

AN ANALYSIS ON THE GRADE III STUDENTS' ABILITY IN RESOLVING PROBLEMS OF SEQUENCE OF NUMBERS IN STATE PRIMARY SCHOOL 32 BANDA ACEH

Mauliana Achmad^{1*} and Rahmad Husein^{1*}

¹State University of Medan, Medan, Indonesia

*Corresponding author: princessanandhya@gmail.com; rhnapitupulu@yahoo.com

Abstract: Arithmetic sequence was first presented formally in the ninth grade junior high school at the age of about 14 years, but this material has been widely introduced informally in some textbooks for classes beginning in elementary school. Based on these facts, the study was conducted with the aim to describe the ability of third grade elementary school students in solving mathematical problems related to the material sequence of numbers. This study was conducted on all students in grade 32 class III SD Negeri Banda Aceh amounted to 60 siswa. Kelas III A 30 students and 30 students of class III B. The results of this study is to describe the ability of third grade students of SDN 32 in Banda Aceh in solving problems related to the sequence of numbers. The description may result in: (1) The ability of third grade students of elementary school with math skills high in problem solving sequence of numbers is very good, (2) ability of third grade students of elementary school with math skills were in problem solving sequence of numbers either, (3) ability of third grade students SD with low math skills in problem solving sequence of numbers is quite good. Therefore it can be concluded that the third grade students of SDN 32 in Banda Aceh can resolve problems related to the material even if the material sequence of numbers is actually taught in class IX SMP.

Keywords: students' ability, elementary school, sequence of numbers

1. INTRODUCTION

In the development of education, especially in schools is a very important factor that should be done by humans for its survival in the future. One of which must be learned in school education is related to mathematics. Today mathematics become a very important part of life, both in science and in the field of education. Therefore it is undeniable that mathematics is one of the oldest sciences in the world, and affects almost all branches of science that we know today.

In response to this rapid growth, the government has made great efforts and the efforts to improve the national education curriculum, as evidenced by the various advances in the national education curriculum, especially for math. At the national curriculum of mathematics education in Indonesia, one of the subjects arithmetic sequence was first presented formally in the ninth grade junior high schools, when students aged around age 14. However, some of the basic concepts of the material has been delivered in the classroom lower-class, even starting in the first grade primary school.

In some good mathematics textbook published by the Center for National Education and the Ministry of Books published by some private publishers, the basic concepts of arithmetic sequence have been delivered since the first grade elementary school, called Numbers Skip.

Based on research conducted by HodnikCadez and Skrbec (2011) explicitly and clearly stating that the student is still in the early period of the school can actually understand the material opportunities that newly introduced formally in class IX Secondary School, at around the age of 14 years. Where the purpose of the study was to observe the students' ability students preschool and early period schools understand the material opportunities.

HodnikCadez and Skrbec (2011) did not agree with the assumption that the new students will be able to master the material opportunities around the age of 14 years old. According to them, even prasekolahpun students can master a few concepts of arithmetic sequence material that is related to the theme of opportunity, for example, to distinguish between events that are certain, might, or might not happen.

From the facts above, the researchers found that students in the initial period school does able to understand the material arithmetic sequence and series, although the material is not part of the school curriculum and will be formally introduced in class IX SMP, includes continuing a sequence number, reiterated how to find the next number in a sequence number, find the difference of a sequence number, and determines the number of a sequence of numbers.

Based Krogh and Slentz (2011), primary school usually starts at age six or seven years. At this age, children are expected to have been able to use the knowledge they have acquired during the program preschool and kindergarten. They are expected to have been able to develop cognitive, social, and emotional. During this period, most children have been able to think logically and understand some basic principles, such as conservation and reversibility, although they were only able to understand during these concepts associated with everyday life. This is supported by Gardner's statement (in pounds) as follows.

The universal decision to begin formal schooling around the age of five to seven is no accident. By that age, children are comfortable with representing ideas and objects through a variety of media and they are beginning to demonstrate a readiness to use symbols or notations themselves to refer to other symbols.

While Bruner (1960) states that a learner, although still very young (children of preschool and kindergarten, or even younger), are capable of learning any material for teaching is being organized and structured and systematic and tailored to their needs and teachers in teaching can communicate well and fun for students so that students can understand the material quickly and easily.

But this opinion is strongly opposed to what was stated by Piaget (1964), which states that a learner is unable to learn anything beyond the zone of their ability, and that to learn something, a learner must be in the appropriate level according to age. Bruner (1960) also wrote that education should not only focus on memorizing facts and concepts, but also should give emphasis to the point how the concepts learned could be related to each other. According to him, a child is a problem-solver is active and ready to explore subjects "tough" with mengonstruk ideas and concepts that have been obtained previously.

Just as Piaget (1964), Bruner (1960) in his theory also has some in the learning phase is often called the Three Modes of Representation (the Reys, Suydam, and Lindquist, 1992). However, it differs from Piaget (1964) that do a breakdown by age of learners, Three Modes of Representation Bruner's property of each integrated with one another (in McLeod). These three forms of representation are: 1) Enactive. This phase appears first. This phase includes coding information based on actions performed; 2). Iconic. In this phase, information is processed visually by Figures and seen and witnessed by learners; and 3). Symbolic. This phase is the phase of learning the fastest last. In this phase, the coding information is processed in the form of symbols, such as language. This representation is the form most easily adapted for both action and image have a relationship that is limited to what is represented.

Bruner (in Smith) disagrees with Piaget (1964) on the assumption readiness of learners. According to him, the school is a waste of time because the form of trying to match the level of complexity of subjects studied cognitive development of students. This means that students "restrained" by teachers and schools to just learn and know what they should have learned and they know according to school policies that are tailored to the cognitive development.

Bruner (1960) explained that even subjects who sulitpun able to be mastered by students (although at a relatively young age) with the provision of appropriate learning and well organized, as written by Smith as follows: "We begin with the hypothesis that any subject can be Effectively taught in some intellectually honest form to any child at any stage of development (Bruner; 1960: 33)."

The above article describes the ability of III grade students in solving mathematical problems related to the material sequence of numbers that turned out to third grade students could finish permasalahan relating to the material sequence of numbers that should be done by the students of class IX SMP.

2. METHODOLOGY

2.1 Type of Research

The research is a qualitative research, therefore, the resulting data are descriptive data in the form of a description of the analytical ability of students in the early period of the school in resolving issues related to the arithmetic sequence and series. As revealed Moleong that qualitative research is a study that aims to understand what is experienced by research subjects in a context that is natural by using various scientific methods available.

That is, the data generated in a form of qualitative research is descriptive and not in the form of figures as well as a quantitative research. According Moleong (2009), in a qualitative research, words

and actions of the research subjects or people who observed the data source first. In this study, researchers conducted interviews is to ask in advance to the third grade students about the material line numbers if they already know or know and understand the material or not by giving out some examples that put it on the number line, addition and subtraction, multiplication and division, and solve everyday problems associated with money.

2.3 Research Procedure

In this study, subjects were given a matter of arithmetic sequence and series that are used to determine the ability of students in the early period of the school in resolving issues related to the arithmetic sequence and series. Problem was prepared by the researchers themselves, and the question is a matter of description. Problem is designed in the form of matter description with the aim to facilitate researchers to determine the ability of students in solving a given problem. The matter consists of 10 items with a time of 60 minutes associated with arithmetic sequence and series.

Ten (10) items included the continuing sequence of numbers, define the tribe next in a sequence of numbers, define the n th term in a sequence number, and determine the amount of a sequence with the subject of research, and researchers act as the interviewer to figure out how the numbers are finite , According Moleong subject examination revealed his thoughts in solving problems that diberikan. Proses subject selection is done by providing the ability math test questions to all third grade students of elementary school to get students mathematical ability of high, medium, and low then taken across the third grade students are capable of high, medium and low.

Each class was taken three data validity in qualitative research based on four criteria: credibility, transferability, dependability, and confirmability. The data is considered valid if the data has been trustworthy through examinations conducted criteria. Meanwhile, according to the students as research subjects, which consists of checking the validity of data in the process of selecting the subject, researchers discuss with the class teacher who conducted through observation extension, increase endurance, triangulation, discussions with friends, negative case analysis, and check. In this study, the researchers chose to use triangulation. concerned in order to get a subject that has Moleong (2009) states that triangulation good communication skills so that researchers do not experience difficulties in conducting the interview.

2.3 Subject Selection Process

The process of selecting subjects in this study, in tests of mathematical ability of students is a technique that utilizes data checking something else beyond the data for the purposes of checking and comparison of the data ". Denzin (in Moleong, 2009) distinguishes four types of triangulation, including by leveraging the use of resources, methods, students are given the problems associated with the investigator, and theory. In providing math skills test consisting of 10 items that include comparing two numbers, sequence numbers, determine the place value, addition and subtraction, and specify the time. Therefore, after researchers conducted a data collection on the first time that includes giving the test in the form of matter that is related to the arithmetic sequence and series and continued with the interview after written test conducted, and researchers will conduct data collection into two with the same procedures as the first data retrieval.

2. RESULTS

Based on the research results obtained, it can result in a given test each subject vary widely, especially when viewed from the level of education or class of each subject. Subjects who were in third grade elementary school showed pretty good ability with the achievement of a high enough in solving a given problem. In fact, the ability of achievement demonstrated by the subject of class III SD almost equal ability achievements of the subject class III SD. The subject was also able to express his explanation very well when the researchers asked them to explain their reasons or steps they do in solving a given problem.

Due to the subject of the interview conducted in English, it is not surprising that the language they use non-standard, and there are many grammatical errors. However, the idea they convey a very clear and understandable, so that the researchers did not find it difficult to dig up information on the steps of the subject to determine the answer.

In addition, the level of mathematical skills subjects also affect the achievement of this research. Subjects who have high math skills tend to earn achievements are also high, whereas subjects who have math skills were likely to earn achievements that were, and subjects who had lower math skills tend to earn achievements are low as well. However, there is also a subject that has a low math skills but gain a high achievement in this study.

4. DISCUSSION

Analysis of students' abilities in the early period of the school in resolving the problem of numbers, particularly on the material arithmetic sequence and series is a description or Figure of the ability of students in the early period of the school, the students in the class II SD, each consisting of students with math skills high, math skills medium and low math skills in solving problems related to the arithmetic sequence and series.

This study is the beginning of improvement of national education curriculum Indonesia, because through this research, it can be known that third grade students of elementary able to earn achievements that is high enough to resolve the problems associated with the arithmetic sequence and series, which according to the national curriculum, newly introduced formal in ninth grade junior high school, when students around the age of 14 years.

This research is expected to be consideration and review of the national curriculum, so the material arithmetic sequence and series may be introduced in the lower classes, no longer a class IX SMP, with the hope that a change is better for education in Indonesia.

5. CONCLUSIONS

Based on data analysis and discussion that has been described, the following conclusions can be drawn. First, the ability of elementary school third grade students with high math skills in problem solving sequence of numbers is very good. Subject can solve problems given very well and can explain the measures undertaken to resolve such questions with very good as well, so it can be said that the subject of class III SD with mathematical ability high to solve problems of sequence of numbers, especially row arithmetic. Second, the ability of Elementary School third grade students with mathematical skills to solve the problem is in a good sequence of numbers. Subject can solve problems that a given well and can explain the measures undertaken to resolve such questions well too, so it can be said that the subject of class III SD with mathematical ability is being able to resolve the issue sequence of numbers, in particular arithmetic sequence. Third, ability Elementary School third grade students with low math skills in problem solving sequence of numbers is quite good. Subject can solve problems which are given fairly well and can explain the measures undertaken to resolve such questions quite well too, so it can be said that the subject of class III SD with the ability lowly mathematics to solve problems of rows of numbers, especially row arithmetic.

REFERENCES

- [1] Bruner, Jerome. 1960. *The Process of Education*. Massachussets: Harvard University Press.
- [2] HodnikČadež, Tatjana and Škrbec, Maja. 2011. Understanding the Concepts in Probability of Pre-School and Early School Children. *Eurasia Journal of Mathematics, Science & Technology Education*, 7(4), 263-279
- [3] Krogh, Suzanne L. dan Slentz, Kristine L. 2011. *Early Childhood Education: Yesterday, Today, and Tomorrow (2nd Edition)*. New York and London: Routledge Taylor & Francis Group.
- [4] Moleong, Lexy J. 2009. *Metodologi Penelitian Kualitatif*. Bandung: Remaja Rosdakarya.
- [5] Piaget, J. 1964. *The Language and Thought of the Child*. New York: Meridian Books.
- [6] Reys, Robert E., Suydam, Marilyn N., dan Lindquist, Mary M. 1992. *Helping Children Learn Mathematics*. 3rd Edition. Massachussets: Allyn and Bacon.