

Nested Type Integrated Learning Model through Learning Motivation towards Students' Critical Thinking Skills

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Abstract—The problem in this research is low student's thinking ability, indicated by the lack of active participation of students in the learning process and their lack of ability to develop the knowledge they have, especially in problems that require the ability to analyze. This is caused by the role of teachers who serve as the only source learning, as well as teachers who play a more active role in the learning process so less encouraging students to play an active role in seeking and finding their own knowledge. In creating a good learning process, a teacher should consider the characteristics of each student including students' motivation in learning. This study aims to determine: (1) the differences of critical thinking skills between students who are taught by nested type integrated learning model and those who are taught by lecturing method, (2) the differences of critical thinking ability between students who have high learning motivation and those who have low learning motivation, (3) the interaction between nested type integrated learning model with students' learning motivation in influencing their critical thinking ability. This research is a quasi-experiment with pretest-posttest control group design. The subject of this research is the students of class VIII National Junior High School 1 Kuningan, Indonesia, academic year 2017-2018. The sample of this research is class VIII E as the control class and VIII F class as the experimental class where the total students from the two classes are 69 students. The results of this study show that: (1) there is a difference of critical thinking ability between students who are taught by nested type integrated learning model and those who are taught by lecturing method, (2) there is a difference of critical thinking ability between students who have high learning motivation and those who have low learning motivation, (3) there is interaction between nested type integrated learning with student's learning motivation in influencing their critical thinking ability.

Keywords—*nested type integrated model; learning motivation; critical thinking ability*

I. INTRODUCTION

Education holds a central position as the primary need for human beings since by education, humans can encounter challenges that will happen. Besides, by education, humans can also recognize and develop all potentials they have so they can be humans completely. The characteristics emphasized on the education in the 21st century consist of 5 main points, namely:

1) Critical thinking, 2) creative thinking, 3) communicative, 4) innovative, and 5) problem solving. Someone who thinks critically can infer from what he knows and finds out how to use the information to solve any problems. In Bloom's taxonomy, high order thinking skill includes analyzing (C4), evaluating (C5), and creating (C6).

Critical thinking according to Beyer in Muspita is "a group of specific operations that is possible to be used one by one in various combination or order, and each operation includes analysis and evaluation" [1]. While according to Murti, that: "critical thinking is the process of intellectual thinking where the thinker uses thought that is reflective, independent, clear and rational" [2]. According to Ennis, the indicators of critical thinking skills are: 1) basic clarification, 2) building basic skills, 3) conclusion, 4) further clarification, and 5) strategy and tactics [3].

There are many factors that can influence the students' critical thinking skills, such as students' low learning motivation, environment and technology advance, and the monotonous teacher in learning process. When a student has high learning motivation which is also supported by adequate facility, it is obvious that the student will be pleased to learn continuously. Moreover, if the teacher is skilled in using various kind of learning model, the students' motivation to learn is likely to increase.

Based on the interview with Social subject teacher and the observation in National Junior High School 1 Kuningan, it is found that the comprehension of students' critical thinking skills is almost half to meet the criteria where the students got difficulty to answer the questions proposed. It can be seen from the learning process when teacher gave a question, there were only a few students able to answer, and the students only understood when the teacher explained the material and the sample questions, but when they were asked to analyze the questions related to wide thinking and the context was changed with the material taught, the students were hard to answer with their own thinking.

Based on the previous study conducted by the researcher with sample class VIII E consisting of 36 students, they with low critical thinking skills still dominated, and can be seen in the table below:

TABLE I. PERCENTAGE OF CRITICAL THINKING

No	Percentage		Number of Students	
	>75	<75	>75	<75
1	33,3%	66,7%	12	24
total	100%		36	

To improve the students' critical thinking skills and also to create an active, creative and interactive atmosphere, there needs to be a learning model that is appropriate with the situation and condition of the students and considers the environment used during the learning process as well. The integrated learning model is essentially a learning approach that enables students either individually or in an active group to seek, dig up, and find the concept and principles holistically and authentically. Through the integrated learning model, students can find anything related to the learning material by themselves so they can be trained to independently find the concept they learn holistically, meaningfully and authentically.

A. Research Questions

- Is there any difference of critical thinking skills between students with nested type integrated learning model and lecturing method on eight grade students of National Junior High School 1 Kuningan?
- Is there any difference of critical thinking skills between students with high learning motivation and students with low learning motivation on eight grade students of National Junior High School 1 Kuningan?
- Is there any interaction between nested types integrated learning model and the students' learning motivation in affecting critical thinking skills on eight grade students of National Junior High School 1 Kuningan?

II. THEORETICAL BACKGROUND

Thinking is a process of finding the answers to what people want to know. It is in line with what is proposed by Mehra in Suharsaputra who stated that: "thinking (thought) is finding what has not been known based on something that has been known" [4]. While according to Reason in Sanjaya, stated that: "thinking is a mental process of someone that is more than just remembering and comprehending" [5]. According to Krulik and Rudnik "thinking process begins with recall, basic thinking, critical thinking, and creative thinking" [6].

Critical thinking requires us to be able to analyze and evaluate each action. According to Murti, critical thinking is "a process of thinking intellectually where the thinker values his thinking quality intentionally [2]. The thinker uses thinking that is reflective, independent, clear and rational". While according to Jhon Dewey in Muspita, stated that critical thinking is "a consideration that is active, continuous, and thorough about a conviction or a form of knowledge received from the point of reasons that support it and the further conclusions that become its tendency" [1].

To improve the students' critical thinking skills and also to create an active, creative and interactive atmosphere it needs a learning model that is appropriate with the situation and condition of the students and considers the environment used

during the learning process as well. Therefore, the teacher should master skills to collaborate the teaching material and art or the teacher can also package it in a learning model that is attractive and able to increase students' motivation to follow the learning process.

The learning model used should be able to help students in developing their critical thinking skills, and one of the learning models is integrated learning model. Integrated learning model is an approach in the learning that relates intentionally some aspects either inter-subjects or intra-subjects. By the merger, the students will gain knowledge and skills thoroughly so the learning becomes meaningful for students. According to Atkinson, integrated learning is "an application of one learning strategy based on integrated curriculum approach that aims to create or make a learning process relevantly and meaningfully for students" [7].

In the activity of increasing thinking level, the implementation of appropriate integrated learning model is by implementing nested type. The nested type integrated learning is the curriculum integration in a branch of science which specifically puts the integration focus on a number of learning skills that is going to be taught by a teacher to his students in a learning unit for the achievement of learning material (content). Those skills include thinking skills, social skills, and organizing skills. This idea is in line with what is proposed by Fogarty in Maharani which stated that "nested type integrated learning is a learning that mergers the thinking skills, social skills, and organizing skills. The characteristics of subjects become the pedals of the initial activity [8]. According to Fogarty in Maharani "the kind of social and linguistic subjects can be merged with thinking skills and social skills" [8].

According to Woodwort in Sanjaya "a motive is a set that enables individuals to do certain activities to achieve the goals" [5]. While according to Sardiman, stated that "learning motivation is the mental factor that is non-intellectual and its typical role is in case of the desire growing, feeling pleasant, and the motivation to learn" [9].

III. RESEARCH METHODOLOGY

The method used in this research is the quasi experimental. This research used a group as experimental group with nested type integrated learning model and one more group as the control class with conventional/lecturing method. The research design used is the factorial design with two independent variables "two-factor between-subject".

TABLE II. RESEARCH DESIGN

Learning Method (A)	Learning style (B)		
	Visual (1)	Auditory(2)	Kinesthetic (3)
Lecturing	A1B1	A1B2	A1B3
Nested	A2B1	A2B2	A2B3

Source: Ghozali [10]

Description:

- A1B1: Lecturing method and visual learning style
- A1B2: Lecturing method and auditory learning style
- A1B3: Lecturing method and kinesthetic learning style
- A2B1: Nested method and visual learning style
- A2B2: Nested method and auditory learning style
- A2B3: Nested method and kinesthetic learning style

IV. FINDINGS AND DISCUSSIONS

The learning that was conducted used Nested type Integrated Learning approach. To see the relationship between learning motivation and critical thinking skills of the students, the learning was conducted in three times of meeting.

The first step done by the researcher is distributing questionnaire of learning style with 20 items of questions. The data of questionnaire-filling result of students in control class and experimental class is presented as follows:

TABLE III. DATA OF STUDENTS' LEARNING STYLE IN CONTROL CLASS AND EXPERIMENTAL CLASS

Control class (Lecturing)		Experimental class (Nested)	
High Motivation	8 std	High Motivation	20 std
Medium Motivation	9 std	Medium Motivation	6 std
Low Motivation	18 std	Low Motivation	8 std

Next is the step of students' critical thinking skills test (pretest), implementation of treatment using nested type integrated learning model and lecturing method, until the step of posttest to see the effectiveness of using nested model compared with the lecturing method in improving the students' critical thinking skills at National Junior High School 1 Kuningan.

TABLE IV. TEST RESULT OF DESCRIPTIVE POSTTEST IN CONTROL CLASS AND EXPERIMENTAL CLASS

	Descriptive Statistic				
	N	Min	Max	Mean	Std deviation
Control posttest	35	4.70	10.00	7.4468	1.39104
Experimental posttest	34	4.00	10.00	7.9441	1.45648

From the data of critical thinking skills score above, it is obviously seen that the use of nested type integrated learning model in experimental class more increases students' critical thinking skills. In using nested type integrated learning model, learning process emphasizes on three skills, namely thinking skills, social skills, and organizing skills. So this nested type integrated learning model is proper to be applied in learning process.

Then by using two way anova test, it shows the relevance between nested types integrates learning model, learning motivation and students' critical thinking skills. It is proven by the two way anova test using SPSS 21.0 as follows:

TABLE V. RESULT OF TWO WAY ANOVA TEST

Test of Between-Subjects Effects				
Source	Type III Sum of squares	Df	Mean Square	F
Corrected model	6.184*	5	1.237	.586
Intercept	3327.025	1	3327.025	1577.121
Learning model	2.592	1	2.592	10.039
Learning motivation	2.194	1	2.194	5.318
Learning model*	155.637	2	77.818	7.388
Learning motivation				
Error	152.902	63	20.110	
Total	420212.400	69		
Corrected Total	1309.086	68		

Dependent variable: critical thinking

Based on the table of the result above, it obtained result as follows:

- Integrated learning model actually can increase students' critical thinking skills, it can be seen from the F value of 10.039 with significance value $0.012 < 0.05$. It means that the level of students' critical thinking between those taught using nested type integrated learning model has difference statistically with those taught using lecturing method.
- Learning motivation affects the critical thinking skills, auditory, and kinesthetic which have difference statistically. It can be seen from the significance value of $0.007 < 0.05$. It means that the critical thinking skills of students with high learning motivation, medium learning motivation and low learning motivation have difference statistically.
- There is interaction between model and students' learning motivation in affecting students' critical thinking. It can be seen from the significance value of $0.020 < 0.05$.

From the data above when all hypotheses are accepted it conducts post hoc test to see if there is any difference of creative thinking level of students from the three students' learning styles which the author presents in the following anova table:

TABLE VI. RESULT OF ANOVA TEST

Critical thinking skills					
	Sum of square	Df	Mean squares	F	Sig.
Between groups	4700.5366	5	940.107	48.16	.000
Within groups	1229.667	63	19.519		
Total	5930.203	68			

From the ANOVA table above, in sig. column is obtained sig. value 0.000 which means that the sig. < 0.005 ($0.000 < 0.05$). The conclusion drawn is that there is significant difference (interaction) between critical thinking level based on the three students' learning motivation and the implementation of nested type integrated learning model.

Then, when the result of ANOVA test shows significant difference, the further test is to see which groups are different by doing post hoc scheffe test. The following is the data of table of post hoc test that had been done by the researcher:

- There is difference of critical thinking skills between students with lecturing method and medium learning motivation with significance value 0.000
- There is difference of critical thinking skills between students with lecturing method and low learning motivation with significance value 0.000
- There is difference of critical thinking skills between students with lecturing method and high learning motivation with significance value 0.000

- There is difference of critical thinking skills between students with nested learning model and medium learning motivation with significance value 0.011
- There is difference of critical thinking skills between students with nested learning model and high learning motivation with significance value 0.013
- There is difference of critical thinking skills between students with nested learning model and low learning motivation with significance value 0.034

V. DISCUSSIONS

The score gain of critical thinking skills of students who were taught using nested type integrated learning model is higher than the critical thinking skills of students who were taught using lecturing method. It is because nested type integrated learning model is the curriculum integration in a branch of science which specifically puts the integration focus on a number of learning skills that is going to be taught by a teacher to his students in a learning unit for the achievement of learning material. Those three skills include thinking skills, social skills, and organizing skills.

Besides, integrated learning is based on inquiry approach that involves students starting from planning, exploring, and brainstorming from the students. Nested type model is one of the integrated models which is implemented to encourage students to work bravely in groups and learn from their own experience. In addition, the students could be more active in pouring out the ideas and stimulated to think more creatively in encountering each issues in Social subject.

In other words, in the learning, the students did not only get the lesson from the teacher, but the students were also directed to solve problem (thinking skills), work together in group to discuss the answer from various sources to solve the problem (social skills), and summarize the analysis of the answer for the problems they have collected (organizing skills). Different from the implementation of control class learning which only received material from the teacher as facilitator, so the level of students' critical thinking in control class got low predicate.

This is in line with the previous study conducted by Ekawati at Indonesian Teacher's Union (PGRI) Junior High School 1 Ciputat which shows that the use of nested type integrated learning model gives significant effect on the students' ability of problem solving in mathematics [11]. It is because the students were required to complete each problem by themselves so it made students think actively and use various kind of skills and procedures to solve the problems. In addition, the research conducted by Maharani at National Senior High School 5 Cirebon proven that the research resulted the conclusion that the implementation of nested type integrated learning to increase the students' science literacy on the ecosystem concept of tenth grade students can be concluded that the students activity in nested type integrated learning belongs to strong criteria [8]. The study above is in line with Trianto's opinion which stated that: Through integrated learning, students can get experience directly so they can afford the power to receive, keep, and implement the concept they have learnt. So that the students are trained to find

various concept by themselves that is learnt thoroughly, authentically, meaningfully and actively [12].

Thus, nested type integrated learning model by focusing on a number of skills enables students to think actively and increase their critical thinking skills.

Next, the elements that make learning motivation affect the students' critical thinking according to Dimyanti and Mudjiono are: "(1) students dreams or aspiration, (2) students' ability, (3) students' condition, (4) condition of students' environment, (5) dynamic elements in teaching and learning, (6) teacher's effort to teach students" [13]. Growing students' learning motivation is teacher's responsibility. Because a teacher that is good in teaching will always encourage students to achieve the goal.

Although in the test is found the significant effect but in conducting the research process, there are some obstacles found by the researcher in the range. There are: (1) the students were still not accustomed with the learning model that required them to master three skills where one of them is the thinking skill, (2) during the learning process, the students less prepared the material to be discussed, (3) some students were not able to participate actively in the learning process, (4) less motivation given by the teacher.

VI. CONCLUSION

There is a difference of critical thinking skills between students with nested type integrated learning model and lecturing method. It means that the result of critical thinking skills of students with nested type integrated learning model is higher than the students who were taught using lecturing method and it is proven by the result of posttest in experimental class which was higher than control class.

There is a difference of critical thinking skills between students with high learning motivation, students with medium learning motivation and students with low learning motivation. From the result of the research is obtained students with high learning motivation had critical thinking skill that was higher than students with medium learning motivation and students with low learning motivation.

There is an interaction between nested type integrated learning model and students' learning motivation in affecting students' critical thinking. These two independent variables similarly have effect on students' critical thinking skills.

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