ISSN:3026-0442

Proceedings of the 1st International Conference on Education, Science Technology And Health (ICONESTH 2023 Universitas Bina Bangsa Getsempena, Dec 12-14, 2023, Banda Aceh, Indonesia)

ANALYSIS OF SCIENCE PROCESS SKILL COMPONENTS IN NATURAL AND SOCIAL SCIENCE BOOKS FOR CLASS V SEUNEUBOK JOHAN EAST ACEH PRIMARY SCHOOL

Nurmayani Daulai[1], Siti Mayang Sari[2], Munawar[3]
[1,2,3]Universitas Bina Bangsa Getsempena, Banda Aceh, Indonesia

***** Corresponding email: *nurmay043@gmail.com*

ABSTRACT

This research aims to analyze the components of science process skills in natural and social science books for class V at the Seuneubok Johan state elementary school. The scientific approach (observing, asking, analyzing, concluding, communicating and creating) is part of the Science Process Skills. This research is researchdescriptive or descriptive research is research that aims to describe a phenomenon or situation without manipulationobject study. The stages in this research are selecting textbooks, taking and determining samples, analyzing the components of Science Process Skills in the books, and drawing conclusions. The results of this research are the skills componentsprocess In the natural and social science books for class V of the Seuneubok Johan state elementary school, East Aceh, there are still few components of science process skills, namely observing, communicating and asking questions. There are no analyzing, concluding and creating components yet, so follow-up is needed in subsequent research, so that the science process skills components in natural and social science books are optimal.

Keywords: *Science Process Skills, Natural and social science books, Elementary school books.*

INTRODUCTION

Education is an effort made to create a learning atmosphere so that students can develop the potential that exists within them (Junaedi, 2019). Learning in the 2013 curriculum is expected to be able to answer the demands of the 21st century where students are able to have critical and analytical thinking skills with learning based on a scientific approach in all subjects. The development of critical thinking skills is carried out by teachers by practicing critical thinking skills and facilitating learning activities with critical thinking indicators (Bilkisda & Sudibyo, 2021). The scientific approach (observing, asking, analyzing, concluding, communicating and creating) is part of the Science Process Skills. The scientific approach is also called the scientific approach. Learning based on a scientific approach has more effective results compared to traditional learning (Sudarsih, 2022).

Science process skills are defined as insight into the development of physical and intellectual skills that already exist in students and originate from basic skills (Novitasari et al., 2017). Another opinion says that science process skills are used by studentsscientist to discover something new through scientific activities in the form of research (Muamar & Rahmi, 2017). (Mahjatia et al., 2021) states that through scientific activities and science process skills students will be able to discover scientific concepts. So in the learning processnatural and social sciences, Science process skills are very important and can be said to be mandatory. (Safitri, 2022) states that science process skills can be divided into two groups, namely 1) the basic (simpler) process skills dan 2) integrated (more complex) process skills. The basic process skills, terdiri dari 1) observing, 2) inferring, 3) measuring, 4) communicating, dan 5) classifying, 6) predicting. Sedangkan yang termasuk dalam integrated process skills adalah 1) controlling variable, 2) defining operationally, 3) formulating hypotheses, 4) interpreting data, 5) experimenting dan 6) formulating models.

Science process skills are skills that involve all students' abilities in acquiring knowledge based on phenomena. The students' abilities in question are the skills of observing, grouping, interpreting, predicting, asking questions, hypothesizing, planning experiments, applying concepts, communicating and carrying out experiments. (Guswita et al., 2018) states that process skills are learning outcomes achieved by a person in the form of the ability to carry out scientific work or scientific research, communicate the results of scientific research and have a scientific attitude.

Science process skills consist of two, namely (1) Basic Science Process Skills which consist of the skills of observing, grouping, measuring, using space

and time relationships, predicting, concluding and communicating; and (2) Integrated Science Process Skills which include compiling operational definitions of variables, determining hypotheses, controlling variables, experimenting, and interpreting experimental data (Syafi'ah et al., 2022). In learningnatural and social sciencesof course it will not be separated from Basic Science Process Skills and Integrated Science Process Skills. Therefore, in training Basic Science Process Skills and Integrated Science Process Skills in students, of course it must be supported by many factors, one of which is learning media in the form of textbooks which contain descriptions of the material that will be delivered to students. This is in line with the results of research in America which states that textbooks are used by science teachers for 90% of their learning time (Safitri, 2022).

Teaching materials are all forms of materials used to assist teachers or instructors in carrying out learning activities. Based on initial observations made by researchers, there are still many schools that use textbooks without paying attention to these things. One of them is a book on learningnatural and social scienceswhich is used for class V students at the Seuneubok Johan state elementary school. The results of initial observations carried out by researchers on the contents of the book revealed that the book only presents a summary of the material and drill practice questions in the cognitive domain only.

A good textbook should not only contain material summaries and drill questions but also be able to meet the demands of an independent curriculum. According to (Faradisa et al., 2021) textbooks are one of the means used by students to learn various concepts, develop skills and attitudes. Textbooks or textbooks are also one of the supports for successful learning. Apart from teaching scientific concepts, textbooks can be relied on by teachers in developing scientific knowledge for themselves. (Safitri, 2022) states that textbooks are a medium for practicing science process skills and are designed as instructions for teaching the principles of a subject.

Research conducted (Aliyah & Erman, 2021)shows that the elementsSkills the science process that appears the most in textbooksnatural scienceclass VII in the 2013 curriculum is an element of basic science process skills, namely observing, while an element that has not yet appeared is an element of integrated science process skills, namely the operational definition of variables. Science process skills content in learning booksnatural scienceOf course, this is also presented in the learning booknatural scienceindependent curriculum at other levels. Therefore, to further check the coverage of science

process skills in other books, researchers need to conduct research on learning booksnatural and social sciencesclass V semester 1 which is used in the national elementary school Pupengbok Johan which is used. This research was conducted to analyze the components of science process skills in booksnatural and social sciencesclass V semester 1.

METHODS

This research uses a qualitative descriptive research method. Studydescriptive or descriptive research is research that aims to describe a phenomenon or situation withoutmanipulate object research (Sukmadinata, 2015). Qualitative research methods are methods based on philosophypostpositivism and used for researchobject natural (Sugiyono, 2017).

The stages in this research begin with selecting book material to be analyzed. In this book selection, independent curriculum elementary school natural and social science books were chosen. After this initial stage, it is continued with the second stage, namely taking and determining samples. The sample from this research is a class V natural and social science book used by students at Seuneubok Johan state elementary school semester 1. The third stage in this research is analyzing the components of science process skills in the book. The final stage is drawing conclusions according to the results of the analysis found which are then outlined in the research results report. The flow

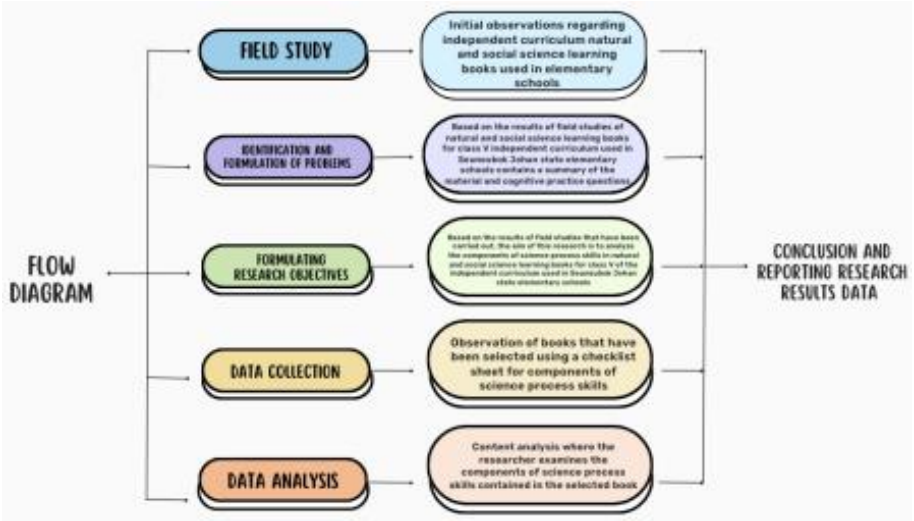

diagram of the stages in this research is depicted in Figure 1 below.

Figure 1. Flow diagram of research stages

This research uses data collection techniques using a check list sheet for science process skill components which has been prepared based on science process skill indicators which have been adapted from (Syafi'ah et al., 2022). The data that has been obtained will be analyzed using content analysis techniques. The elements of science process skills used to analyze the book are divided into two, namely (1) Basic Science Process Skills and (2) Integrated Science Process Skills (Aliyah & Erman, 2021).

RESULTS AND DISCUSSION

The components of science process skills identified based on the indicators and sub-indicators that have been described in the theoretical study, data were obtained as presented in Tables 1, 2, 3, 4.

Table 1. Recapitulation of Identification Results for Components of science process skills contained in Chapter 1 Seeing by Light, hearing Because sound.

No	Component Skills Proses Sains	Sub Chapter	Information
Basic Science Process Skills			
1	Observe	Light And Its Properties	The Basic Science Process Skills component of observing and collecting data from observations appears in the let's try activity
2	Grouping	-	No Basic Science Process Skills components foundgrouping or classification in Chapter 1 material Seeing through Light, hearingBecause sound
3	Estimate	Guessing The Nature Of Light	The Basic Science Process Skills component is estimating, observational data appears in activities carried out together
4	Make Conclusion	Explain Scheme Of How The Eye Sees	The Basic Science Process Skills Component makes conclusions, observational data appears in the activities that I have studied
5	Do Communication	-	No component of Basic Science Process Skills for communication was found in the material Chapter 1 Seeing through Light, hearingBecause sound

Integrated Science Process Skills			
1	Interpret/ Interpretation	Explain Scheme Of How The Eye Sees	Component Integrated Science Process Skillsinterpreting observational data that emerges from activities carried out together. After carrying out activities together, students interpret the data from their observations through data analysis activities based on observations by answering the questions that have been given
2	Hypothesize	-	No components found Integrated Science Process Skillshypothesize on the material in Chapter 1 Seeing through Light, hearingBecause sound
3	Definition Operational Variable	-	No components found Integrated Science Process Skillsdefining variables in Chapter 1 material Seeing through Light, hearingBecause sound
4	Plan Test/ Study	Find Out How Sound Creeping	Component Integrated Science Process Skillsplanning an experiment or research can be seen on page 19 through the let's try activity. Apart from that, you can see the determination of tools and materials or sources of observation, instructions on what will be observed, measured or recorded clearly, and instructions on work steps in making observations.
5	Carry Out Test/ Research	Find Out How Sound Creeping	Component Integrated Science Process Skillscarry out the experiment shown on page 19 through the activity let's try with a sound experimenton the table.

Table 2. Recapitulation of Results of Identification of Components of Science Process Skills in Chapter 2 Harmony in Ecosystems

No	Component Skills proses sains	Sub chapter	Information
Basic Science Process Skills			
1	Observe	Process of living things get	The Basic Science Process Skills component of observing and collecting data from observations can be seen in the let's try by discussing activity

		energy in an ecosystem	
2	Grouping	-	No Basic Science Process Skills components foundgrouping or classification in the material in Chapter 2 Harmony in Ecosystems
3	Estimate	-	No Basic Science Process Skills estimating components were found in the material in Chapter 2 Harmony in Ecosystems
4	Make conclusion	Present a picture of a food chain	The Basic Science Process Skills component makes conclusions visible in the let's reflect activity
5	Do communication	Present a picture of a food chain	The Basic Science Process Skills component of communication appears in activities carried out together
Integrated Science Process Skills			
1	Interpret/ Interpretation	-	No Interpretation/Interpretation Integrated Science Process Skills component was found in the material in Chapter 2 Harmony in Ecosystems
2	Hypothesize	-	No hypothesized Integrated Science Process Skills component was found in the material in Chapter 2 Harmony in Ecosystems
3	Definition Operational variable	-	No Integrated Science Process Skills components were found, operational definitions of variables in the material for Chapter 2 Harmony in Ecosystems
4	Plan test/ study	Understand the process of energy transfer in food webs	The Integrated Science Process Skills component of planning an experiment or research can be seen on page 57 through the let's try activity. Apart from that, you can see the determination of tools and materials or sources of observation, instructions on what will be observed, measured or recorded clearly, and instructions on work steps in making observations.
5	Carry out test/ research	Understand the process of energy	The Integrated Science Process Skills component of carrying out experiments is shown on page 57 through the let's try

		transfer in food webs	activity with jar, new and paper experiments.

Table 3. Recapitulation of Identification Results for Components of science process skills contained in Chapter 3 Magnetism, Electricity and technology for life

No	Component Skills proses sains	Sub chapter	Information
Basic Science Process Skills			
1	Observe	How Method get electrical energy	The Basic Science Process Skills Component of observing and collecting data from observations can be seen in the let's try activity where electrical energy is obtained
2	Grouping	-	No Basic Science Process Skills components foundgrouping or classification in the material in Chapter 3 Magnetism, Electricity and technology for life
3	Estimate	Find out how generate electrical energy	The Basic Science Process Skills component focuses on the activity of choosing the challenge of finding out how to generate electrical energy
4	Make conclusion	-	No Basic Science Process Skills component was found to make conclusions on the material in Chapter 3 Magnetism, Electricity and technology for life
5	Do communication	-	No Basic Science Process Skills components were found to communicate in the material in Chapter 3 Magnetism, Electricity and technology for life
Integrated Science Process Skills			
1	Interpret/ Interpretation	-	No Interpretation/Interpretation Integrated Science Process Skills component was found in the material in Chapter 3 Magnetism, Electricity and technology for life
2	Hypothesize	-	No hypothesized Integrated Science Process Skills components were found in

			the material in Chapter 3 Magnetism, Electricity and technology for life
3	Definition Operational variable	-	No component of Integrated Science Process Skills was found, operational definitions of variables in the material in Chapter 3 Magnetism, Electricity and technology for life
4	Plan test/ study	What is Magnetism	The Integrated Science Process Skills component of planning an experiment or research can be seen on page 80 through the let's try activity. Apart from that, you can see the determination of tools and materials or sources of observation, instructions on what will be observed, measured or recorded clearly, and instructions on work steps in making observations.
5	Carry out test/ research	What is Magnetism	The Integrated Science Process Skills component of carrying out experiments is shown on page 80 through the activity let's try with a magnet experiment.

Table 4. Recapitulation of Identification Results for the Components of Science Process Skills contained in Chapter 4. Let's get to know our earth

No	Component Skills proses sains	Sub chapter	Information
Basic Science Process Skills			
1	Observe	The natural appearance of our earth	Components of Basic Science Process Skills are observing and collecting data from visible observations on any topicon earth us
2	Grouping	-	No Basic Science Process Skills components foundgrouping or classification in Chapter 4 material. Let's get to know our earth
3	Estimate	-	No Basic Science Process Skills estimating components were found in the material in Chapter 4. Let's get to know our earth
4	Make conclusion	Make a map of where you live	The Basic Science Process Skills component makes conclusions visible in the let's reflect activity

5	Do communication	-	No component of Basic Science Process Skills for communication was found in the material in Chapter 4. Let's get to know our earth
Integrated Science Process Skills			
1	Interpret/ Interpretation	-	No Interpretation/Interpretation Integrated Science Process Skills components were found in the material in Chapter 4. Let's get to know our earth
2	Hypothesize	-	No components of Hypothesized Integrated Science Process Skills were found in the material in Chapter 4. Let's get to know our earth
3	Definition Operational variable	-	No Integrated Science Process Skills component found, operational definition of variables in Chapter 4 material. Let's get to know our earth
4	Plan test/ study	Atmosphere Earth	The Integrated Science Process Skills component of planning an experiment or research can be seen on page 144 through the let's try activity. Apart from that, you can see the determination of tools and materials or sources of observation, instructions on what will be observed, measured or recorded clearly, and instructions on work steps in making observations.
5	Carry out test/ research	Atmosphere Earth	The Integrated Science Process Skills component of carrying out experiments is shown on page 144 through the let's try activity by exploring around the house.

Components of Basic Science Process Skills measuring and using numbers, estimating, making conclusions, and components of Integrated Science Process Skills hypothesizing and operational definitions of variables not found in Chapter 4 Let's get to know our earth. This is in line with Fitri et al.'s research, namely that based on the results of the analysis carried out there are several scientific stages that are not included in the subject matter sub-chapter (Agusantia et al., 2021).

According to Hilpan (Safitri, 2022), one indicator that textbooks are said to be good is the availability of the Science Process Skills component. Based on the results of identifying the Science Process Skills components

which include the Basic Science Process Skills components and the Integrated Science Process Skills components in science textbooksknowledge natural and social class V which is used as a learning book for Seuneubok Johan state elementary school students, it was found that the components of Science Process Skills were found in all chapters (Chapter 1 Seeing through Light, hearingBecause sound, Chapter 2 Harmony in Ecosystems, Chapter 3 Magnets, Electricity and technology for life, Chapter 4 Let's get to know our earth) are components of Basic Science Process Skills (observing and communicating) and Integrated Science Process Skills (planning and conducting experiments). In the component of observing, planning and carrying out experiments, student activities are presented in Chapter 1 (seeing through light), Chapter 2 (harmonious ecosystem), Chapter 3 (how to get electrical energy), Chapter 4 (how our earth changes).

This is in line with research that has been conducted (Ramadhani et al., 2019), which states that in the 1st semester high school physics textbooks observing or observation is an element of Science Process Skills that is often found. Meanwhile, for the Basic Science Process Skills component, communication that appears in all chapters is student presentations based on the information or data obtained. This happens because in all chapters there are experiments that students must carry out so that after students obtain the data, they must present the results of the experiments. Based on the results of this identification, the class V natural and social science learning book used as a learning book for Seuneubok Johan State Elementary School students is suitable for use. It just needs to be reviewed so that all components of Science Process Skills are met.

CONCLUSION

Skill componentprocess science in natural and social science learning books for class V state elementary school studentsfire bok johan the most frequently found are Basic Science Process Skills observing and communicating and Integrated Science Process Skills planning and conducting experiments. Meanwhile, the Science Process Skills component that is not found in the book is the Integrated Science Process Skills component, operational definitions of variables. Based on these results, it can be concluded that the natural and social science textbooks for class V students do not fulfill all the components of Science Process Skills so they still need to be reviewed.

ACKNOWLEDGEMENT

We would like to thank Seuneubok Johan Elementary School, East Aceh, and other parties who have supported this research.

REFERENCES

Agusantia, D., Sumardi, H., & Susanto, E. (2021). Analisis Buku Teks Matematika SMP Kelas VIII Terbitan Erlangga Kurikulum 2013 Berdasarkan Pendekatan Saintifik. *Didactical Mathematics*, *3*(2), 12–19. https://doi.org/10.31949/dm.v3i2.1354

Aliyah, A., & Erman. (2021). Analisis Unsur-Unsur Keterampilan Proses Sains dalam Buku IPA SMP. *Pensa E -Jurnal :Pendidikan Sains*, *9*(2), 147–153.

Bilkisda, I. Z., & Sudibyo, E. (2021). Pengaruh Pembelajaran E-Learning Edmodo Terhadap Kemampuan Berpikir Kritis Siswa Smp Pada Materi Kalor Dan Perpindahannya. *Pensa E-Jurnal : Pendidikan Sains*, *9*(2), 193–198. https://ejournal.unesa.ac.id/index.php/pensa/index

Faradisa, A. R., Fianti, S. I., Cristyanty, V., Yusuf, S. M., & Cahyani, V. P. (2021). Proceeding of Integrative Science Education Seminar. *Proceeding of Integrative Science Education Seminar (PISCES)*, *1*(65), 441–448.

Guswita, S., Anggoro, B. S., Haka, N. B., & Handoko, A. (2018). Analisis Keterampilan Proses Sains Dan Sikap Ilmiah Peserta Didik Kelas XI Mata Pelajaran Biologi Di SMA Al-Azhar 3 Bandar Lampung. *Biosfer: Jurnal Tadris Biologi*, *9*(2), 249–258. https://doi.org/10.24042/biosfer.v9i2.4025

Junaedi, I. (2019). Proses pembelajaran yang efektif. *Journal of Information System, Applied, Management, Accounting and Research*, *3*(2), 19–25.

Mahjatia, N., Susilowati, E., & Miriam, S. (2021). Pengembangan LKPD Berbasis STEM untuk Melatihkan Keterampilan Proses Sains Siswa Melalui Inkuiri Terbimbing. *Jurnal Ilmiah Pendidikan Fisika*, *4*(3), 139. https://doi.org/10.20527/jipf.v4i3.2055

Muamar, M. R., & Rahmi. (2017). Analisis Keterampilan Proses Sains Dan Keterampilan Kognitif Siswa Melalui Metode Pratikum Biologi Pada Sub Materi Schizophyta dan Thallophyta. *Jurnal Pendidikan Almuslim*, *5*(1), 4.

Novitasari, A., Ilyas, A., & Amanah, S. N. (2017). Pengaruh Model Pembelajaran Inkuiri Terbimbing Terhadap Keterampilan Proses Sains Peserta Didik Pada Materi Fotosintesis Kelas Xii Ipa Di Sma Yadika Bandar Lampung. *Biosfer: Jurnal Tadris Biologi*, *8*(1), 91–104. https://doi.org/10.24042/biosf.v8i1.1267

Ramadhani, P. R., Akmam, Desnita, & Darvina, Y. (2019). ANALISIS KETERAMPILAN PROSES SAINS PADA BUKU TEKS PELAJARAN

FISIKA SMA KELAS XI SEMESTER 1. *Physics Education*, *12*(4), 649–656.

Safitri, L. (2022). *Komponen Keterampilan Proses Sains Dan Analisisnya Pada Buku Ajar Ilmu Pengetahuan Alam*. *1*(4).

Sudarsih, A. (2022). Penerapan Pendekatan Saintifik Strategi Discovery Learning Dengan Metode Diskusi untuk Meningkatkan Aktivitas Bertanya dan Hasil Belajar IPA di SDN 19 Cakranegara. *Jurnal Ilmiah IKIP Mataram*, *9*(1), 1–7.

Syafi'ah, R., Laili, A. M., & Prisningtyas, N. V. (2022). Analisis Komponen Keterampilan Proses Sains Pada Buku Ajar Ipa Kelas Ix. *LENSA (Lentera Sains): Jurnal Pendidikan IPA*, *12*(2), 87–96. https://doi.org/10.24929/lensa.v12i2.230