) required making different study instrument than usual class as every chapter needed real problem analysis instrument.

Data of large scale test result

The second trial was called wide scale trial conducted on a class with heterogenous students, implying that students had varied characteristic. After instrument was tested on a small group and revised, test of learning instrument on experiment class was held. Aspect of student respond towards Problem-Based Learning model was composed by six indicators, which were: (1) interest, (2) respond, (3) cooperation, (4) responsibility, (5) activeness (6) understanding. The result was displayed on Table 1:

Table 1.

Data Analysis for Student Respond

No	Indicator	Total	Question	Answer Choices	Total
1	Interest	32	I am happy with the learning model	RA	12
				A	20
				D	-
				RD	-
2	Respond	32	Problem-Based Learning makes me excited with the lessons	RA	9
				A	22
				D	1
				RD	-
3	Cooperation	32	Problem-Based Learning model makes me active on working together with others during Social Science learning	RA	16
				A	16
				D	-
				RD	-
4	Responsibility	32	Problem-Based Learning model trains my responsibility on group discussion	RA	13
				A	18
				D	-
				RD	-
5	Activeness	32	I become more active on group discussion to solve problem on economic core activity topic	RA	13
				A	19

				D	-
				RD	-
6	Understanding	32	Problem-Based Learning model makes me really curious with subject of primary economic activity topic	RA	8
				A	24
				D	-
				RD	-
7	Knowledge	32	Problem-Based Learning model gives benefit and increases my knowledge	RA	17
				A	15
				D	-
				RD	-

Source: Student Questioner towards Problem-Based Learning, 2018

Note: RA (Really Agree), A (Agree), D (Disagree), RD (Really Disagree)

After analyzing the distribution of student questioners, authors also organized interview to students about student respond and achievement with Problem-Based Learning model.

1. Student Responds

Student respond towards Problem-Based Learning model was very positive. This was demonstrated by student activeness on giving argument between groups. Almost every student attracted with Problem-Based Learning model observable when students were being asked about this learning model. It can be concluded that Problem-Based Learning facilitates students to easily understand the lesson and motivates them to be studious as they got interested with the learning model applied.

2. Teacher Responds

Analysis of teacher respond towards Problem-Based Learning model was as follows::

a. Content or subject aspect

Teacher respond towards Problem-Based Learning model which was social environment oriented containing economic activities subject adjusted to students of VII class need was reciprocal with what had been expected. Lessons given were taken from some book references. Content available on learning module discussed production, consumption, and distribution activity.

b. Subject delivery aspect

Subject delivered discussed primary economic activities where students were asked to think critically and sound their argument according to the social environment. In the module, open questions were given to tempt students to ask. Those open questions had a function to arouse curiosity and encourage students to think together. Subject content was also supported with illustration or activity that was related with primary economic activity. On the end of meeting, students would be divided into groups to complete collaborative task. It was a task that needed cooperation (group discussion).

Learning Outcome Attainment

Student attainment of learning outcome witnessed improvement when learning evaluation was conducted to see the difference. After trial, the difference of achievement between the class used factual learning and the other with Problem-Based Learning model resulted in: on the t-table, t score = -7.767 (bigger than 2.56). The average score in factual learning was 74.59 while it was 85.56 for the learning implemented Problem-Based Learning model. Average deviation of the two learning models was 11.569 got from a subtraction (74.59 - 86.56). After all, due to sig > 0.01, there was a difference on student achievement for the use of factual learning model compared to Problem-Based Learning.

Learning attainment on factual learning with Problem-Based Learning improved. The total for factual learning was 2387 whereas with problem-based learning it was 2790. This showed a significant rise in comparison with the previous learning. Following is table 2 depicted the comparison of students' learning attainment result on answering questions:

Table 2.
Student Learning Outcome Attainment

No	Name	Score	
		Exam with Factual Learning	Exam with Problem Based Learning
1	Student 1	73	80
2	Student 2	74	85
3	Student 3	73	85
4	Student 4	74	90
5	Student 5	74	75
6	Student 6	75	85
7	Student 7	75	75
8	Student 8	74	85
9	Student 9	72	90
10	Student 10	73	95
11	Student 11	73	90
12	Student 12	74	80
13	Student 13	76	90
14	Student 14	75	90
15	Student 15	75	85

16	Student 16	74	90
17	Student 17	79	100
18	Student 18	75	90
19	Student 19	74	90
20	Student 20	72	95
21	Student 21	75	80
22	Student 22	74	80
23	Student 23	78	95
24	Student 24	73	95
25	Student 25	76	100
26	Student 26	78	100
27	Student 27	75	75
28	Student 28	76	95
29	Student 29	76	90
30	Student 30	74	80
31	Student 31	75	75
32	Student 32	73	80
	Average	74.59	86.56
	Total	2387	2790

Source: Document of Student Learning Evaluation Result, 2018

Positive respond from both students and teachers towards the use of Problem-Based Learning on Social Science subject as well as increased achievement of students confirmed that this learning model was well received by students and teachers. Its accomplishment could also be noticed from the rise of student achievement after implementation of the Problem-Based Learning model. Teachers can adopt this learning on their school as a learning innovation that is never conducted before. This learning may not be limited on Social Science subject only but also on other subjects. As for the final words, this study needs to be further developed including some additional research variables to prove that Problem-Based Learning can be applied on all subjects.

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