

Affecting Factors in Learning using Problem-based Learning Model on Language Assessment Course

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Abstract—Problem Based Learning is one of the innovative learning methods that prioritizes students' critical thinking skills through group performance so that they can know the ability of students to start empowering, sharpening and testing their ability of thinking as a whole. This research is aimed at describing factors affecting learning using PBL on Language Assessment course. The method used is survey by identifying or describing facts, opinions, attitude, and behavior's research subject is the students of fifth semester with amount sample research are 60 students. Taking sample research by purposive sampling with criterion students who join language assessment class. The results of this research are shown that there are four factors which affect learning using PBL in Language Assessment course. They are: (1) learning planning; (2) metacognitive ability; (3) PBL learning strategies through discussions and team work; and (4) external learning.

Keywords—*problem-based learning, language assessment, survey method.*

I. INTRODUCTION

Education is the most crucial thing as an investment of human resources. The paradigm of curriculum development in education is the basis for improving the quality of education which is realized in learning. Therefore, it needs a learning innovation related to the changes of the new curriculum [1].

Standard National Education in Curriculum 2013 PP No. 32 Article 77 D, explains that "the basic competencies to be achieved is spiritual attitudes, social attitudes, knowledge and skills in learning, subject or courses related to core competencies." self-control of student and able to socialize with friends is a social skill that must be owned by students. While the competences of student skills include doing task, communicate reading or writing.

Now education has faced some problems, one of the problems is the ability to think in a matter of problem solving. There are many knowledges that have not been integrated with the real life situations. The role of education is to prepare students to be people who are not only smart but also able to solve problems that will come [2]. Therefore, it is necessary to have an education that focus on high-order ability (Higher

Order Thinking) where students can show their creativities in solving problems in education.

Problem Based Learning is one of the innovative learning methods that prioritizes students' critical thinking skills through group performance so that they can know the ability of students to start empowering, sharpening and testing their ability of thinking as a whole. The achievement of learning from the course is not only to know the level of cognitive but also affective and psychomotor. The ability of critical thinking must be owned by students in order to sharpen the brain. Moreover, they should integrate the problem with real life so that learning is not only memorizing.

Problem Based Learning (PBL) is one of model in learning process (pedagogical) that has a part to act both as supportive change agents working in collaboration of students and individual to use their skill using creativity to find solutions to practical problems. Questioning issues and finding solutions using creativity are also challenging who teach and transfer PBL based curriculum, and poses some fundamental questions [3].

Arends in [4] stated that learning begins with the explanation of real problems that encourage students to solve the problems through the integration of everyday experiences with the knowledge they acquired. With the stimulus of learning, students can argue by using their creative ideas which will be able to improve their critical thinking skills.

According to Setyaningsih, *et al.* in [5] that critical thinking skills stimulated to raise questions and connect with problems so as to explain precisely. Therefore, in learning, there needs to be an increase of students' activeness to think critically in facing problem especially education problem.

Language Assessment course in English Department uses to provide the teachers with some practical overview for evaluating and designing various assessments. Not only for teachers but also students readers and English language instructor who have strong interest and influence of the teaching and learning English around the world. In language assessment classroom, students are given some materials, such as kind of assessment and evaluation, types of

assessment tools, kinds of language test, kinds of achievement test, diagnostic test, and placement test.

The result of interview about the learning process of language assessment during this time for lesson plan by the lecturer is enough to present the lesson plan. However, the teaching materials used in the teaching learning processes are still using reference book instead of teaching materials designed by the lecturer. The reference book is not maximal to achieve the learning objectives in the language assessment courses. In addition, the learning model used is still conventional lecturing where the educators still play an active role. Exploration of affective and psychomotor competences that leads students actively involved in learning still has limited implementation.

Based on the identification of learning problems conducted by interviewing students, it is necessary to improve learning in university through strategy, selection of teaching materials or learning media. Identification of learning problems is intended to develop teaching materials that will be used by students in the language assessment course. Development of this resource to overcome the problem of learning by considering the target of the students and adjust the learning achievement of the language assessment courses.

Development of teaching materials is tailored to the needs of students learning, curriculum demands that apply as well as the characteristics and environment of students. Teaching materials that support students to be more active and critical in meeting the problem of education especially the assessment of learning is a problem based learning approach. Learning with the help of teaching materials, students learn independently in the sense they can adjust speed and ability in accordance with ability on each. The syntax of learning problem based learning is adapted from Arends in [4] which is illustrated in Figure 1 as follows.

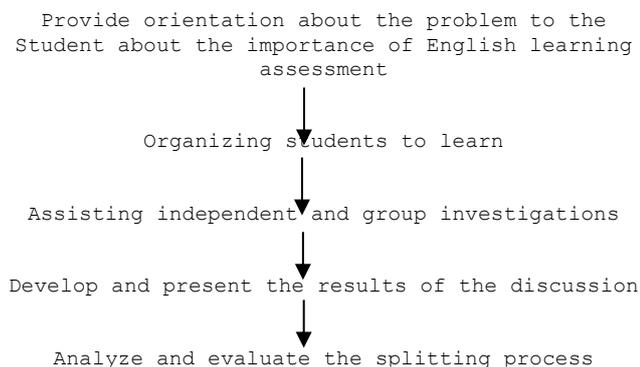


Fig. 1. Sintak of Problem Based Learning Model

Learning with problem-based learning model can improve one of the skills that is Self-Directed Learning (SDL) where students can learn independently, determine their own learning objectives. With this model, students have an active role in learning. There are some perceptions about PBL, lectures should be reduced. In the PBL implication is not the same as the curriculum with university with each other. PBL implementation should be matched to the student characteristics of the institute. If the interest of students college is low, it is necessary for the class to deliver the learning materials. The PBL curriculum does not mean

eliminating classroom strategy in classroom learning but shaping adult learning, explaining difficult topics, and integrating the problems with real life.

The rest of this paper is organized as follow: Section II describes proposed research method. Section III presents the obtained results and following by discussion in section IV. Finally, Section V concludes this work.

II. PROPOSED METHOD

The research method used survey research with identifying or describing facts, opinions, attitude, and behaviour. The variable that identified is a factor which influences in learning using problem based learning strategy. The research subject is the students of fifth semester with amount sample research are 60 students. Taking sample research by purposive sampling research with criterion students who join language assessment class. Method of collecting data used instrument which supposed to the students language assessment class. Measurement scale used five scales, there are:

- 1 = strongly disagree,
- 2 = disagree,
- 3 = moderate,
- 4 = agree, and
- 5 = strongly agree.

Technique of analysis data used descriptive statistic with confirmatory factor analysis. Data analysis used IBM SPSS v.20.0 for windows.

III. RESULTS

The results of this study showed in Table I that there are 19 factors that affect learning using problem-based learning with an average of 4.6 to 3.1.

TABLE I. FACTORS THAT INFLUENCE THE PBL LEARNING

No	Factors	Mean	SD
1	Course contract	4,6	0,913
2	Explanation of Assesment	4,3	0,764
3	Delivering the materials	4,2	0,841
4	Explanation of Learning Outcome	4,1	0,927
5	Preparation of	4,1	1,218
6	Inspiration and motivation	4	0,816
7	Discussion	3,9	0,918
8	Problem solving	3,8	0,834
9	Instrument Development	3,8	0,798
10	LCD	3,8	0,902
11	Group Work	3,7	1,016
12	Teamwork	3,7	0,89
13	Problem Discovery	3,6	0,814
14	Presentation of ideas	3,6	0,809
15	communication skills	3,6	0,812
16	students' knowledge	3,5	0,96
17	critical thinking	3,5	1,023
18	Social sensitivity	3,3	0,736
19	Library	3,1	0,988

from those factors, there are some factors which are very relevant in influencing the learning of PBL. They are delivering the course contract, explaining the assessment, delivering the materials, explaining the learning outcome. These factors have an average with range 4.1 - 4.6.

Students argue that there are 13 relevant factors in preparing learning in the Language Assessment courses using PBL with an average score ranging from 3.1 to 4.0. Those factors are motivations of educators, discussion, problem solving, skilful of instrument development, teamwork, presentation of ideas, communication skills, knowledge acquisition, critical thinking, social sensitivity and library facilities.

The analysis results of the Principal Component Analysis method in Table II, it showed the score of KMO is 0.713. The Bartlett's Test of Sphericity produces an estimation "chi-square" with total 503.497 with sig (0.000) ρ (0.05). The results of the analysis indicate that these factors affect the learning using PBL which allows for further analysis. The analysis results of 19 indicators become four factors based on the score of eigen values > 1, it means respectively eigen values of 7,16; 2,32; 1,49; 1,23. These factors can predict the influence of PBL learning with total 64.188%. Each of these factors predict with the factor score 1 of 37.658%, factor 2 of 12.218%, factor 3 of 7.829% and factor 4 of 4.483%.

TABLE II. ANALYSIS RESULT OF SPSS APPLICATION OF FACTORS THAT INFLUENCE IN PBL

No	Indikator	KMO	Initial Eigenvalues	Eigen values	Varian explained (%)
		0,713			
1	LO		7,16	7,16	37,658
2	Contract		2,32	2,32	12,218
3	Assesment		1,49	1,49	7,829
4	Teaching materials		1,23	1,23	6,483
5	Course materials		0,93		
6	Learning facilities		0,86		
7	Library		0,81		
8	Inspiration and Motivation		0,69		
9	Student knowledge		0,61		
10	Team Work		0,54		
11	Discussion		0,49		
12	Finding problems		0,47		
13	Problem solving		0,37		
14	Social sensitivity		0,30		
15	Critical thinking		0,22		
16	Presentation of Ideas		0,22		
17	Communication skills		0,11		
18	Group work		0,09		
19	Instrument development		0,07		

The next analysis is the Rotated component matrix with Principal Component Analysis method and Varimax Rotation method showing four factors with explanation in Table III below. From the results of analysis shows that factor loading values between a variable with several factors have been quite distinguished. All the variables have met the criteria which have a higher loading factor on one factor and otherwise it has a small value on other factors.

TABLE III. ROTATED COMPONENT MATRIX

		Rotated Component Matrix ^a			
		Component			
		1	2	3	4
1	LO	,759			
2	Contract	,830	,225		
3	Assesment	,786			
4	Teaching materials	,609		,528	
5	Course materials	,830			
6	Inspiration and motivation	,447			,524
7	LCD	,694			,349
8	Knowledge outcome		,624	,421	
9	Team work			,866	
10	Discussion	,459		,544	
11	Finding problems		,647		
12	Problem solving		,504		,351
13	Social sensitivity	,211	,561		
14	Critical thinking		,468		,416
15	Presentation of ideas		,798		
16	Communication skills		,873		
17	Group work		,668		
18	Instrument development	,260	,668		
19	Library				,765

Based on Table III above, it showed that there are four factors that influence in preparing the learning using PBL in the Language Assessment course with the following explanations:

Factor 1 consists of : delivery of learning outcomes, course contracts, assessment, teaching materials used, materials and learning facilities. This factor is called learning planning factor. Factor 2 consists of: student knowledge outcomes, problem discovery, problem solving, social sensitivity, critical thinking, presentation of ideas, communication skills, teamwork, skill competence (instrument development). This factor is called metacognitive skills (critical and deep thinking). Then, factor 3 consists of: group work and discussion. This factor is called PBL strategy factor. For factor 4, it consists of: inspiration or learning motivation and learning reference. This factor is called an external factor of learning. The four factors that influence the preparation of learning problem based learning are illustrated in the following Figure 2.

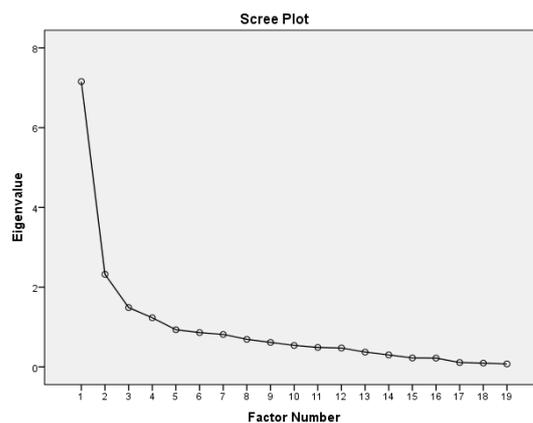


Fig. 2. Screen Plot faktor pembelajaran PBL

Four factors affect the PBL based on the screen plot. The scree plot is a plot of eigenvalues against the number of extracted factors. The point at which the scree begins to occur shows the number of appropriate factors. This point occurs when the scree starts to look flat. In Figure 1 it is known that the scree plot starts horizontally on the extraction of the initial variables into 4 factors.

IV. DISCUSSION

Factor 1 is learning planning. From the research result, it shows 37,66% which is contributed in preparation of Language Assessment Course based PBL. A Planning in teaching and learning processes is very important for giving an impact to the quality of students in learning. From the result of research, one of student references in learning is hand out, module or teaching material problem-based which can increase learning motivation. It is showed an average gain 0.3. The other result is the critical thinking ability of learners with gain score 0.7 compared with control class only using a classical method.

Accordance with research conducted Riggs and Hellyer-Riggs in [6] states that a learning will go actively for learners through multimedia-assisted learning materials. With that learning material which is problem-based can improve the critical thinking skills of learners because of being actively involved in learning and understanding the material in depth.

Factor 2 is metacognitive skills. The results showed 12.22% of metacognitive skill factors contributed to PBL learning. The results of this study are relevant from previous research findings Setyaningsih, *et al.* in [5] states that the critical thinking process can be formed from activating problem-based learning model. It means learning that starts from the problem, learns a concept and principle as well as solves the problem which is accordance with the learning topic.

A critical thinking patterns can be conducted by several stages: 1) clarification stage, students are able to dig information and solve problems as a whole according to the topic of learning; 2) assessment stage, in this process the student is not only exploring the information with relevant concepts but finding the relationship between information with daily life experiences. Besides, it is also raising questions and solving ideas that comes from the argumentation of students to form new thinking in accordance with the concept; 3) conclusions stage, in this stage students are able to conclude various problems and then connect with the topic so that it can be formed new thinking related to the concept.

According to Dick and Carey in [7], that skill equals to the analytical, evaluation, and creation ability on the cognitive learning taxonomy of Bloom. The problem solving skill equals to the analytical ability if the problem solved is well defined, and equals to the evaluation and creation ability if the problem solved is ill-defined. The PBL was defined by Howard Barrows and his team, as the early designer of PBL at McMaster University Medical School Canada in 1970, as a student-centered teaching approach using the real world problem and its solution as learning stimuli of students in small groups as presented by Karakas in [8]. The PBL model structure of the courses consisted of five phases i.e. problem identification, problem solving planning, problem solving

implementation, problem solving result presentation, and problem solving reflection.

The results of research stated that the structures of PBL model in the subject of Biology Learning Strategy are problem identification, problem planning, problem implementation, problem presentation, problem solving and problem reflection. The result of the study shows that the PBL model is compatible with problem-based learning used to develop students' critical thinking competencies.

Next, the result of research conducted De Simone in [9] showed that Problem-based learning (PBL) provides generative contexts for prospective and certified teachers to work together in small collaborative groups. Together, they analyse problems, discuss options, and make informed decisions to solve problems based on authentic teaching situation with real, multifaced challenges.

The descriptions of previous research shows the strength that PBL model requires a metacognitive thinking to explore information, find problems, solve problems and also integrated with daily life between concepts and problem discovery. The critical thinking skill or high thinking ability is one part of metacognition ability. High-ability skills (HOTS) include: logic and reasoning, analysis, evaluation, problem solving and judgment Brookhart.

A problem-solving learning encourages learners to seek correct solutions and develop argumentative thought by constructing and defending the reasonable solutions Xia and Wang in [10]. Therefore, the learning now needs to develop PBL to train students to think critically, to differentiate good and bad information and also to make the right decision and to be responsible of their decision made. So that students can achieve higher levels of thinking. This result is accordance with a study result conducted De Graaf and Kolmos [11].

They state that the PBL model appears to inspire a higher degree of involvement in study activities and, consequently, a higher level of complex comprehension.

Factor 3 shows the indicator of discussion and cooperation with the contribution of 7.83%. it shows that the indicator has influence in preparing of language assessment learning. In accordance with the results of research it states that the Problem Based Learning (PBL) model is a model of learning that enables students in critical thinking through group work or team so as to develop cognitive ability with the some stages. They are empowering, testing, and integrate his thoughts continuously. This factor is accordance with previous study conducted. He states that students were able to solve the problems presented using lecture approach, group activities, lecturer guidance and independent learning.

The discussion and team work is one of the strength of the Problem -Based Learning model. It is not only to develop personal interpersonal but also to develop team or cooperation. Therefore, this learning is more active because it intertwined interaction of learners continuously. Learning strategies with discussions and teamwork train to have sensitive attitudes toward others, help to express opinions so as to help students solve problems, be able to determine appropriate solutions and conclude it [12].

The interpretation of problem solving and evaluating information in PBL learning is conducted through discussions-presentation. According to Saefi, *et al.* in [13]

suggests that discussion-presentation strategies can build students for critical thinking. With the directed discussion strategy, student participation will give more opportunity to argue with the argument to answer the question. This is why some of the learning preparation factors are discussion strategy and teamwork to solve the problem to conclude it.

Factor 4 is inspiration or learning motivation and learning reference. Factor 4 is called an external factor of learning. This factor gives contribution of 6.48% in the influence of learning factor of Problem based-Learning. According to Amir in [14] one of the advantages of using PBL is giving motivation to students. This is related to previous study conducted Surif, *et al.* in [15]. This study showed that PBL could enhance soft skills particularly on students' motivation, communication skills, collaboration, and independent learning. Nicolay also states that many certain advantage of problem-based education. They are the enhancement of learning efficiency, motivation, interested in learning.

V. CONCLUSION

This paper has presented affecting factors in learning using problem-based learning model on language assessment course. The results of this research are shown that there are four factors which affect learning using PBL in Language Assessment course. They are: (1) learning planning; (2) metacognitive ability; (3) PBL learning strategies through discussions and team work; and (4) external learning.

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