Activism of The Students in Reflective Thinking Learning Method with Brainstorming and Oriented in Question

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Abstract— The purpose of this research is to know and compare activism of the college students after they implemented Reflective Thinking learning method with an approach that oriented in question and brainstorming in Basic Natural Science. The method of this research is quasi experimental. The sample of this research is college students of Ahmad Dahlan University in second semester of the 2014/2015 school year that were learning Basic Natural Science. The research was done in two classes, which in each class was given a learning with Reflective Thinking. Class A with an approach that oriented in questions and class B with brainstorming. Observation was done to know activism of the college students. Based on research, we could conclude that the activism level of the students in Reflective Thinking learning method with an approach that brainstorming is higher than the activism level of the students with an approach that oriented in question.

Keywords: Reflective Thinking, activism, brainstorming

I. INTRODUCTION

In following Basic Natural Sciences lecture, students of Ahmad Dahlan University tend not to be quite active. They only had a little discussion, listening and partly wrote what the lecturer’s said. While the learning method that the lecturer uses was a speech with the help of power point presentation.

When people think about transfer, it is common to think first about learning something and then assess the learner’s abilities to apply it to something else [1]. But even the initial learning phase involves transfer because it is based on the knowledge that people bring to any learning situation. Teaching is more than telling [2]. Effective teaching requires a great deal of thought, preparation, and design. The analysis of the teaching process includes six elements, as in [3], these are:

1. Identification of potential learners, estimating their requirements and breaking the ice.
2. Creation, selection, and preparation of tasks, experiences, and activities.
3. Preparation of resources.
4. Performance of tasks, roles, and responsibilities.
5. Assessment and feedback on learning.

Activities consist of two things which are physical activity and mental activity. Student activity in learning is very important. Both are a unity that cannot be separated. The materials will be easy to understand when students are active in learning. So the more active the student, the better the learning will be. Various student activities in learning are:

1. Visual activity (e.g. reading, watching demonstration pictures, experiment, watching other’s work).
2. Oral activities (e.g. explaining, formulating, asking, giving suggestion, having a notion, holding interview, discussion).
3. Listening activities (e.g. listening conversations, discussion, music, speech).
4. Writing activities (e.g. story-writing, opus-making, report, inquiry, duplicating).
5. Drawing activities (e.g. drawing, graph-making, map, diagram)
6. Motor activities (e.g. experiment, construction-building, playing).
7. Mental activities (e.g. responding, remembering, problem-solving, analyzing, decision-making).
8. Emotional activities (e.g. put an interest, feeling bored, happy, excited, enthusiastic, calm).

Reflective thinking is a part from the research method which was told by John Dewey. In fact, he defined the educational process as a continual reorganization, reconstruction and transformation of experience [4]. His opinion as in [5]: Education is a social process where people who hasn’t been mature (especially children) is invited to socialize with people. The education purpose is giving a contribution in self and social development through experience and problem-solving which goes on reflectively (reflective thinking). According to John
Dewey, reflective thinking in problem-solving is a process of active-thinking, carefulness, which based on thinking process aim on five-step-definitive conclusions, which are:

1. Students recognize problems that come outside the student’s self.
2. Students will investigate and analyze the difficulty and determine the problem they face.
3. Students connect the analysis results or one another and collect the hypothesis to solve the problem. Students do it on their experience guidance.
4. Students consider the possible answers or hypothesis with each cause.
5. Students try to practice one of the possible answer which they consider as the best. The result will proof whether it is right or wrong. If it is wrong, then they will try the other answer until they find the exact problem solving.

John Dewey told that the thinking process goes these steps below:

1. The felt need
2. The problem
3. The hypothesis
4. Collection of data as evidence
5. Concluding belief
6. General value of the conclusion

Problem solving method in reflective thinking can be gotten from many ways. Such as brainstorming and question-oriented approach. Brainstorming method is also known as giving suggestions.

Brainstorming method is a discussion form to collect opinions, arguments, informations, knowledges, experiences from all participants. On brainstorming method, other person’s opinion is not to be responded. This method base on argument that some people are possible to have more opinions than others. In brainstorming, will be served a problem, then participants are invited to propose any idea about it, no matter how strange it is. Strange ideas are not priori rejected, but analyzed, synthesized and also evaluated. There may come the unexpected problem solving.

Question-oriented approach needs group to consider series of questions in order to still have orientation on their purpose. Questions in this approach are arranged to help the group identifies important issues that will be solved. Besides, those questions can also make the group formulating the best solution that can be done.

II. RESEARCH METHOD

This research method is quasi experimental. There are two classes in this research, class A as experiment class and class B as control class. In class A, students have the reflective thinking kind of learning with question-oriented approach, while class B has brainstorming learning.

<table>
<thead>
<tr>
<th>Class</th>
<th>Treatment</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Question-oriented</td>
<td>V</td>
</tr>
<tr>
<td>B</td>
<td>Brainstorming</td>
<td>V</td>
</tr>
</tbody>
</table>

The data sample in this research are students of Ahmad Dahlan University in 2014/2015 period in even semester who were majoring Basic Natural Sciences on class A and class B. This observation was done during the learning process to know the student’s activity. Class A observation result will be compared to class B observation result to know which class has more active student. Student activity observation paper is arranged with Likert scale as:

<table>
<thead>
<tr>
<th>score</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Inactive</td>
</tr>
<tr>
<td>2</td>
<td>Less active</td>
</tr>
<tr>
<td>3</td>
<td>Active</td>
</tr>
<tr>
<td>4</td>
<td>Very Active</td>
</tr>
</tbody>
</table>

The success percentage (SP) of student activity can be counted with this formula below:

\[
SP = \frac{\text{obtained score}}{\text{maximum score}} \times 100\% 
\] (1)
III. THE RESEARCH RESULT AND EXPLANATION

The reflective thinking learning was given on each class A and class B three sessions. The material that was given was scientific method and the technology impact. Class A with question-oriented approach while class B with brainstorming approach. During the learning process an observation was done to the students’ activity. The results of the students’ activity observation can be drawn into this table below:

### TABLE 3. ACTIVITY OF STUDENTS IN CLASS A (WITH QUESTION-ORIENTED APPROACH)

<table>
<thead>
<tr>
<th>Number</th>
<th>Activity indicator</th>
<th>1st sess. score</th>
<th>2nd sess. score</th>
<th>3rd sess. score</th>
<th>Average score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Active on giving opinion</td>
<td>19</td>
<td>21</td>
<td>22</td>
<td>20.7</td>
</tr>
<tr>
<td>2.</td>
<td>Active on asking</td>
<td>15</td>
<td>17</td>
<td>18</td>
<td>16.7</td>
</tr>
<tr>
<td>3.</td>
<td>Active on responding</td>
<td>17</td>
<td>19</td>
<td>19</td>
<td>18.3</td>
</tr>
<tr>
<td>4.</td>
<td>Listening to friend’s opinion carefully</td>
<td>22</td>
<td>23</td>
<td>23</td>
<td>22.7</td>
</tr>
<tr>
<td>5.</td>
<td>Giving chance to friends for responding/asking</td>
<td>19</td>
<td>20</td>
<td>20</td>
<td>19.7</td>
</tr>
<tr>
<td>6.</td>
<td>Answering friend’s question correctly</td>
<td>23</td>
<td>23</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>7.</td>
<td>Report-writing</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>20.7</td>
<td>21.9</td>
<td>22.1</td>
<td>26.5</td>
</tr>
</tbody>
</table>

### TABLE 4. ACTIVITY OF STUDENTS IN CLASS B (WITH BRAINSTORMING APPROACH)

<table>
<thead>
<tr>
<th>Number</th>
<th>Activity indicator</th>
<th>1st sess. score</th>
<th>2nd sess. score</th>
<th>3rd sess. score</th>
<th>Average score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Active on giving opinion</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>2.</td>
<td>Active on asking</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>3.</td>
<td>Active on responding</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>4.</td>
<td>Listening to friend’s opinion carefully</td>
<td>29</td>
<td>30</td>
<td>30</td>
<td>29.7</td>
</tr>
<tr>
<td>5.</td>
<td>Giving chance to friends for responding/asking</td>
<td>30</td>
<td>31</td>
<td>32</td>
<td>31</td>
</tr>
<tr>
<td>6.</td>
<td>Answering friend’s question correctly</td>
<td>28</td>
<td>30</td>
<td>31</td>
<td>29.7</td>
</tr>
<tr>
<td>7.</td>
<td>Report-writing</td>
<td>31</td>
<td>31</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>32.1</td>
<td>32.7</td>
<td>33</td>
<td>33.8</td>
</tr>
</tbody>
</table>

If it is drawn in graph, then the observation data of average student activity in class A and class B can be seen below:

![Graph of Student Activity Observation Result on Class A and Class B](image)

**FIGURE 1. GRAPH OF STUDENT ACTIVITY OBSERVATION RESULT ON CLASS A AND CLASS B**

The success percentage of student activity on class A can be calculated as:

\[
\text{Success Percentage on Class A (SPA)} = \frac{\text{total obtained score}}{\text{total maximum score}} \times 100\%
\]

\[
SPA = \frac{26.5}{40} \times 100\% = 66.25\%
\]
The success percentage of students’ activity on class B can be calculated as:

\[
\text{Success Percentage on Class B (SPB)} = \frac{\text{total obtained score}}{\text{total maximum score}} \times 100\%
\]

\[
\text{SPB} = \frac{33.8}{48} \times 100\% = 84.5\%
\]

Based on Success Percentage calculation above, then could be compared that student in class B had a higher Success percentage compared to class A. So students who did reflective thinking with brainstorming method were tend to be more active that students who did reflective thinking with question-oriented method.

In class A (question-oriented) students were less active, compared to class B (brainstorming). This happened because when discussion was directed with question, students were rived on those questions, which meant that their ideas were limited. Finally, some of them only chatted with their friends outside the discussion topic. Only few students from the group who looked seriously discussed those questions. So that, the discussion’s situation would feel strained and be less active. Unlike the brainstorming’s situation, Students were not limited with list of questions when they had a discussion. Even more, each student must tell all of his ideas to the group. The ideas were unlimited and none was able to comment or criticize all of the ideas that had been told. Therefore, all students were involved actively in discussion. Even more, in brainstorming, students were timeless and the learning felt defiant and fun. The group’s conclusion was the summary of all ideas that were told by students.

IV. CLOSING

Based on the research result, there is obtained a conclusion that on reflective thinking learning, student’s activity who applied brainstorming method was higher than the question-oriented method. In applying the reflective thinking learning method, time setting is very important in order to get an effective and efficient discussion. Besides, students have to do a preparation before the learning that is understand the materials in order to get an active and aimed discussion.

REFERENCES