

ANALYSIS OF SCIENCE PROCESS SKILLS OF GRADE V STUDENTS OF PRIVATE ELEMENTARY SCHOOLS IN KEMIRI SUB-DISTRICT

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Abstract: This study aims to analyze the science process skills of fifth-grade students of one of the private elementary schools in the Kemiri sub-district. The type of research used is qualitative with the research design being historical research. The subjects of this study were fifth-grade students of one of the private elementary schools in the Kemiri sub-district in the 2023/2024 school year with a total of 6 students taken from high, low, and medium abilities. Data collection techniques in this study used observation, questionnaires, interviews, and documentation. Data analysis was carried out, namely, data reduction, data display, and conclusions. The results of this study showed that the science process skills of fifth-grade students of one of the private elementary schools in Kemiri sub-district are in the competent category. With a description of each indicator of science process skills, namely: 1) observing is in the competent category, 2) predicting in the competent category, 3) classifying in the competent category, 4) interpreting in the competent category, 5) concluding in the competent category, and 6) communicating in the decent category. It is expected that teachers carry out science learning by optimizing existing indicators in science process skills through questions and practices or experiments that meet the indicators of science process skills so that students have skills that are useful for their daily lives.

PENDAHULUAN

Science learning is learning that requires opportunities for students to feel directly, experience, and find the meaning of the material they learn (Lusidawaty et al., 2020: 169). Prihantini, (2021: 126) states that science as a process is that science requires a process in finding facts and theories for that in learning science, science process skills are needed.

Research conducted by Fatimah & Ngazizah (2021: 34) states that science learning is learning that is given directly through an experience so that students can understand the material for themselves and apply it. For this reason, ideally, science learning does not only emphasize giving tasks but tasks that involve process skills, and scientific attitudes are also emphasized in science learning. In science process skills students are faced with problems and they must solve these problems, so that students are active in learning activities starting from planning, implementing, to finding (Nuryani & Pratama, 2022: 1163).

Science process skills are skills that involve intellectual skills, namely the way students think, students' manual skills using tools and materials and assembling a tool in science process skills, and social skills contain attitudes in interacting with each other, namely peers to discuss, ask questions, and communicate results with social skills (Wiratman et al., 2021: 186). In line with research conducted by Robiatul et al., (2020: 520) which states that science

process skills involve all the skills that students have, namely, intellectual skills, manual skills, and social skills. According to Prasetyo, Fakhрина, Widanti, Wijaya, & Ngazizah, (2019: 3) stated that science process skills are the ability to use thought, reason, and action efficiently and effectively to achieve certain goals. This makes science process skills very important for students in solving problems in everyday life. Darmayanti et al., (2021: 133) in their journal revealed that science process skills are expertise or skill used in experiments with the scientific method. Science process skills are skills where students are trained to understand the formation of laws and formulas through processes or steps to obtain knowledge, with these skills students will predict, classify, observe, and communicate (Rahma & Kusdiwelirawan, 2020: 125).

Yalçinkaya-Önder, (2022: 434) stated in his journal that science process skills are needed by students in their lives in a world filled with science and technology, in this case, teachers must integrate science process skills with students to meet the demands of the times. In line with research conducted by Gasila & Fadillah, (2019: 15) which states that science process skills need to be applied by elementary school students so that students are trained to independently discover new knowledge for themselves. The role of science process skills for students is to help them in the development of critical and logical thinking, have skills that are useful for everyday life, and can help them solve problems. Science process skills are divided into 6 parts, namely: observing, predicting, classifying, communicating, measuring, and concluding.

Based on the results of interviews conducted at one of the private elementary schools in the Kemiri sub-district, it was found that the teacher had developed indicators of science process skills in science learning. However, not all indicators have been optimized. In practice, students have not been familiarized with all the indicators contained in science process skills. The teacher said that experimental activities are still rarely done, even though the indicators of science process skills can be seen in experimental activities. Experiments that have been carried out by teachers are simple experiments that only include observing and classifying indicators while other indicators have not been familiarized. Thus, it is necessary to conduct further research on science process skills in grade V students of one of the private elementary schools in the Kemiri sub-district on magnetic material.

METHOD

The research method in this research is qualitative with historical research design. Qualitative research is a study that presents data in the form of narrative text. Qualitative research analyzes based on the data obtained, then develops it into a hypothesis and searches for data again repeatedly to finally conclude (Sugiyono, 2019: 360-361). Meanwhile, historical research design according to Aslichati & Prasetyo, (2013) is a systematic and objective study of the past, by collecting, evaluating, and verifying data to obtain conclusions.

HASIL PENELITIAN

This research will describe data and analyze data regarding the science process skills of fifth-grade students of one of the private elementary schools in the Kemiri sub-district. This research was conducted from August 2023 to February 2024 to obtain research data. The implementation of this research was carried out directly in one of the private elementary schools in the Kemiri sub-district. Students conducted research on the science process skills of fifth-grade students in one of

the private elementary schools in the Kemiri sub-district by conducting observations, filling out questionnaires, interviews, and documentation.

The following is the data analysis of the science process skills of fifth-grade students of one of the private elementary schools in Kemiri subdistrict with 6 research subjects based on high, medium, and low skills taken from the practicum scores of fifth-grade students of one of the private elementary schools in Kemiri subdistrict with details: 2 subjects with high skill scores, 2 subjects with medium skill scores, and 2 subjects with low skill scores.

1. Observing Indicator

Observing is observing with as many senses as possible and collecting relevant facts (Kusumawati, 2022: 9). In this study, students were asked to observe the tools and materials in the experiment, then students were also asked to observe the process and results of the artificial magnet experiment. The results of the observations made were then written in the worksheets provided. The following is a discussion of observational skills in subjects with high, low, and medium abilities.

Subjects with high ability are in the competent category. This is because subjects with high ability can observe and write down the results of experiments carried out correctly. In observing activities, subjects with high ability have optimized their sensory tools in the form of vision to see experimental tools and materials, experimental processes, and experimental results. Then, there is a sense of touch that is used to hold the tools and materials used. Subjects with high ability were also able to correctly write down the results of observations of objects that can be attracted by artificial magnets.

Subjects with moderate ability in the observation indicator are in the competent category. Subjects with moderate ability can make observations through sensory tools in the form of vision to see tools and materials, the experimental process, and the results of the artificial magnet experiment. Then, subjects with moderate ability used the sense of touch to hold the experimental tools and materials. Subjects with moderate ability were able to correctly write down the results of observations of objects that could be attracted by artificial magnets.

Subjects with a low ability to observe indicators are in the competent and feasible category. This is based on the data obtained that subjects with low ability can use sensory tools in observations made in the form of vision and touch. Subjects with low ability can write down the results of their observations in the form of objects that can be attracted by magnets correctly in the available worksheets. However, there are subjects with low ability who have not been able to write the results of their observations correctly.

Research on the science process skills of fifth-grade students of one of the private elementary schools in the Kemiri sub-district on observing indicators found that there were 5 subjects with competent categories and 1 subject with a decent category. Based on this explanation, the category of science process skills of fifth-grade students of one of the private elementary schools in the Kemiri sub-district in the observing indicator is in the competent category.

2. Predicting Indicator

Predicting is an activity of suggesting possibilities that will occur in a situation using a certain pattern (Kusumawati, 2022: 12). In this study, students

were asked to make initial predictions through observations and to be able to suggest events that might occur in the experiment and accompanied by logical reasons.

Subjects with a high ability to predict indicators are in the competent category. This is because the subject made initial predictions based on the results of initial observations. Subjects with high ability also thought about events that would occur in the experiment based on previous observations. Subjects with high ability can also suggest possibilities that will occur in the experiments carried out.

Subjects with moderate ability to predict indicators are in the competent category. This is based on the results of the research data which shows that subjects with high ability have made initial predictions based on the initial observations made. Subjects with high ability can also suggest possibilities that will occur in the experiment. Subjects with a low ability to predict indicators are in the competent category. This is because subjects with low ability have made initial predictions based on the initial observations made. Subjects with low ability can suggest the possibility that will occur in the experiment correctly. Subjects with low ability are also able to suggest the possibility that will occur in the experiment correctly.

Research on the science process skills of fifth-grade students of one of the private elementary schools in the Kemiri sub-district on the prediction indicator found that there were 6 subjects in the competent category. Based on this explanation, the category of science process skills of predicting indicators of fifth-grade students of one of the private elementary schools in the Kemiri sub-district is in the competent category.

3. Indicator of Classifying

Classifying is recording the results of observations separately can compare objects through differences and similarities and characteristics of objects (Kusumawati, 2022: 10). In this study, students are asked to be able to sort the observation data regarding objects that can be attracted by magnets and objects that cannot be attracted by magnets and include appropriate grouping categories. Students are asked to make a table of grouping objects that can be attracted by magnets and cannot be attracted by magnets accompanied by arguments. Subjects with high ability in the classification indicator are in the competent category. This is because subjects with high ability can sort the observation data based on the types of objects that can be attracted by magnets and cannot be attracted by magnets. Subjects with high ability can also determine the category of grouping objects and can make a grouping table.

Subjects with moderate ability are in the competent category. This is because subjects with moderate ability can sort objects that can be attracted by magnets and cannot be attracted by magnets. Subjects with moderate ability are also able to create grouping categories based on the type of object and can create grouping tables based on existing categories.

Subjects with low ability are in the competent and developing categories. In the competent category, there are subjects with low ability who can sort objects that can be attracted by magnets and cannot be attracted by magnets and can make grouping categories based on the type of object and can make grouping tables based on the category of objects. Then, there are subjects with low ability who can categorize the results of the experiment, but in classifying the results of

the experiment they have not been able to fully and have not been able to make a grouping table by the categories obtained in the experiment.

Research on the science process skills of fifth-grade students of one of the private elementary schools in the Kemiri sub-district on the classification indicator found that there were 5 subjects with competent abilities and 1 subject with newly developing abilities. Based on this explanation, the category of science process skills of classifying fifth-grade students of one of the private elementary schools in the Kemiri sub-district is in the competent category.

4. Interpreting Indicator

Interpreting is associating or processing information that has been collected through data collection and observation activities (Kurniasih & Sani, 2017: 51). In this study, students were asked to relate the results of the experiment to make magnets with initial predictions and existing theories. Students are asked to be able to explain the interpretations made regarding the effect of the number of turns of wire with objects in the experiment along with supporting reasons from the observation data.

Subjects with high ability in the interpretation indicator are in the competent category. This is because subjects with high ability were able to relate the results of the experiment to make magnets with the initial predictions made and were able to explain their interpretation of the effect of the number of turns of wire with objects in the experiment.

Subjects with moderate ability in the interpretation indicator are in the competent category. This is because subjects with moderate ability were able to relate the results of the experiment to make magnets with the initial predictions made and were able to explain their interpretation of the effect of the number of turns of wire with objects in the experiment.

Subjects with low ability in the interpretation indicator are in the decent and developing category. This is because subjects with low ability have not been able to relate the results of the experiment to make magnets with the initial predictions made and have not been able to explain their interpretation of the effect of the number of turns of wire with objects in the experiment.

Research on the science process skills of fifth-grade students of one of the private elementary schools in the Kemiri sub-district on the indicator of interpreting found that there were 4 subjects in the competent category, 1 subject in the decent category, and 1 subject in the newly developing category. Based on this explanation, the science process skills of interpreting indicators of fifth-grade students of one of the private elementary schools in the Kemiri sub-district are in the competent category.

5. Summarizing Indicator

Concluding is the activity of making conclusions based on observational data made in experiments (Dewi, 2021: 14). In this study, students are asked to be able to make conclusions and compare the results of experiments with 5 twists and 10 twists and write the number of objects that can be lifted. Students are asked to be able to provide explanations related to magnetic and nonmagnetic objects. Subjects with high ability are in the advanced category. This is because subjects with high ability can make conclusions and compare the results of experiments with 5 twists and 10 twists and write down the number of objects that can be lifted.

Subjects with high ability were able to provide explanations related to magnetic and nonmagnetic objects.

Subjects with moderate ability are in the competent category. This is because subjects with moderate ability were able to correctly make conclusions and compare the results of experiments from 5 twists and 10 twists and write down the number of objects that can be lifted. Subjects with moderate ability have also not been able to correctly write down objects that can be lifted by magnets with 5 twists and 10 twists. Subjects with moderate ability were able to correctly provide explanations related to magnetic and nonmagnetic objects.

Subjects with low ability are in the competent and developing category. This is because subjects with low ability are partially able to correctly make conclusions and compare the results of experiments from 5 twists and 10 twists and have not been able to correctly write the number of objects that can be lifted. Subjects with low ability were partially able to correctly provide explanations related to magnetic and nonmagnetic objects.

Research on the science process skills of fifth-grade students of one of the private elementary schools in the Kemiri sub-district on the conclusion indicator found that there were 3 subjects in the competent category, 2 subjects in the competent category, and 1 subject in the newly developing category. Based on this explanation, the science process skills of fifth-grade students in one of the private elementary schools in Kemiri sub-district are in the competent category.

6. Communicating Indicator

Communicating is expressing opinions on the results of other process skills orally or in writing (Kusumawati, 2022: 11). In this study, students were asked to be able to present the results of experiments in front of the class with a clear voice, easy-to-understand language, and in the order of presentation.

Subjects with high ability are in the decent category. This is because subjects with high ability can present the results of experiments in front of the class in groups after being shown by the teacher. Subjects with high ability have not been able to explain with a clear voice, the language used is also brief, in the order of presentation is still guided by the teacher. Subjects with moderate ability are in the decent category. This is because subjects with moderate ability are partly able to properly present the results of experiments in front of the class. Subjects with high ability have not been able to explain well with a clear voice, the language used is also short, in the order of presentation is still guided by the teacher.

Subjects with low ability are in the new developing category. This is because subjects with low ability have not been able to present the results of experiments independently or in groups. Subjects with low ability have also not been able to explain with a clear voice, the language used is also short, in the order of presentation is still guided by the teacher.

Research on the science process skills of fifth-grade students of one of the private elementary schools in the Kemiri sub-district on the indicator of communicating found that there were 4 subjects with a decent category and 2 subjects with a newly developing category. Based on this explanation, the science process skills of communicating indicators of fifth-grade students of one of the private elementary schools in the Kemiri sub-district are in the appropriate category.

CONCLUSION

Based on the results of the research and discussion previously described, it is concluded that the science process skills of fifth-grade students of one of the private elementary schools in Kemiri sub-district are in the competent category. This is because there are 5 indicators in science process skills that have a competent category that's is observing indicator, predicting indicator, an indicator of classifying, interpreting indicator, summarizing indicator and 1 indicator in the decent category that's is communicating indicator.

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