ICEE-2

Science Process Skills of Grade VI Elementary Students in Object Changing Material

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Abstract. Science Process Skills (SPS) are all scientific skills used to acquire, develop, and apply scientific concepts and theories. SPS mastery is not only useful in science learning but also for students' daily lives. Therefore mastery of abilities is very important in the science process since elementary school age. This study aims to obtain an overview of the profile of students' science process skills. The research method used was a survey method with research subjects as many as 25 students of Class VI SDN Cibala consisting of 12 men and 13 women. The data collection technique used is a test technique. The data that has been obtained is then analyzed by simple statistical analysis. Based on the results of the research that has been done, it can be seen that the ability of KPS in elementary school students of Class VI SDN Cibala as a whole is still low which has an average value of 9.8, while for each aspect of KPS is moderate with a percentage of 54%. Thus, through the results of a survey of the profile of students' science process skills, it is expected that the organized science learning can motivate students to be more creative and innovative.

Keywords: profile, science process skills, science learning, object change, elementary school students.

INTRODUCTION ~ Natural Sciences (IPA) comes from English, namely natural science, which means the science of nature, or the study of natural events. Sulistyorini (2007) states in the learning process that science must contain three dimensions, namely: (1) Science as a product, is the accumulation of the results of the efforts of the pioneers of previous science and generally has been arranged in a complete and systematic manner in textbooks; (2) Science as a Process, is a method for gaining knowledge or is a process for obtaining science; (3) Natural Sciences as Fertilizing Attitudes.

According to Firman and Widodo (2007), the quality of the science learning process in SD / MI is not seen from the depth of scientific knowledge being taught, but rather to what extent the knowledge taught can be meaningfully digested by students, so students can understand various events and solve various problems encountered in his daily life. The 2013 curriculum emphasizes strengthening the learning process. In this case students are expected to be active to find out for themselves the concepts learned. The approach that is relevant and listed in the 2013 Curriculum is a scientific approach. That is because the stages of the process in the scientific approach are in line with the scientific method in science learning. Science learning does not only emphasize product mastery, but mastery of process skills and scientific attitude. The process skills in science learning are known as students' science process skills. According to Dahar (1996) science process skills (KPS) are the ability of students to apply scientific

methods in understanding, developing and discovering science (Lestari, 2016).

Science process skills can not only be applied in the learning process in the classroom, but also become a provision in solving problems in daily life. Science process skills are one of the most commonly used thinking skills (Aydoğdu, Tatar, Yıldız-Feyzioğlu & Buldur, 2012; Gagne, 1965). In addition, Rillero (1998) emphasizes that individuals who cannot use KPS will experience difficulties in their daily lives, because these skills are not only used during education, but are also used in everyday life. Kazeni (2005) The development of science skills enables students to obtain the skills needed to solve everyday problems (Aydoğdu, Erkol and Erten, 2014).

Given the importance of science process skills, it is necessary to identify the profile of science process skills in students. The results of previous studies conducted by Widdina, et al (2018) stated that the basic science process skills used by junior high school students in learning were included in the high category. In addition, results

research conducted by Nugraha, et al (2019) shows that the profile of science process skills of elementary school students in one of the schools in Kudus is included in both categories. Based on the explanation above about the importance of science process skills for students, the researchers conducted research on "Elementary Science Process Skills of Grade VI Students on Material Change Objects".

According to the Science - A Process Approach (SAPA) in Padilla (1990) these science process skills are defined as a set of abilities that can be transferred widely, in accordance with many scientific disciplines and reflect the behavior of scientists. SAPA groups process skills into two, namely basic and integrated types. Basic (simple) process skills provide a foundation for learning integrated (more complex) skills. These basic science process skills include skills in observing, inferring, measuring, communicating, grouping, and predicting. While integrated process skills include controlling variables, defining operations, formulating hypotheses, interpreting data, experimenting, and formulating models (Padilla, 1990).

Semiawan (2007) states that science process skills are physical and mental skills related to basic abilities possessed, controlled and applied in scientific activities, so that scientists can discover something new (Devi, 2010). Toharudin, Hendrawati and Rustaman (2011) define science process skills as all scientific skills used to find concepts or principles or theories in order to develop concepts that are has existed or denied the previous findings.

So science process skills are scientific skills that can be used in scientific activities to find something, which includes basic

science process skills and integrated science process skills. In this research the process skills used include observing, measuring, classifying, making hypotheses, interpreting data, identifying variables, predicting, conducting experiments, concluding and communicating (Devi, 2010).

METHOD

This research uses survey method. The subjects of the study were Grade VI students of SDN Cibala, amounting to 25 people, consisting of 12 men and 13 women. Collecting data from research subjects is done through KPS question tests on students. The test consists of 20 items, used to measure the ability of science process skills consisting of ten aspects of PPP, namely observing, measuring, classifying, making hypotheses, interpreting data, identifying variables, predicting, experimenting, concluding and communicating. PPP problems are developed and given after going through expert validation (expert judgment). Data obtained from students' KPS test results are then analyzed using simple statistical analysis techniques and categorized according to the following table.

Tabel 1. Categories of Student Science Process Skills Assessment

Value	Categories
0-5	Very low
6-10	Low
11-15	Middle
16-20	High

As for knowing the ability of each aspect of student KPS the following formula is used.

Percentage = $\frac{x}{n}$x 100%

The percentage values obtained are then categorized according to the following table.

Table 2. Categories of Student Science Process Skills

Percentage (%)	Categories
0-25	Very Low
26-50	Low
51-75	Objectives
76-100	High

RESULT

1. General Science Process Skills of Students

Data on Science Process Skills of Grade VI students of SDN Cibala were obtained after students answered a number of KPS questions that were given individually. The first analysis is done by counting the number of students' correct answers and classifying students based on the results of the correct

answers according to the predetermined categories. For more details about the results of student KPS abilities can be seen in the following table 3.

Table 3. KPS Profile of Class VI Students of SDN Cibala

Student	SPS Sutudent				Nilai Rata-rata KPS
	Very Low	Low	middle	High	
25	0	16	9	0	9,8

Based on the average value of KPS in the table above, it can be accessed by KPS grade VI students included in the low category. 2. Student Science Process Skills for Every Aspect of KPS Based on table 3, the next step is to analyze the student's correct answers and group them into each aspect of the PPP. To find out how far KPS grade VI students at Cibala Elementary School for each aspect of KPS can be seen in table 4 below.

Table 4. Profile of every aspect of KPS for Elementary School Students in Class VI

No	KPS	Right	Pecsentage	Categories
1	Observing	18	72	Middle
2	Measuring	14	56	Middle
3	Classifying	16	64	Middle
4	Make a hypotesis	12	48	Low
5	Interpreting data	15	60	Middle
6	Identifying variable	10	40	Low
7	Predicting	13	52	Middle
8	Conducting Eksperiment	16	64	Middle
9	Inferring	11	44	Low
10	Communicating	10	40	Low
Jumlah		135	54	Middle

Based on the data in the table above, it can be seen that from the ten aspects of KPS that were tested in the test questions, there were only six aspects that appeared in the

medium category and four aspects that appeared in the low category.

The student KPS aspects that appear in the medium category are aspects of observing, measuring, classifying, interpreting data, predicting and conducting experiments.

Whereas aspects of student KPS that appear in the low category are aspects of making hypotheses, identifying variables, inferring, and communicating.

This shows that the KPS of Class VI students in Cibala Elementary School for each aspect is generally in the medium category, where on average students are only able to answer correctly as much as 54% of every aspect of the KPS being tested. Based on the above data it can be seen that the KPS of students, both basic KPS and integrated KPS is still low.

DISCUSSION

Based on the results of the study outlined in the above table, it can be seen that in general KPS Cibala SDN grade VI students are in the low category. Whereas KPS for each aspect is generally in the medium category.

This is in line with the results of Sukarno, Permanasari and Hamidah's (2013) research which states that the low KPS of students is caused by many factors, including 1) the low ability of KPS teachers; 2) lack of teaching materials that develop and improve student KPS; 3) lack of guidance in developing KPS-based assessment tools for both teachers and students.

Thus we need a learning process that is able to grow and develop student KPS, where teachers are required to be able to design and create a science learning process that is able to develop student KPS. So that both basic KPS and student integrated KPS can be improved. This is in accordance with the opinion of Rustaman (2003) in Lestari (2016) which states that process skills need guidance in developing KPS-based assessment tools for both teachers and students.

Thus we need a learning process that is able to grow and develop student KPS, where teachers are required to be able to design and create a science learning process that is able to develop student KPS. So that both basic KPS and student integrated KPS can be improved. This is according to the opinion of Rustaman (2003) in Lestari (2016) which states that process skills need to be developed through direct experiences as learning experiences. Because through direct experience, someone can better appreciate the process or activity that is being carried out.

CONCLUSION

Based on the results of research that has been done it can be concluded that:

1. The science process skills of Class VI students at SDN Cibala as a whole are

included in the medium category, which only has an average KPS score of 9.8.

2. The science process skills of Class VI students of SDN Cibala for each aspect of the KPS are still included in the medium category, with a percentage of 54%.
3. The students' science process skills are still low, of course, requires teachers to be able to plan and implement a science learning process that is able to develop elementary school student KPS.

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