

## Identification of Science Process Skills Students of Junior High School Batang Hari Jambi In Science Lessons

Ricky Purnama Wirayuda<sup>1</sup>, Riska Fitriani<sup>2</sup>, Gunawan Wibisono<sup>3</sup>, Nisaul Afifah<sup>4</sup>

<sup>1,2,3</sup> Universitas Jambi, Jambi 36361, Indonesia

Coressponding Author. E-mail:

<sup>1</sup> pwricky27@gmail.com

<sup>2</sup> Riskafitriani04.rf@gmail.com

<sup>3</sup> unawanwibisono923@gmail.com

<sup>4</sup> nisaul.afifah14@gmail.com

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### Abstract

The purpose of the research conducted by the researcher was to find out how the description of students' science process skills in science subjects at SMPN 6 Batang Hari Jambi Regency. The method used in this research is a descriptive method with a qualitative approach. This research was conducted in Batang Hari Regency, precisely at SMPN 6 Batang Hari. The subjects of this research were 134 students of class VIII. The instruments used in this study are: (1) Observation sheets, (2) open interviews. The results of observations and interviews show that the achievement of students' science process skills is still low, in general, which is related to teaching and learning activities carried out. This is due to several factors, including: Students are not required to be active in exploring their own knowledge in the learning process. The physics learning process rarely uses investigation and experiment activities. Learning activities carried out are mostly lectures by teachers to students

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## INTRODUCTION

Currently, disease outbreaks have spread throughout the world caused by a virus called Coronavirus Diseases, also known as Covid-19. In March 2020 WHO declared the status of a COVID-19 pandemic, which is capable of changing the order of life around the world. Learning during the Covid-19 pandemic brought extraordinary changes. Normally, it seems that all levels of education, including tertiary institutions, are "forced" to change and adapt suddenly to do home learning through online media (Handayani, N. A., & Jumadi, J., 2021 ). Of course it's not the same simple thing as being completely unprepared. The educational problem is that the learning process is not uniform, including the standards and quality of learning outcomes in the educational process.

Education is an effort to create quality human resources, so it is important to improve the education of a country. Education is a process of improving the quality of life, as well as acquiring and instilling skills carried out by students (Kurniawan et al., 2019: 125). The success of education in a country automatically also shows the progress of a country. In the educational process there is a process called the learning process. Learning can involve two parties, namely students as students and teachers as facilitators. The most important thing in learning activities is the learning process (Rohani, 2019).

At the junior high school level there are several lessons that come from the integration of the disciplines of natural and social sciences. One of them is science subjects (Galisa et al., 2019: 15). According to Siahaan et al., (2017:2); Sari et al., (2019: 78) learning science essentially includes two things, namely products and processes, science as a product includes a collection of facts, concepts, and principles. Science learning leads to procedural knowledge, namely learning about how to obtain information through scientific activities based on science process skills (Hamadi et al., 2018: 43; Fitriana, 2019: 100).

Science process skills (KPS) are defined as the development of insight into intellectual, social and physical skills derived from the basic abilities found in students (Hernawati et al., 2018: 266). According to Duda et al., (2019: 1208), Science process skills are cognitive skills used by scientists as a systematic approach to problem solving. Thus, science process skills are

the main capital of students in learning science which can support the mastery of science concepts. Science process skills focus on the learning process to develop students' skills in understanding knowledge or concepts, independently finding and developing the facts, concepts, and values needed (Siahaan et al., 2017: 2).

science process skills have a strong relationship with higher order thinking skills (Nugraha et al., 2017: 42). Higher-order thinking skills through theoretical learning are largely determined by the ability and creativity of students in mastering science process skills (Hasyim, 2018: 82; Mengawati, Rahmatsyah, & Yus, 2020: 123). Higher-order thinking skills (HOTS) are an important component for an individual to be able to solve new problems in the 21st century (Retnawati, 2018: 216). High Order Thinking Skills (HOTS) or higher order thinking skills are divided into four groups, namely problem solving, decision making, critical thinking and creative thinking (Putranta & Supahar, 2019).

Thinking skills are at the core of the learning process so that students have competence in solving all problems. Students without thinking skills will certainly have the impact of failure in dealing with the complexity of the problems encountered in the challenges of the times. The thinking skills that students need to have are creative thinking skills (Marwiyah et al., 2015: 26; Haryanti & Saputra, 2019: 59). According to Qamariah et al., (2016: 43) creative thinking is a thinking process that has the characteristics of fluency, flexibility, originality and elaboration. Creative thinking can be considered one of the key competencies of the twenty-first century, and its effects are widespread. It allows us to fly to the moon, create art, develop computers, and cure disease (Ritter & Mostert, 2017:243).

Based on the background described above, the researcher is interested in conducting further research on students' science process skills in science subjects in order to lead students to have good creative thinking skills. The research conducted by the researcher aims to find out how the students' science process skills are described in science subjects at Public Junior High School 6, Batang Hari Regency, Jambi.

## METHOD

The method used in this research is descriptive method with a qualitative approach. The descriptive method is a method used to examine the status of a group of people, an object, a set of conditions, a system of thought, or a class of events in the present (Prastowo, 2016: 168). While the qualitative research method is a systematic research method that is used to examine or research an object in a natural setting without any manipulation in it and without testing hypotheses, with natural methods when the expected research results are not generalizations based on quantity measures, but the meaning (in terms of quality) and observed phenomena (Prastowo, 2016: 24).

This research was conducted in Batang Hari Regency, to be precise at SMPN 6 Batang Hari Jambi, in the odd school year 2021/2022. The subjects of this study consisted of 2 research subjects, namely students and teachers at SMPN 6 Batang Hari Jambi. Research subjects are subjects designated to be investigated by researchers (Arikunto, 2006: 145). Determination of research subjects or respondents in this study by means of purposive sampling. Namely by determining the subjects according to the criteria determined by the researcher, while the criteria determined were science subject teachers, so that the subjects in this study were 3 teachers who the researchers gave codes A, B, and C. As for the criteria for students the researchers determined students class VIII as a subject in his research. The object of research is something that is the essence of research problems (Arikunto, 2006: 29). The object of this research is students' science process skills. The determination of the subject and object of this study was based on the results of observations made by researchers, where the learning activities at the school did not use many variations of learning so that researchers were interested in knowing the science process skill profiles of students who received the learning process.

The instruments used in this study were: (1) Observation sheets, used to observe students' activities and skills during the science learning process in class. (2) Open interviews were used to dig deeper into the profile of students' science process skills and to cross-check the correctness of all the data that had been collected. This interview was conducted with science teachers and some research

subjects. The purpose of this interview is to get information about the opinions, aspirations, hopes, desires, beliefs and so on that exist in students. Interview questions for teachers contain questions about the science learning approach that has been applied, practicum implementation, and questions about science process skills. There are three interview questions as follows:

1. Do you understand science process skills?
2. What is the natural science learning approach that you have used so far?
3. In the past semester, have you ever done a science practicum? What is the reason?

The research procedure that will be carried out in this study is divided into three stages, namely the preparation stage, the implementation stage and the completion stage. The Preparation Stage includes: preparing a research design, determining the subject and object of the research, compiling a research interview draft. The implementation phase includes: analyzing or observing the science learning process that is integrated into science process skills and conducting interviews with science subject teachers and some students privately to obtain the percentage of science process skill presentation for each lesson, writing reports. The completion stage is to report the results of the analysis of observations and interviews that have been obtained from the research.

## RESULTS AND DISCUSSION

Based on the results of observations at SMPN 6 Batang Hari Jambi, researchers found the fact that science learning activities in class were carried out using the concept of knowledge transfer so that learning tended to be passive and oriented towards students' cognitive abilities without considering the process of acquiring knowledge during the learning process. Thus making students rarely hold discussions and work together with other students which causes students to be passive and not trained to be independent and students' science process skills cannot develop properly.

The results of the answers to the three interview questions conducted by the

researchers came from science teachers who participated in the research which are briefly explained as follows.

The first question is about "do you understand about science process skills?" a teacher answered that he only knew the name but did not know the form and application of it during the teaching process. Meanwhile, the other two teachers explained that according to him, the science process skills were the same as the scientific method listed in the 2013 Curriculum.

The second question is about "what is the science learning approach that you have applied so far?" Teacher A and teacher C explained that the science lessons they had been carrying out so far generally explained the material orally, then the students recorded a summary of the explanation, followed by a question and answer session. For these two teachers, the application of the scientific approach as intended in the 2013 curriculum is not an absolute approach and must be applied in every learning meeting so that both of them apply the approach only to certain topics which they think are easy to implement. Another material topic they teach with a general approach is lectures. The frequency of applying a scientific approach is also rare. The reason for the application of the lecture method by these two teachers is that this method is simpler and less time-consuming and easy to control students in the class. For teacher B, because there is a lot of physics material in science learning, it is easier for him to teach these concepts by lecturing in front of the class, students sit listening, then proceed by asking questions to students for discussion. The questions he gives can be from the student's handbook or questions he makes himself based on the material. In order for students to continue studying outside of school hours, teacher B also gives assignments to work on in groups.

The third question is about "have you ever done science practicum in the last semester, especially in the physics sub-chapter?" and "what is the reason?" Teacher A explained that in the last semester, he had only done practicum once. The practicum is carried out by considering practicum materials where the tools and materials are easy to get, inexpensive, and the way it works is simple. According to teacher A, there were lots of practicums for class VIII science learning materials for class VIII, but the way they worked was complex, the tools and

materials needed were difficult to obtain and the prices were expensive. Doing one practicum for him requires a long deadline. Based on that one practicum experience, he said that if you do too many practicums, you will miss a lot of material. While he has to teach according to the time target as designed in the syllabus at the beginning of each semester. According to teacher B, he had never done a practicum, even though he reasoned that doing a practicum would take more time than non-practical learning. In addition, not all equipment and materials used for practicum are available in schools. If the tools and materials are imposed on students it will be burdensome for them. Teacher C's answer to this question is the same as teacher B, that is, they have never done practicum. The reason is that practicum requires a long time of preparation, including he himself must try it first before practicum with students. In addition, even if there is a desire to do practical work on several material topics, the availability of tools and materials for this is inadequate. Teacher C also explained another reason for not doing practicum, namely that all science concepts were completely contained in the student's handbook. For him, reading a lot from various references is the right choice when other factors that support practicum implementation are not available.

The results of the answers given by students also strengthen the results obtained by researchers from interviews conducted with teachers. From student informants the researchers obtained the result that learning that took place while at school only used the lecture method and students only listened, the absence of group practicum activities also resulted in a lack of students' science process skills. Apart from that, the obstacles experienced by students and teachers during the Covid-19 pandemic were that learning which originally lasted for 40 minutes, during the pandemic was only carried out for 20 minutes face to face. So that procuring practicum during the pandemic was a little difficult, plus the teacher also had to adjust to the curriculum and syllabus, learning achievement targets for 1 semester.

The results of observations and interviews show that 1) Students are less actively required to explore their own knowledge in the learning process. The science learning process carried out by the teacher is to provide full information and to increase the practice of calculating questions. 2) The physics learning

process rarely uses investigative and experimental activities so that students' scientific attitudes and thinking habits are not properly trained. Practicum activities that have been carried out by the teacher are only verification of the material previously presented. 3) The learning activities carried out are mostly lecturing activities by the teacher to students, so that the acquisition of knowledge is less meaningful and the skills of students are not explored properly. These three things cause the achievement of students' science process skills to be still low, in general, that is related to the teaching and learning activities carried out.

The learning activities carried out must be able to facilitate students to master science process skills. Science process skills are not only important for students who study science, but most jobs in the current era also involve the use of these skills (Keil, et al, 2009). Seeing the importance of mastering students' science process skills, solutions are needed to overcome the problems in the findings of this study. The solution that can be done to overcome this problem is to carry out learning innovations, so that learning becomes more meaningful.

In addition, students' science process skills can be improved by having practicum activities in the learning process. According to Royani et al., (2018: 47) Practicum activities are one of the activities that play a very important role in increasing the success of the teaching and learning process. With this practicum activity students can improve process skills. Practicum is an activity carried out to test and apply the theory that has been obtained during the learning process (Kurniawan et al., 2019). Practicum activities can involve students actively during the practicum process to develop a scientific attitude so that they can train cognitive, affective and psychomotor aspects (Wang, 2018). In carrying out this practicum students can be involved in the process of observing, comparing, and formulating hypotheses so that students gain experience and real case examples of the material being taught.

The application of science process skill-based learning is designed to direct students to develop the skills needed in the 21st century (Diego et al., 2020: 166). KPS is needed to learn and understand science as a whole, so that it can solve problems in everyday life (Hunaepi et al., 2020: 100). The importance of learning in schools is able to improve students' science process skills because students' science process

skills have a close relationship with critical thinking skills which are very important for the development of 21st century education. Science process skills have a strong relationship with higher order thinking skills (Nugraha et al., 2017:42).

## CONCLUSION

Based on the analysis of acquisition data for eight types of science process skills of students in Batang Hari Jambi district, the value of science process skills is in the medium category. Even though they already have science process skills, the score is not enough to support them in learning. One of the factors that influence students' science process skills at school is the learning approach that is often applied by teachers. The existence of science process skills of students who are in the medium category is also supported by the results of interviews with four subject teachers who said that teachers do not understand what science process skills are, rarely do practicum, and the approach applied in learning is a conventional approach centered on teacher. The teacher is more dominant in the learning process and rarely does practicum because of limited supporting facilities and infrastructure, limited time, and demands for achieving the target of teaching all material in accordance with the syllabus.

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