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An Analysis of Hots in the 5th Grade Elementary School Students' Learning with Radec Model with the Theme of "Electricity Around Us"

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Abstract. The importance of teaching students the ability to think that is trained early is an obligation of teachers in educational innovation. One of them is developing Higher Order Thinking Skills (HOTS). This study aimed to analyze the ability of students to work on HOTS questions in learning with the RADEC model which is one of the innovative models that is able to train students' ability to think at a higher level. This research used descriptive method with a qualitative approach. The research subjects were 24 fifth grade elementary school students of Babakan Trogong, Bandung. The data was collected by using HOTS-questions instrument, observation sheets when learning took place, and the data processed in a descriptive manner. The results of this study indicated that RADEC learning model helped students do HOTS questions with the finding that 19 out of 24 students experienced an increase in learning outcomes.

Keywords: HOTS, RADEC, Elementary School

INTRODUCTION ~ Education is an important program in a country. Developed countries are characterized by high quality of education. Indonesia also must be able to produce high quality of education for its people. One of the programs in education is to train students to have good skills in thinking because with good thinking skills students are able to solve problems in their daily lives. Therefore, thinking skills need to be trained. "The ability to think can be taught and trained if we want" (Smith, 2002; 663). Kowiyah (2012, p. 175) argues that "thinking is a psychiatric process that connects or compares situations of facts, ideas or events with facts, and ideas or other events".

In line with this opinion, Valentine 1965 (in Kuswana 2011, p. 2) reveals "that thinking in psychological studies expressly examines the process and maintenance of an activity that contains the 'how' things are related to ideas directed to several goals that are expected". Santrock (2007, p. 254) explains that thinking is ".... manipulating and transforming information in memory, usually to form concepts, reason, think critically, and solve problems". Ahmadi (2004, p. 31) argues that "thinking is the power of the soul that can put relationships between knowledge". During the process of thinking, our minds are in a question and answer situation which means that our minds are in the process of putting the relationship between the knowledge acquired. So, thinking is a psychological or psychological process where a person is able to connect between facts, ideas, and events to achieve the expected goals. "Primary school is the first ladder to introduce individuals to ways of thinking, and basic education is the 'crucial site of practice' because at this time children form the first relationship with the school and the formal
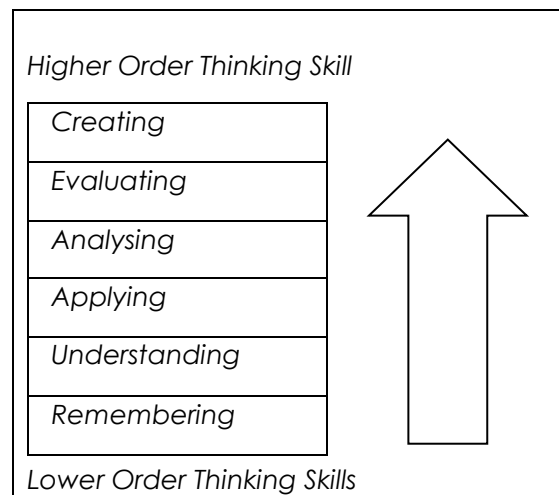
learning process" (Comber, 2003 in Roche, 2015). "If at this time students begin to be invited to learn meaningfully, think flexibly, and make decisions based on mature thinking, then these students will become 'better thinkers'" (McGuinnes, 1999).

Students are expected to be able to process information and make the right and fast decisions in the present. Students need to develop ways of thinking and reasoning logically based on facts. Benjamin Samuel Bloom is an educational psychologist who conducted research and development on thinking skills in the learning process and classified the framework of the concept of thinking called Taxonomy Bloom. Krathwohl (2002, p. 212) states that "The taxonomy of education is the framework for clarifying what we expect or students' interest in knowing the results of instruction."

Anderson (in Churches 2008) divides the classification of bloom from lower order thinking level to higher order thinking.

Higher Order Thinking Skill

| Creating |
| Evaluating |
| Analysing |
| Applying |
| Understanding |
| Remembering |

Lower Order Thinking Skills

Remembering is one of the thinking processes, but the process of thinking according to bloom is that there are levels from the low level called LOTS to the high level called HOTS. The low levels are remembering, understanding and applying, while the high levels are analyzing, evaluating, and creating. Utari (2011, p.2) argues that "according to Bloom, memorization is actually the lowest level of thinking ability (thinking behavior). There are still many other higher levels that must be achieved so that the learning process can produce students who are competent in their fields ". The high level that is meant by bloom is the HOTS level which trains students to think about analyzing an event or evaluating a particular result, or creating a new idea. "Some aspects of higher-order thinking include analysis, evaluation, and creation (a high level of Bloom's taxonomy); logical thinking; decisions making and critical thinking; solution to problems; and creative thinking "(Brookhart, 2010, p. 14).

There needs to be a serious effort by the teachers to use models that train students to think at a higher level so that students can think at a higher level. The use of a particular model is enough to make teachers overwhelmed coupled with the limited knowledge of teachers about the learning model and the benefits of using it. Teachers are too fixated on teacher books and student books. A learning model needed that is indeed very easy to implement in schools. One of them is the syntax model that is easy to remember. However, the model must be in accordance with the learning objectives to be achieved. Along with that, Ernawulan and Hany (2014, p. 334) state that "it is the duty of a teacher to find and try various models that can develop and encourage students' thinking abilities".

One model chosen is the RADEC learning model. The naming of the RADEC model describes the syntax of Read-Answer, Discuss, Explain, and Create. This model was proposed by Wahyu Sopandi in 1994. Wahyu Sopandi (2017) stated that "Learning model in question is the Read-Answer, Discuss, Explain, and Create (RADEC). The name is adjusted to the sequence of the learning stage (syntax) ". Dyah Lyesmaya et al (2018, p. 516) write, "R-A-D-E-C is the learning model that was introduced by Sopiandi in 1994. RADEC which has four steps is short for the learning process. There are Reading-Answer, Discuss, Explain, and Create.

The advantage of this model is that the syntax is easy to remember. Syntax that is easy to remember is expected to be easily used by teachers in learning. Jumanto, et al (2018, p. 563) say, "RADEC stands for Read, Answer, Discuss, Explain, and Create. The model name is adjusted to the learning syntax so that it is easy to remember the order of its implementation. Wahyu sopandi, et al (2018, p. 10) suggest that "the results of the RADEC learning model socialization research and workshop indicate that participants easily remember and understand the RADEC learning model". In addition, this model is able to practice higher-order thinking skills. One of them is at the answer and create stages. In the answer stage, students are asked to answer questions individually. The questions given are not only a matter of low levels but up to high levels. Dyah Lyesmaya, et al. (2018, p. 516) state that "the questions should be required varying level of thinking, from low level thinking (LOT) to high level thinking (HOT), from just memorizing information to formulating examples of productive questions, formulating problems and project plans that can be made that are in accordance with the material being studied". At the create stage students must be trained to think at a high level according to the Bloom stage. Creating is the highest stage of a thinking process. The ability to create is certainly supported by other abilities from remembering to evaluate. Dyah Lyesmaya, et al. (2018, p. 517) say that "this phase that stands out is the step of training

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students to think, cooperate, and communicate from the start to find creative ideas, to take ideas that will be realized, planned, implemented , reported, and presented the results of the realization of creative ideas in various forms. "Wahyu Sopandi (2017) adds," through the implementation of the RADEC learning model, 'creativity in creating research ideas, problem solving, and other creative works will also be improved ".
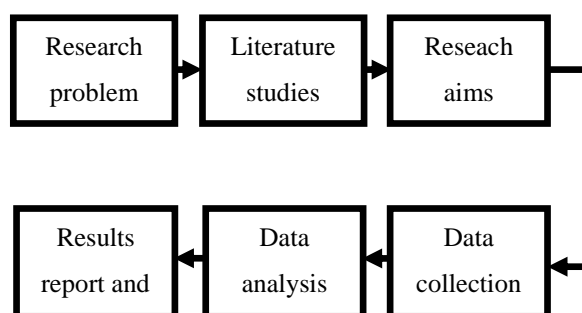
Previous research on the RADEC model was conducted by Dyah Lyesmaya, et al (2018, p. 517). Lyesmaya states that "4C (Critical thinking, Creative, Collaborative, and Communications skills) as a 21st Century learning skill has been adopted in the Indonesian Elementary School by using the R-A-D-E-C learning model". Jumanto, et al. (2018 p. 564) states that "there are significant differences through different tests about the achievement of students' creative thinking proved to be the control class and the experimental class. Thus, it can be interpreted that the application of the RADEC learning model has a significant positive influence on elementary school students' creative thinking. Therefore, this article analyzed 5th grade elementary school students' learning with RADIC model with the theme of "electricity around us".

METHOD

The research method used in this study was a descriptive method with a qualitative approach, because this study intends to examine an object based on facts in the field in depth and thoroughly. Ormrod (2008, p. 10) suggests that a descriptive study is a study that describes a situation. Researchers chose descriptive method because it can describe objects in depth about a complex situation which can not be explained through numbers.

The stages of this study are based on the presentation of Creswell (2008, p. 52)

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┌──────────┐   ┌──────────┐   ┌──────────┐
│ Research │ → │Literature│ → │ Reseach  │
│ problem  │   │ studies  │   │  aims    │
└──────────┘   └──────────┘   └──────────┘
                                    │
                                    ▼
┌──────────┐   ┌──────────┐   ┌──────────┐
│ Results  │ ← │  Data    │ ← │  Data    │
│report and│   │ analysis │   │collection│
└──────────┘   └──────────┘   └──────────┘
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This study intends to answer the problem formulation of students' abilities in answering HOTS questions with the RADEC model. This study involved 24 fifth grade students of SDN Babakan Tarogong. The technique of data collection in this study used HOTS-based-questions which amounted to 11 questions and observation

sheets while learning took place. Questions consisted of 8 C4 questions, 2 C5 questions, and 1 C6 question. Then, the data obtained were processed qualitatively.

RESULTS

Based on the results of data collection using 11 HOTS-based-questions, comparative data between pretest and posttest results were obtained. Questions were given before learning (pretest) and after learning (posttest). The following is the analysis of student answers during the pretest and posttest:

mean scores

0 28.61 42.78 100

terendah pretest postest tertinggi
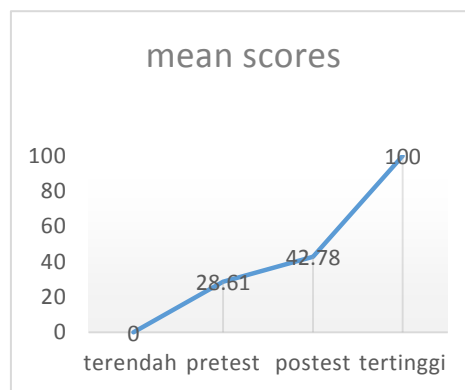
pretest and posttest

The mean score increases in the pretest and posttest

Based on the data obtained, the average of pretest data was 28.61 and the average of pretest data was 42.78. The results showed an average increase of 14.17. Based on observation, the implementation of learning was done in 1 day with limited time and not appropriate to the plan. This happened because of the limitations of the school and class so that the time was not optimal. This has become one of the causes of the maximum value obtained. However, 19 students experienced an increase which showed that the RADEC model helped to train students to think at a higher level.

MEAN SCORES

28.61 — 42.78

pretest — postest

The mean score increases in the pretest and posttest

comparison of pretest dan postest
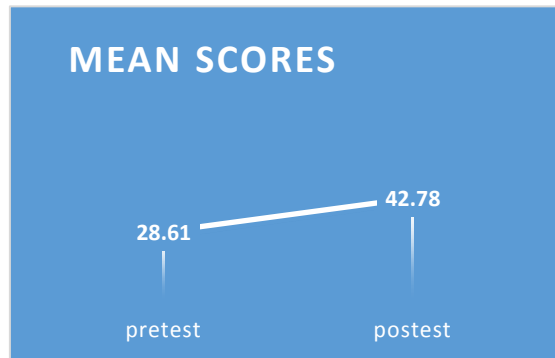
■ pretest ■ postest
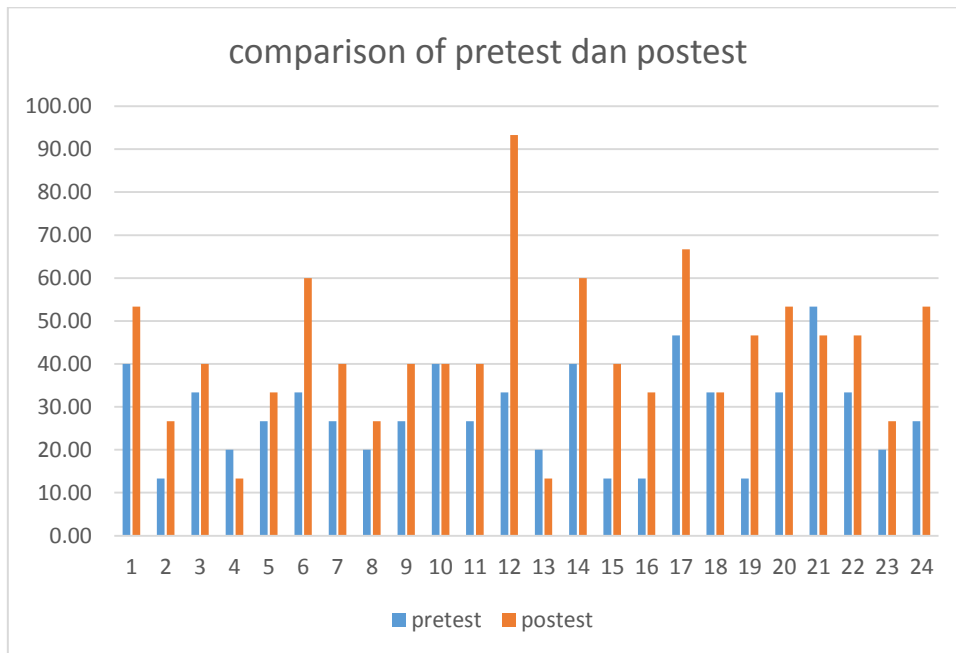
Picture of Caption UsageThe picture

UsageThe picture shows an increase in 19 students. There are 2 permanent students namely students 10 and 18. 3 students decrease namely students 4, 13, and 21. To be clearer, the number of students showing increases and decreases is
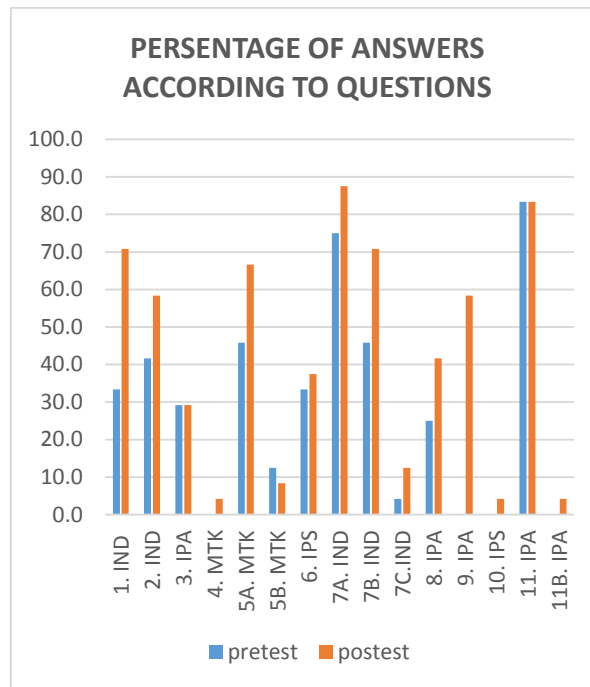

HOTS Analysis

13% 3%

■ TETAP
■ NAIK
■ TURUN

79%
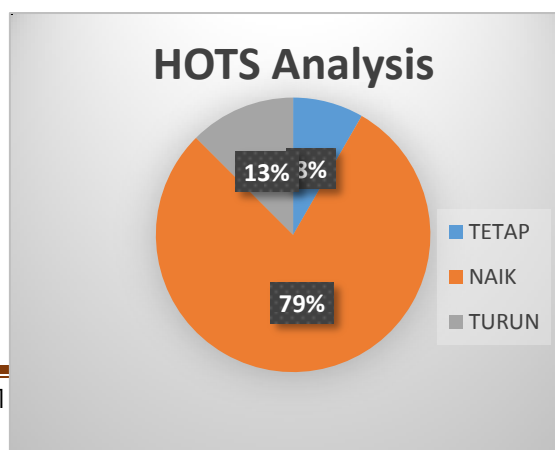
presented in the following figure.

Figure 2 Image of the number of student increments analysis

The picture is presented based on the number of students (24 students). Apart from that, an analysis was also carried out on each item. the number of student increases is presented in the following table.

From the picture, it can be seen that the most palling questions are answered by students namely problem number 7A. In Indonesian subjects, 87.5% of students answer question number 7A correctly. Questions in Indonesian subject are the most dominant questions that can be answered by students. Based on observation, it is true that analyzing the contents of text is often done by students. Meanwhile, students are not accustomed to analyze mathematical diagrams and image analysis for science. In fact, the material is new that students will learn this semester.

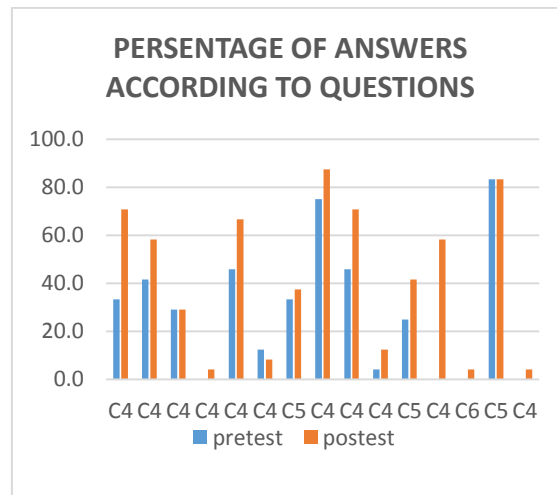**PERSENTAGE OF ANSWERS ACCORDING TO QUESTIONS**

Image of pretest and posttest comparison

Based on the table, the most frequently answered questions are C4 questions. Question C4 is the most taken problem since students have not done a lot of HOTS-based-questions before. Bloom B.S, (in Anderson and Khathwohl. 2001 p. 79) says that "analyzing involves the process of breaking up matter into small pieces and determining how the relationship between parts and between each overall structure". From C4 questions, we can start training students to analyze a problem in a question that can be in the form of text or pictures.

CONCLUSION

Based on the findings and discussion of the problem on how students do HOTS-based-questions in learning with the RADEC model, it can be concluded that the RADEC model helps students to practice thinking at a higher level. This is based on the results of the analysis of the tests and observations of 19 students who showed progress in working on HOTS-based-questions.

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