

Students' Critical Thinking Ability: Descriptions Based on Thematic Learning Outcomes and Open Ended Application

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Abstract. Critical thinking ability is a high-level thinking ability which is one of component in the issue of 21st century intelligence. The purpose of this reserch is to determine students' critical thinking skills. The type research is descriptive research using quantitative methods. This research was conducted in SD Negeri 2 Pulutan, Penawangan District, Grobogan Regency. The population in this study were all fifth grade elementary schools in Grobogan Regency which were registered in the second semester of the 2018/2019 academic year. The sample was taken in fifth grade of SD Negeri 2 Pulutan that had 29 students. The data collection is done by multiple choice questions test as many as 20 items which all include indicators of critical thinking. The results showed that the percentage of students with the ability to answer thinking questions was quite critical at 53.2%, and less critical at 51.7%, and very uncritically at 13.8%. It shows that students' critical thinking skills are in the low category. The ability to think critically is very important in order to face the rapid changes in the life order and global changes. The application of open ended models is an appropriate effort because the goals and desires of students are built and achieved openly, and required to explain various ways to get the answers.

Keywords: crititical thinking, ability, thematic learning, outcomes, open ended

1. INTRODUCTION

The competition for life in this era of globalization is very tight. This tight competition has affected all life aspects including in education. Education is a conscious and planned effort to create a learning atmosphere in order to develop its potential so education becomes a quality education [1]. Education plays an important role for preparing generations that are able to compete with the rapid advances in modern technology. In facing the current era of modernization, the education system in Indonesia is expected to enable students to equip them with learning skills and life skills. The success of a student today depends on the achievement of the 21st century, so students must learn to get it. Based on [2], competencies that must be

possessed in the 21st century are creativity and innovation, critical thinking and problem solving, communication, and collaboration.

In the 21st century [3] urged teachers to continue teaching and learning development in schools with a model of high-level thinking (HOTS). Critical thinking ability is a high-level thinking ability which is one of component in the issue of 21st century intelligence. In preparing students who are ready to compete in the millennium and revolution era of Industry 4.0, teachers must be able to direct students to think critically, analytically, and be able to provide conclusions or problem solving [3]. The ability to think critically is very important and necessary in life in lite with science and technology are developing very rapidly today. This has resulted in rapid changes in the life order and global changes. If students are not equipped with critical thinking skills, students do not have the ability to take, process, and use the information they have to face the challenges in daily life. It was agreed with [4] which states that critical thinking is a directed and clear process used in mental activities such as solving problems, making decisions, persuading, analysing assumptions, and conducting scientific research.

Teachers as organizers of classroom learning have a duty to help students' to develop their critical thinking skills. According to [5] in general learning only focuses on students cognitive development at the level of low order thinking mastery, they are cognitive ability to remember (C1) and understanding (C2), so students have difficulty in answering high cognitive levels. Students' critical thinking skills are at a high cognitive level (HOTS). The ability to think critically is appropriate in indicators from (Facione, Ennis, Brown & Kelley) in the study consisted of the ability of C3-C6. By practicing critical thinking skills, learning will become more meaningful, because in addition to teach about remembering facts also train the ability to understand (C3), analyse (C4), synthesize (C5), and evaluate (C6).

Learning applied in the 2013 curriculum is integrated thematic learning. Thematic-based learning activities are based on a theme consists of several subjects which are combined into a theme [6]. Thematic learning is defined as learning that is designed based on a specific theme. Elementary School Thematic Learning in Indonesia, is an interdisciplinary, multidisciplinary and transdisciplinary integration [7]. Thematic learning in Primary Schools is to integrate the dimensions of attitudes, knowledge, and skills into a single unit, combining competencies from several basic lessons to be connected so they strengthen each other, combining the core competencies of each lesson so each lesson still has its own basic competencies and connects various subjects with the surrounding environment.

The application of critical thinking skills in learning is very relevant to the 2013 curriculum. This is appropriate [8] that the dimension of knowledge based on Bloom's Taxonomy is classified as factual, conceptual, procedural, and metacognitive, whose mastery needs to be started from the level of primary education to secondary education. Schools that have implemented the 2013 curriculum are considered to have familiarized students with critical thinking of students. Based on these assumptions, the researcher will analyse students' critical thinking skills in thematic learning in elementary schools. The purpose is to describe the critical thinking skills of elementary school students in the 2013 curriculum year thematic learning 2018/2019. Besides that in the 21st century era, a teacher must be clever to apply a learning model that can make students play an active role in learning so students' critical thinking skills can be improved and learning objectives can be achieved.

2. METHOD.

The type of research conducted is descriptive research. Any approach that attempts to describe data might be referred to a descriptive method [9]. The data used in this study was descriptive quantitative data. Quantitative description is based on counts or measurements which are generally reduced to statistical indicators such as frequencies, means, standard deviations, and range [9]. This research was conducted in fifth grade at SD Negeri 2 Pulutan in Penawangan Subdistrict, Grobogan Regency. The subjects in the study were 29 students of fifth grade students.

The student test results according to critical thinking indicators were analysed to determine the percentage of indicator achievement on each question. Furthermore, the percentage of indicator achievement is presented in diagrams and tables. The research conclusions were obtained from the percentage of indicator achievement.

3. RESULT AND DISCUSSION

3.1. Result

The level of critical thinking skills of students can be known by giving questions that contain indicators of critical thinking (C3-C6). The questions given are the tests on theme 6 (heat and transfer) multiple choices on 20 questions. Complete answer distribution for fifth grade students of SDN 2 Pulutan in 2018/2019 Academic Year can be seen in the following picture 1.

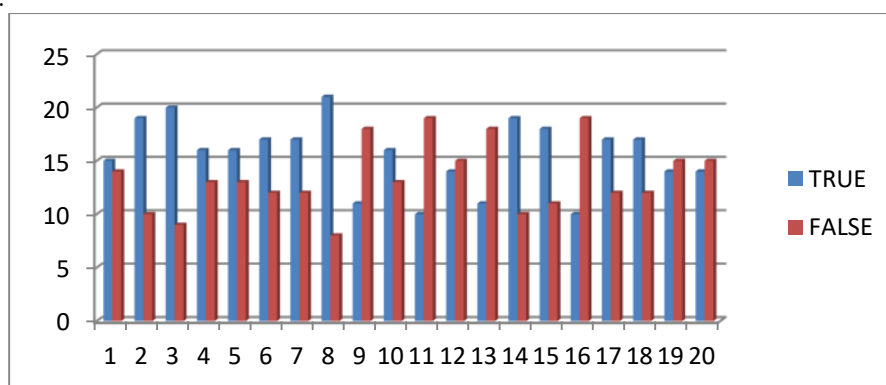


Figure 1. Distribution of answers of fifth grade students of SDN Pulutan 2

From questions answered by students, namely: very critical, quite critical, less critical, and not critical. . In this study carried out after the material on theme 6 was finished discussed and studied. The test given is intended to determine students' critical thinking skills where it is known that the level of ability of students varies. There are 4 categories in the percentage of questions answered by students, they are very critical, quite critical, less critical, and not critical. The number of questions used is as many as 20 multiple multiple choice questions. This can be seen in the following percentage calculation table:

Table 2. Percentage of Student Ability at SDN Pulutan 2

Ability Level	Value	Score	Percentage
Very Critical	≥ 76	0	0%
Quite critical	$75 \geq 56$	10	34,5%

Less Critical	55≥40	15	51,7 %
Not Critical	<39	4	13,8 %
Total		29	100%

Based on table 1, it can be seen that the percentage of students with the ability to answer very critical thinking questions is 0%, quite critical at 34.5%, less critical at 51.7%, and less critical at 13.8%. The level of critical thinking skills of students on average is still low because > 50% are at a less critical and not critical level. The questions provided are 4 types of C3-C6. Based on table 1, it can be seen that the percentage of students with the ability to answer very critical thinking questions is 0%, quite critical is 34.5%, less critical is 51.7%, and less critical is 13.8%. The level of critical thinking skills of students on average is still low because > 50% are at a less critical and not critical level. The questions provided are 4 types of C3-C6. The data on the percentage of students in answering critical thinking questions in SDN 2 Pulutan is offered on theme 6 (Heat and Transfer) 2018/2019 Academic Year

Table 2. Presentation of Students in Critical Thinking at SDN Pulutan 2

Indicator	Questions	True	False
Students' ability to express the intent of information (C3)	7	57.1%	42.9%
Students' ability to analyze information (C4)	7	52.7%	47.3%
Students' ability to conclude information (C5)	4	52.6%	47.4%
Students' ability to connect the implications of information (C6)	2	48.3%	51.7%
Total	20	210,7%	189,3%

Among the 4 types of questions according to the indicators of critical thinking adjust the bloom taxonomy, In C3 questions from 7 questions provided students can answer the right questions only 57.1%, in 7 questions with level of analysis (C4) students answer questions 52.7% correct answers, from 4 C5 questions students answered 52.6% of the answers were correct, and in C6 questions students answered 48.3% correct answers. From 20 student questions correctly answer 52.7% (<60%), i, it shows that students' critical thinking skills in thematic learning are low.

3.2. Discussions

Thinking is a human activity that is always done, even when sleeping. The process of thinking is someone's intellectual activity that occurs in the brain. Thinking is one of the most important forces and it's a characteristic that distinguishes humans from animals. Critical thinking is part of Higher Order Thinking Skills in the 21st century. Critical thinking is the intellectually disciplined process of active and skilfully conceptualizing, applying, analysing, synthesizing, and evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action [10]. Critical thinking is reasonable and reflective thinking is focused on deciding what to believe or do [11].

Someone who has the ability to think critically has an attitude of confidence, very open, appreciates an honesty, respect for clarity and accuracy, looks for other views that are different, and will change attitudes when there is an opinion that is considered good with the suitability of a clear concept [12]. The need for thoroughness in working on test questions

because based on the observations of students still tend to after completing the test is not checked again, to find out the existence of unanswered questions or incorrect answers.

Students also have the habit of not confident in working on the test questions seen before the test questions are shared, there are students who want to give up without knowing the test first, and not confident in their own answers causing students to cheat or discuss. This needs to be corrected because each student must be prepared to accept all problems that will train the mindset in a better direction in solving the problem with critical thinking instilled in learning.

The observation in SD Negeri 2 Pulutan illustrates that the low student learning outcomes on theme 6 (Heat and Movement) have not been able to apply their critical thinking skills during the teaching and learning process, students only receive teacher explanations, record and listen without asking questions. The ability to think critically as desired in the 2013 curriculum does not provide an appropriate description. In the implementation of classroom learning, students appear to be less active. Half of the number of students in the class did not do something to develop themselves and the curiosity of students tended to be low on the material being taught. This can be seen from the results of observations made in class, students feel indifferent when following the learning process. When children submit ideas, they are still right with textbooks at school, when the teacher gives the same questions, the answer is still the same and no one gives a different idea. Students' critical thinking skills will develop if supported by the efforts made by the teacher.

Teachers should try to improve their critical thinking skills by giving different opinions, sometimes the teacher gives an example in daily life related to the material so that students are more happy and enthusiastic in following the learning process, conducting question and answer in the learning process, and training students to be brave express their opinion. The implementation of learning does not give an idea that students are student centre, so the teacher only uses 1 variation of teaching without heeding students to be able to think critically. This can be done by changing the paradigm in education and learning, learning orientation, which was originally teacher-centred, switched to student centred [13]. The optimal learning outcomes are basically desired by all parties and logical-critical thinking insights are needed for the development of future progress in learning [14].

Responding to these problems, a teacher must be clever to implement the learning model that can make students play an active role in learning process so students' critical thinking skills can improve and learning objectives can be achieved. Teacher education and training not only aims to enable teachers to develop students' critical thinking skills, but also allows teachers to develop criticality in education, curriculum, and students [15]. The teacher must facilitate the development of students' critical thinking through learning done in class. One effort to develop students' thinking skills in the 21st century is through learning models that can train students to understand problems, provide reasons for the answers that are raised and draw conclusions. The learning model has the potential to develop students' critical thinking skills effectively, the open ended learning (OEL) model.

According to Hannafin et al. [16] the open-ended learning model is a learning process in which individual goals and desires are built and achieved openly. The steps of this model include: orientation, presentation of problems, work on individual problems, group discussions, presentation of the results of the discussion, and closing. The application of the open ended learning model in this learning can encourage active and creative students and improve critical thinking skills so learning objectives can be achieved optimally. This is evidenced in the research conducted by [17] that conclusions can be drawn at a significant level of 5% indicating that (1) there is an open-ended effect on mathematics learning achievement, critical thinking skills, and self-confidence of junior high school students in

Kebumen District, (2) there is no school influence, (3) there is no open-ended and school interaction on mathematics learning achievement, critical thinking skills, and junior high school students' self-confidence.

The application of the open-ended learning model on thematic learning in fifth grade of elementary school students starts from preparation, before starting the teaching and learning process, the teacher must make lesson plans and make questions open problems. The lesson plan, including the LKPD, which contains questions about open problems, was prepared by researchers and then given to the fifth grade teacher to learn. Researchers compile lesson plans according to theme 8 "Environment is Our Friends" sub-theme 2 Environmental Change. Besides that the media is also well prepared by researchers because use attractive visual media makes the material can also be quickly captured by students' thinking power if from the beginning it has been packaged attractively through videos and images that are in accordance with the learning theme. This is in accordance with the opinion [18] which states that the function of learning media can be emphasized as follows: as a tool to make learning more effective, accelerate the learning process and improve the quality of the teaching and learning process.

The implementation of learning includes the introduction, students listen to the motivation given by the teacher; To attract students' interest, interesting learning media are used around the school environment. At the beginning of learning, the teacher also invites students to see video learning using LCD provided by the researcher. The teacher asks students to observe pictures of environmental changes and ask their opinions about the picture. Then students are asked for opinions about the causes and effects of events openly. The main activities include: students are presented with open problems to be solved individually. The problems given by the teacher are simple but it meant so much. Students were asked to analyse two opposing images, the condition of deforested forests and still beautiful forest conditions. The teacher presents the problem of what causes the condition and what you usually do in dealing with the problem. Students answer freely according to the conditions they do and understand. Then students make groups and get open problem questions, students discuss with their groups about the completion of open problem questions, open solutions in groups are certainly different from individuals but with the understanding of each material makes discussion activities more active. Each group presents the results of the discussion, students or groups analyse the answers that have been put forward, which are correct and which are more effective, and; The final activity is that students and teachers conclude the results of the discussion. and after the end of the learning process, students get daily tests. Students and teachers reflect on learning activities, Plan for the next lesson, and invite all students to pray to finish learning activities [19].

4. CONCLUSION

The results showed that overall the fifth grade students of SD Negeri 2 Pulutan in the second semester of the 2018/2019 academic year had low-level critical thinking skills based on the results of the tests obtained which was equal to 65.5% at a less critical level and very uncritical. In C3 questions from 7 questions provided students can answer the correct questions only 57.1%, in 7 questions with level of analysis (C4) students get 52.7% correct answers, from 4 questions C5 students get 52.6% correct answers, and in C6 questions students get 48.3% of the correct answers. Applying the right model or method according to the material being taught so that critical thinking skills in thematic learning of elementary

school students get better. The open ended learning model is very appropriate to be used in elementary thematic learning to improve critical thinking skills in the current millennium era.

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