THE IMPLEMENTATION OF ACTIVE LEARNING MODELS TO INCREASE PRE-SERVICE TEACHERS' HIGH ORDER THINKING SKILLS

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Abstract

Teaching Practice is a compulsory subject that must be followed by the 6th semester students of Faculty of Teachers' Training and Educational Sciences in Universitas Islam Nusantara, Bandung, Indonesia. The subject has 4 credits that consist of series activities in form of theory and teaching simulation. The objective of the subject is to establish pre-service teacher knowledge and skills by brushing up pre-service teacher knowledge and apply the theory into

real class situation. However, based on observations and informal interviews, many students are not yet ready to do teaching practice and their High Order Thinking Skills (HOTS) are still low. The purpose of this study is to implement active learning models in preparing pre service's teacher and increasing their HOTS. Moreover, the study also investigates the effectiveness of some active learning models. This study implemented Research and Development design. The first phase design is a preliminary study carried out by applying qualitative descriptive approach. The second phase is the development of model design and teaching materials, followed by limited scope trial by applying experimental method (Single One Shot Case Study). The limited trial shows that pre-service teacher's HOTS mostly increase in "analysis" indicator. The limited trial also show that the average score of guided discovery learning model using role playing and making a direction are higher than four other learning models. Based on the finding it could be concluded that four guided discovery learning models implemented in this study improved pre service teachers' HOTS. However, the content of material and the design of learning activities still make the students confuse, as it needs some improvement.

Keywords

Active Learning Model, Teaching Practice, Pre-Service Teacher, High Order Thinking

1. Introduction

Teaching Practice is one subject with 4 credit numbers as a course to prepare students to carry out teaching practice in the classroom. However, many students still not ready to implement their knowledge into practice. This can be seen from teaching simulation held before pre-service teachers do teaching practice in the classroom. Based on observations, it was found that pre-service teachers face difficulties to solve some problems concerning teaching learning activity. The observations also reveals that many lecturers did not give opportunity for pre-service teachers to develop their High Order Thinking (HOT) skills, in this regard the ability to analyze, synthsize and do evaluation.

There are some definition about HOT Skills according to some experts. King, Goodson, and Rohani (2004: 1-2) elaborate that critical thinking include logical, reflective, metacognitive, and creative. Everything is activated when people get into unfamiliar problems, uncertain and full of questions situation. Furthermore, Brookhart, (2010) describe that HOT skills is some skills that required someone not only to remember what they have learn but also to be able to

analyze and evaluate the information and later to create, use, and maximize the information in their future live.

Whereas, the category of high-level thinking, according to Brookhart (2010: 14-15) covers several aspects, namely: 1) Analysis, evaluation, creation, 2) logical reasoning or logic reasoned (logical reasoning), 3) Decisions and critical thinking, 4) trouble shooting, 5) creativity and creative thinking. However, the approach addapted in this study is construction of the cognitive dimension based on the hierarchy of the revised Bloom's taxonomy, those are Analyze, Evaluate, and Create, or, in the older language, Analysis, Synthesis, and Evaluation (Anderson & Krathwohl, 2001). The ability to analyze, synthesize and evaluate are cognitive ability that must be developed to all students, not only for high achiever students.

Based on the the problem found through the observations, lecturer need to develop an active learning model that can build students' high order thinking. The learning model that must be built are learning models that can increase students' to find out solution to solve problem, able to formulate problems, good at analyzing, good at finding a solution, creative and contemplative. Students must "know what", "know why" and "know how" to be a learning cycle in developing HOT ability. Those kind of learning model is the characteristics of active learning model.

Warsono and Hariyanto (2012), elaborate that active learning is any form of learning models that focus on the student as person who responsible for they own study. From this definition it is clear that teachers act as facilitators. As facilitator teacher should be able to deliver material using many kind of leaning method. Collaborative learning is considered as learning method that can enhance students HOTs skills. The variation of active learning methods embodied in collaborative learning among others cooperative learning, problem-based learning and project-based learning.

In the classroom, to be able to create learning activities into an active learning, as one stage of the research, researchers arrange specific guided discovery learning model. The word specific means that the choosen guided discovery model in this study were addapted to fulfil the class condition and it is more specific in term of its names and its implementation.

An active learning model used in this research is guided discovery learning model through *Role Playing* and guided discovery learning model through *Making A Direction*. Moreover, the researcher also develop guided discovery learning through *Make a Phone Call* and guided

discovery learning through *Peers instruction*. The four models are paired, then continued by comparing those two pairs to investigate which of the pair models that are better in improving students' HOT skill.

Guided discovery learning model through *Role Playing* is type of learning and discovery activities that require students to play a role. Lecturer decide certain situation and students should take their part in the activity based on the agreement among them.   Here is the syntax of Role Playing model:

1. Students are arranged into several groups with maximum 3 members for each group

2. Students are given problems sketch and lecturer provided some characters that should be played

3. Students are directed to share roles and tasks, then the lecturer explain the task of each roles

4. Students discuss and share the task to solve the problem

5. Each groups share their finding in front of the classroom while other students may ask question towards the finding

6. Students are led to find conclusion based on teaching learning activity and the finding

7. Lecturer gives reflection at the end of the meeting

Beside Role Playing model, researcher also develop Making a Direction learning models. Guided discovery learning through Making a Direction is a learning model that directs students to create a description or explanation . Here is the syntax of Making a Direction learning model

1. Lecturer provide general overview and objectives of the activities by giving scenario of a problem

2. Each student directed to understand the problems and find an alternative solution

3. Each student is instructed to make referrals description to explain the solution of the problem given

4. Some students share their referral description (can be in the form of demonstration or discussion) while other students may ask towards the description

5. Students are directed to find a conclusion

6. Lecturer lead final reflections.

In the learning model through Making a Phone Call, students are directed to be able to communicate verbally. Students are directed to communicate with friends without using gestures

as if they communicate through the telephone. Here is the syntax of guided discovery learning through making a Phone Call

1. Students are divided into two major groups, namely callers and call recipients

2. Students who act as callers are informed about the learning content by the lecturer

3. Phone callers are paired with phone recipient to discuss

4. The phone callers opened the discussion without using gestures and writing form

5. Each group presents the results of their discussions

6. Students are directed to make inferences

7. Lecturer lead students to conclude final reflection

Peer instruction model is a model of guided discovery in a more special way, namely with the instruction from peers or classmates. Here is the syntax of guided learning model with Peer instruction:

1. Students are divided into groups consist of 3 members

2. Each group is required to have a group leader

3. Students are briefed by the lecturer to inform the content of the material to be studied

4. All group's leaders are briefed by the lecturer about the content of learning material, while the group members collects the information which are assume can help the learning process

5. The leader of the group explain the material to their member and give direction to solve the the problem

6. Each group presents the results of their discussions

7. All students are directed to make conclusions

8. Lecturer lead the students to make final reflection

2. Research Methods

The method used is the Research and Development with the following stages:

1. The first phase, a preliminary study carried out by applying a qualitative descriptive approach.

2. The second phase, the development of design model and materials, followed by application of a small scope test model design and teaching materials by applying experimental methods (Single One Shot Case Study).

The population of the study is all students of sixth semester of 2015/2016 year. The reason for choosing VI semester is because the students in this semester are required to have

teaching practice. The instrument of this research are tests to assess HOT skills, observation sheets and journal writing.

3. Results and Discussion

The test consists of HOT questions were given at the end of learning in each limited trial meeting. The results are as follows.

Table 1: *Results of the High Order Thinking Skills Test*

Subject	Score	
	Limited Trial 1	**Limited Trial 2**
S-1	65	72
S-2	45	77
S-3	51	85
S-4	51	84
S-5	50	90
S-6	56	70
S-8	50	70
S-9	30	59
Average	**49,75**	**75,88**

From Table 1, it could be seen that in the first limited test the maximum score obtained is 65, while the minimum score obtained is 30. In the second limited trial, the maximum score obtained is 90 and the minimum score obtained is 59. From the average score, it could be seen that the lowest average score of HOTS is on first limited trial, that is 49.75. Whereas the highest average score is on the second limited trial that is 75.88.

Table 2: *The result of HOTS Limited Test each Indicators*

Subject	Limited Trial 1			Limited Trial 2		
	1	**2**	**3**	**1**	**2**	**3**
S-1	35	25	5	15	25	17
S-2	35	5	5	25	30	22
S-3	35	6	10	35	30	20
S-4	35	6	10	34	30	20
S-5	35	5	10	35	30	25

S-6	40	10	6	20	30	20
S-7	40	10	0	40	20	10
S-8	20	5	5	25	15	19
Average	**34,38**	**9,00**	**6,38**	**28,63**	**26,25**	**19,13**

Tabel 3: *The Average of HOTS Test Result Limited Trial per Indicator*

	Indicator	Limited Trial 1	Limited Trial 2
1	Analysis	34,38	28,63
2	Evaluation	9,00	26,25
3	Creative	6,38	19,13

From Table 3 we could see test results of HOTS for each indicator. For the limited test 1, analysis indicator had the highest average score of 34.38 and creative indicators had the lowest average of 6.38 out of 100 for maximum value. Meanwhile, in the limited trial 2, the analysis indicator had the highest average score of 28.63 and creative indicators had the lowest average of 19.13 out of 100 for maximum value. It can be concluded that during the implementation of limited trial, the highest average value are the analysis indicator while the lowest average value is at the creative indicator.

The learning model implemented at the first limited trial 1 are guided discovery learning model through *Role Playing* and *Making a Direction*. The learning model implement at the second limited trial 2 are guided discovery learning through *Make a Phone Call* and *Peer Instruction*. The analysis of tests result given at limited trial scope could be seen at Figure 1.
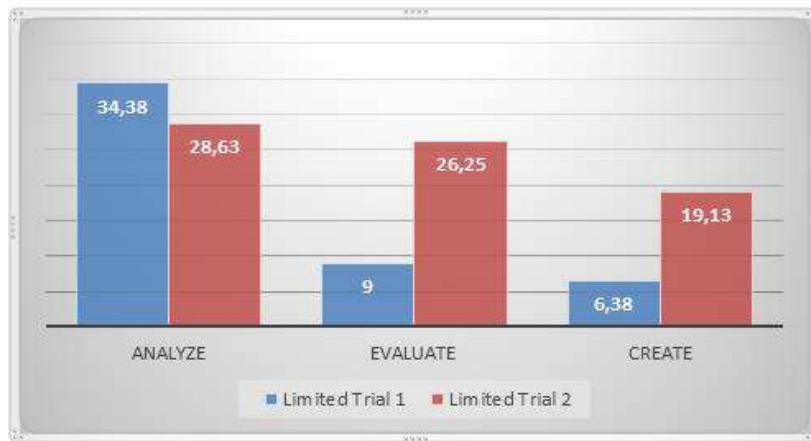
Figure 1: *The average results of HOTS Test*

Figure 1. show that the average score of HOTS test for limited trial 2 is higher than the average score of the limited trial 1. Based on the observation of the implementation of learning by using *guided discovery learning* model all students are in very good criteria. It means that the learning models have been implemented accordingly. Likewise from the journal, all implemented learning models made the students interested and excited.

However, the material's presentations of the lesson plans still make the students confuse, particularly at the first limited trial. This condition affect the test's results . It could be seen from the low of first limited trial test result. The results of HOTS per indicator for limited trial 1 and 2 are presented in Figure 2.
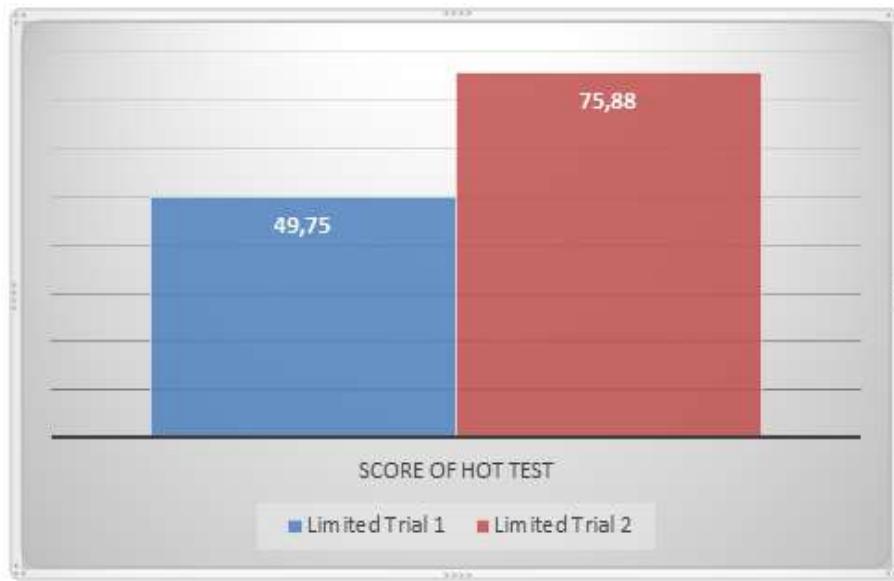
Figure 2: *Average Score of HOTS Test*

A. Analysis

Analysis indicator in this study is an indicator that has highest average compared with evaluate and creative indicators. From the table, it could be seen that the highest score was obtained at the first limited trial. At the limited trial 2, the grouping is less compare to other model implemented in limited trial 1. One of sintaks model is *Making a Phone Call* between students. The activity within the model is pair communication as if telephone conversation that make the students feel happy and enjoy the activity.

B. Evaluation

Evaluation indicator obtained highest average score at the limited trial 2 of 26.25. At the limited trial 2, the group members are fewer compared to limited trial 1. For example at the syntax of *Making A Phone Call* model, the number of group member made the students more focus on the content of material and the problem given. Furtehrmore, it made the students happy and raise students' interest in learning. However, the time to explore the material and practice matters was too short that it made the students have to learn more outside the classroom.

C. Creation

Creation indicator got the lowest score in each limited trial. The four models which were implemented only involve students actively in learning, but do not train students to improve their own creativity.

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