

The Use of Project Based Learning the Effect on Students' Creative Thinking Ability

Yeyen Suryani and Siti Asmawati

University of Kuningan, Kuningan, West Java, Indonesia

Keywords: Project Based Learning Model, Creative Thinking Ability.

Abstract: The problem in this research is the low students' creative thinking ability. This is shown from the learning process during the discussion where students are less able to develop ideas or ideas from various information received. The purpose of this study was to describe students' early ability, to describe the students' creative thinking ability after learning took place between class using PJBL model and class using lecture or conventional method, and to describe the improvement of students' creative thinking ability in the class using PJBL model with the class using lecture method. The method used in this research is experimental method. With the subjects of research are 28 students in the experimental class, and 31 students in the control class. Based on the results of the analysis, it is revealed several findings. First, hypothesis testing of preliminary test (tobs 0,18 < ttable 1,672) means that there is no difference of student's initial ability. Second, hypothesis testing of the final test (tobs 3,363 > ttable 1,672) means the use of PJBL model is effective in improving student creative thinking ability. Third, the N-Gain hypothesis test (tobs 3,88 > ttable 1,672) means the improvement (N-Gain) of students' creative thinking ability in the class applying the PJBL model is higher than the class using the lecture method.

1 INTRODUCTION

Education is one of development aspects that must be developed in addition to the other aspects. School as one of the educational institutions plays an important role in establishing quality human resources. In order to achieve the objectives of education as listed in UUSPN Number 20 Year 2003 article 3 is the development of the potential of learners to be a human being who believes and cautious to God Almighty, have noble character, healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens.

Teaching and learning process is the most important part in the educational process involving teachers and students. A two-way communication process that not only transforms teaching materials from educators to students, but invites students to work and experience. Therefore it is a need to design a learning process that is able to motivate students to be actively involved and able to think creatively.

There are three important aspects of student learning outcomes that must be considered, namely

affective (attitude), psychomotor (skills), and cognitive (knowledge). Affective domains, including the attitude, spirit, tolerance, responsibility, and others. Psychomotor domains, including student skills, such as speaking skills, expressing opinions, and presenting reports. While the cognitive domain includes the ability to solve problems, decision making, critical thinking skills, and the ability to think creatively

In an effort to improve the ability of creative thinking, teachers have a big enough share. The learning climate developed by teachers has an enormous influence on the success and excitement of learning. The learning method chosen and used by the teacher will influence the success of a learning process. Therefore teachers should be more creative and innovative to be able to create a learning that is not only fun but also train students' thinking skills so that students become more creative.

The old paradigm about the learning process that comes from John Lock's tabulation theory where the mind of a child is like a blank paper and ready to receive the strokes of the teacher is less appropriate to be used by the teacher. Teachers need to develop and

implement teaching and learning activities where students can actively build their own knowledge. This is in line with the concept of constructivism in which the success of learning depends not only on the environment or learning conditions, but also on the initial knowledge of students.

Based on the observations made by researchers for 2 months, the researchers concluded that the creative thinking ability of ten grade students of Social Studies class Senior High School 2 KUNINGAN is still relatively low. This is shown through the learning process during the discussion, students are less able to develop ideas or ideas from various information received. In addition, most students are less able to provide alternative answers that are different from existing ones in the book or given by the teacher. Students are still difficult in analyzing and solving the problems discussed in these subjects. Most students fill in the answers only fixated on the existing material on the book, which they had previously memorized at home. Good learning is not just a memorized lesson but more emphasizing understanding, because understanding places more emphasis on the extent to which students understand the material that has been taught. This is also supported by the average value of the midterm test which is still less than Minimum Criteria of mastery learning (KKM).

Student-centered learning requires creative and innovative learning methods that can support such learning. Therefore, teachers need to improve learning patterns and pursue an innovation in learning. One of them is by using the model of Project Based Learning where students are required to have higher order thinking ability.

Hardini and Dewi (2012: 128) say that "The model of Project Based Learning has great potential to provide a more interesting and meaningful learning experience for students".

Moving from the background of the research above, then the problems in this study can be formulated as follows:

- Is there a difference in students' creative thinking ability on initial measurements between experimental class using the Project Based Learning model and control class using the lecture learning method?
- Is there a difference in the students' creative thinking ability on the final measurement between the experimental class using the Project Based Learning model and the control class using the lecture learning method?
- Is there a difference in N-Gain of students' creative thinking ability between experimental

class using the Project Based Learning model and control class using the lecture learning method?

2 LITERATURE REVIEW

2.1 Creative Thinking

Thinking is an essential human skill that takes place for life, work and all other aspects of life. According to Peter Reason in Sanjaya (2011: 230), "thinking is a mental process of a person who is more than just remembering and comprehending.

According to J.M. Bochenski in Suharsaputra (2012: 4), "thinking is the development of ideas and concepts", whereas according to Partap Sing Mehra in Suharsaputra (2012: 5), "thinking (thinking) is looking for something not yet known based on something already known."

According to John Dewey in Uhar Suharsaputra (2012: 6) the thinking process has the following sequences (processes):

- The emergence of difficulty, either in the form of adaptation to the tool, difficulty about the nature, or in explaining things that appear suddenly.
- Then the difficulty is given a definition in the form of problems.
- Arise a possible solution in the form of puzzle, hypothesis, inference or theory.
- Solving ideas are rationally explained through the formation of implications by gathering evidence (data).
- Strengthen the proof of the above ideas and conclude them, either through explanations or experiments.

According Sujanto (2001: 56) suggests that:

"Thinking is a symptom of the soul that can establish the relationships between our knowledge. Thinking is a dialectical process, meaning that as long as we think our mind holds a question and answer to be able to put the relationships between our knowledge correctly"

From the above opinion it can be concluded that thinking is a mental process that someone does by connecting the knowledge he has and the ideas and concepts which are contained in his thinking. Thinking is divided into two namely low-level thinking and high-level thinking. In low-level thinking can generate ideas, ideas and knowledge. While in high-level thinking it can result in a problem-solving and decision-making.

According to the model of intellect structure by Guilford in Munandar (2012: 167) "Divergent thinking (also called creative thinking) is to provide a variety of possible answers based on information provided with an emphasis on the diversity of numbers and suitability." According to Rusman (2012: 324) suggests that "Creative thinking always begins with critical thinking, namely finding and delivering something that previously did not exist or fix something". Meanwhile, according to Munandar (2012: 25) suggests that:

"Creativity is a common ability to create something new, as the ability to provide new ideas that can be applied in problem solving, or as the ability to see new relationships between pre-existing elements."

So that creativity not only makes something new, but it can also modify from various old combinations. According to Ramdhy and Dadi (2012: 126) suggests that:

The characteristics of a creative person can be differentiated into cognitive traits and non-cognitive traits. Into cognitive traits include four characteristics of creative thinking namely originality, flexibility, fluency, and elaboration. Non-cognitive characteristics are: (a) open to new and extraordinary experiences, (b) flexible in thinking and acting, (c) free in self-expression, (d) able to appreciate fantasy, (e) interest in activities - creative activities, (f) believe in own ideas, and (g) independently.

2.2 Indicators of Creative Thinking

According to Guilford in Ramdhy and Dadi (2012: 123) mentions five indicators of creative thinking, namely:

- Fluency; is the ability to generate many ideas
- Flexibility; is the ability to develop various alternative solutions and approaches to problems.
- Originality; is the ability to decide ideas in genuine or genuine ways.
- Elaboration; is the ability to describe in detail and systematically.
- Redefinition; is the ability to review a problem from a perspective that is different from what many people already know.

According to Filsaime (2008: 21) argued that the indicator of creative thinking, namely:

- Originality
The category of originality refers to the uniqueness of any response given. Originality is shown by an unusual, unique and rare response.
- Elaboration

- It is the ability to decipher a particular object.
- Smoothness or fluency
It is the ability to create a myriad of ideas. This is one of the most powerful indicators of creative thinking, as more ideas, the more likely it is to gain a significant idea.
- Flexibility
Is the ability to overcome mental obstacles, change the approach to a problem. Not stuck by assuming rules or conditions that cannot be applied to a problem.

2.3 Definition of Project Based Learning Method

According to Buck Institute for Education (BIE) in Wena (2010: 144) argues that:

"Project Based Learning is a learning model that involves students in problem-solving activities and gives students the opportunity to work autonomously construct their own learning, and the peak produces valuable and realistic student work."

According to Warsono and Hariyanto (2013: 153) "Project-based learning is defined as a teaching that tries to link technology with everyday life issues that are familiar with students, or with school projects". Meanwhile Bransfor and Stein in Warsono and Hariyanto (2013: 153) "define project-based learning as a teaching approach in cooperative and sustainable inquiry".

3 METHODS

The research method used in this research is quasi experimental method where the research sample is not randomly grouped but accept the sample condition as it is (Ruseffendi, 2006: 2). The subject of research is the ability of creative thinking of students, especially the students of Class X Social Studies of Senior High School 2 Kuningan academic year 2014/2015 consisting of one class of control using lecture teaching method that is Class X Social Studies 2 with the number of students 31 students and one experiment class by using Project-based learning method is X IPS 1 with a total of 28 students.

4 RESULTS AND DISCUSSION

4.1 Hypothesis Testing of Pre-Test

The results of hypothesis testing of pre-test by using t test can be seen in the following table:

Table 1: The result of hypothesis testing of pre-test.

Class	Average	Variance	Number of Students	T_{obs}	t_{table}
Experiment	51,07	144,3	28	0,18	1,672
Control	51,58	97,1	31		

From the calculation results obtained $t_{obs} = 0.18$ while $\alpha = 0.05$ and $db = 57$, obtained $t_{table} = t_{0.05(57)} = 1.672$ then H_0 accepted. It can be concluded that the students' learning outcomes in the two sample groups were not significantly different, because $t_{obs} (0.18) < t_{table} (1.672)$. So there is no difference in early ability between the experimental group and the control group.

4.2 Hypothesis Testing of Post-Test

The results of hypothesis testing of post-test by using t test can be seen in the following table:

Table 2: The result of hypothesis testing of post-test.

Class	Average	Variance	Number of Students	T_{obs}	t_{table}
Experiment	84,93	75,8	28	3,363	1,672
Control	75,85	131,3	31		

From the calculation results obtained $t_{obs} = 3.363$ while $\alpha = 0.05$ and $dk = 57$, obtained the $t_{table} = t_{0.05(57)} = 1.672$ or $t_{obs} > t_{table}$ then H_0 is rejected and H_1 is accepted. In short, the method of Project Based Learning has a significant influence on students' creative thinking ability. Thus there is a difference in the post-test between the experimental class and the control class.

4.3 Hypothesis Testing of N-Gain

Table 3: The result of hypothesis testing of n-gain.

Class	Average	Variance	Number of Students	T_{obs}	t_{table}
Experiment	0,69	0,028	28	3,88	1,672
Control	0,50	0,04	31		

Based on the calculation result obtained t_{obs} of 4.13 while t_{table} with significant level $\alpha = 0.05$ where $dk = 57$ which shows the value of $t_{table} = 1.672$. Then this means that $t_{obs} > t_{table}$ is $3.88 > 1.672$ or reject H_0 . The average gain value of student learning outcomes of the experimental class is higher than the average

gain value of student learning outcomes in the control class. This shows that the model of Project Based Learning can improve students' creative thinking ability.

4.4 Discussion

The implementation of the project-based learning model to the experimental class was able to improve students' creative thinking ability compared to the use of the lecture learning method to the control class.

After learning in both classes with different approach, it turns out that both classes have improved student learning outcomes. But the increase that occurs in the experimental class is greater than the control class. This shows that the experimental class using Project Based Learning method can improve students' creative thinking ability.

The results of the above study, supported by the study of Hardini and Dewi theories (2012: 128) say that "the model of Project Based Learning has great potential to provide a more interesting and meaningful learning experience for students". Meanwhile, according to Buck Institute for Education (BIE) in Wena (2010: 144) argues that "Project Based Learning is a learning model that involves students in problem-solving activities and gives students the opportunity to work autonomously construct their own learning, and peak produce student work products Valuable and realistic". Based on some of the above opinions the researcher found out that Project Based Learning is a student-centered learning and puts teachers as motivators and facilitators, where students are given the opportunity to work autonomously construct their learning, acquire new ideas, and can develop ideas that already exist, so as to improve students' creative thinking ability.

The use of Project Based Learning method requires students to be active (student-centered) while the teacher acts as facilitator and motivator, students cooperate with various experiments. So many opportunities are provided to invite students to think creatively about the real issues that will be raised in Project Based Learning.

The ability to think creatively is a cognitive ability of mental activity to generate and develop new ideas as the development of pre-existing ideas to produce a decision in solving problems.

5 CONCLUSIONS

There is no difference in students' creative thinking ability on initial measurements between experimental class using Project-Based Learning method and

control class using lecture learning method. There is a difference of students' creative thinking ability on final measurement between experimental class using Project Based Learning method and control class using lecture learning method. There is a difference in N-Gain of students' creative thinking ability between experimental class using Project-Based Learning method and control class using lecture learning method.

REFERENCES

- Filsaime, D. K., 2008. *Menguak Rahasia Berpikir Kritis dan Kreatif*. Jakarta: Prestasi Pustaka.
- Hardini, I., Puspitasari, D., 2012. *Menjadi Guru Profesional*. Bandung: PT Remaja Rosdakarya.
- Munandar, U., 2012. *Pengembangan Kreativitas Anak Berbakat*. Jakarta: PT.Rineka Cipta.
- Ramdhy, S., Permadi, D. 2012. *Bagaimana Mengembangkan Kecerdasan (Metode Baru untuk Mengoptimalkan Fungsi Otak Manusia)*. Bandung: PT. Sarana Panca Karya Nusa.
- Ruseffendi, E. T., 2006. *Statistika dasar untuk penelitian pendidikan*. Bandung: IKIP Bandung Press.
- Rusman. 2012. *Model-model Pembelajaran mengembangkan profesionalisme guru*. Jakarta. Raja Grafindo Persada.
- Sanjaya, W., 2011. *Strategi Pembelajaran (Berorientasi Standar Proses Pendidikan)*. Jakarta: Kencana Prenada Media Group.
- Suharsaputra, U., 2012. *Metode penelitian kuantitatif, kualitatif dan tindakan*. Bandung: PT Refika Aditama.
- Sujanto, A. 2001. *Psikologi Umum*. Jakarta: Bumi Aksara.
- Warsono. Hariyanto., 2013. *Pembelajaran Aktif Teori dan Asesmen*. Bandung: Remaja Rosdakarya.
- Wena, M., 2010S. *Strategi Pembelajaran Inovatif Kontemporer (Suatu Tinjauan Konseptual Operasional)*. Jakarta: Bumi Aksara.