Analysis of Literacy Process of Learning Science in Elementary School: A Case Study in Jepara

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Abstract

The study aims to examine students' interest in learning science, categorizing it into high, moderate, and low levels among fourth-grade students at SD Negeri 01 Raguklampitan Batealit Jepara. The purpose is to describe and analyze the literacy process in science learning for these students. The research employs a qualitative case study method involving observations, interviews, and documentation. In elementary education, literacy encompasses the development of skills in writing, reading, arithmetic, speaking, and problem-solving, all of which are essential for everyday life. The subjects of this research include fourth-grade students, their teachers, and the school principal at SD N 01 Raguklampitan. One of the ways to foster literacy is through science education. The findings reveal that students with high interest (subjects 1 and 2) enjoy science lessons, those with moderate interest (subjects 3 and 4) are focused during lessons, and those with low interest (subjects 5 and 6) participate but struggle to understand much of the material.

Keywords: *Analysis, Literacy, Science Learning, Elementary School*

INTRODUCTION

Education aims to cultivate a culture of reading, arithmetic, and writing across the community, aligning with Law No. 20 of 2003 Article 4, paragraph 5, which outlines the principles of educational organization. The Indonesian nation aspires not only to produce generations skilled in writing and reading but also to create individuals proficient in various life aspects, thereby becoming a superior and advanced nation. Promoting the nation's literacy culture is crucial for achieving this goal. As stated by the Minister of Education and Culture, the 21st-century life skills prerequisite for Indonesians involves fostering a culture of literacy through integrated education, beginning with family education, extending to school, and encompassing the broader community environment.

Literacy culture is essential for a nation to compete globally. Literacy encompasses writing, reading, and thinking activities vital for lifelong learning. It involves developing complex abilities that the entire Indonesian population can implement, providing opportunities for students to develop literacy skills not only at school but also in broader contexts (Khakima et al., 2021).

In today's globalized world, forming positive student character is crucial due to the significant direct and indirect challenges and influences, both negative and positive. The government addresses this by refining the education system and implementing character-building initiatives. Character education, integrated into science subjects, facilitates the internalization of character education in

science learning. A model analysis-based learning design aids teachers in implementing this process (Suhaida & Syarifah, 2019).

Learning, defined as the interaction between physical and psychological teaching, utilizes various tools and resources to achieve lasting behavioral changes in cognitive, affective, and psychomotor domains. Effective learning involves engaging students holistically, promoting personal development in these areas. Natural Science (IPA) education, spanning from elementary to high school, is vital due to its relevance to human activities and dependence on nature. Science learning should present concepts through direct experiences, combining theory and practical application, highlighting the interrelated dimensions, processes, products, and attitudes of science (Leasa et al., 2020).

A preliminary study involved an interview with a fourth-grade teacher at SD Negeri 01 Raguklampitan Batealit Jepara. The interview focused on the literacy process of fourth-grade students in science learning post-Covid-19 pandemic. It revealed that many students, particularly in class IV, exhibited low literacy levels in science learning due to online learning challenges. The interview results align with strategies to build a school literacy movement, aiming to improve students' understanding of science learning. Teachers continually strive to enhance the literacy process for better learning outcomes. Monitoring, analyzing, and evaluating program implementation and literacy activities are crucial, especially for fourth-grade science students. Literacy involves mastering writing systems and their conventions. It encompasses reading, writing, and communication skills essential for societal interaction. According to the 2003 UNESCO declaration, literacy also includes identifying, evaluating, creating, and communicating information effectively to address various problems (Purwo, 2020).

Learning is a process marked by changes in understanding, attitudes, behavior, knowledge, skills, and other aspects of an individual (Hyun et al., 2017). Effective learning involves active student engagement with their environment. Learning outcomes span cognitive, affective, and psychomotor domains (Hidayat et al., 2022). The objectives of science learning include developing confidence in God, understanding science concepts applicable to daily life, fostering curiosity and positive attitudes, enhancing process skills, promoting environmental conservation, respecting nature, and acquiring science knowledge and skills for further education. Interest in learning plays a crucial role in student attitudes and behavior (Ledley & Holt, 2014). It involves a student's attention and enthusiasm for a subject without compulsion, influencing their overall engagement and performance. Indicators of learning interest include initiative, diligence, precision, discipline, and a consistent drive to engage with the subject matter (Anggraeni, 2019).

Literacy activities should begin early and be consistently nurtured to develop reading habits. Support from principals, teachers, parents, peers, and the environment is essential for effective literacy activities. These activities broaden students' horizons, influence behavior positively, and promote wise use of technology. Teachers must create an effective learning atmosphere and enhance student literacy, improving the overall quality of learning. Implementing productive learning models strengthens concepts and improves numeracy literacy. This research on the literacy process of fourth-grade students in science learning at SD N 01 Raguklampitan Batealit Jepara aims to understand students' interest in learning, addressing the issues and aspirations outlined.

METHODS

To ensure rigorous outcomes, this research employs appropriate scientific methods. Qualitative research methodology is chosen, as it allows for the collection of descriptive data through interviews, field notes, photos, and official documents (Taylor et al., 2015). This approach is ideal for exploring and analyzing phenomena, events, social activities, attitudes, beliefs, and perceptions among individuals and groups. The study utilizes a case study research model, which involves detailed and intensive examination of a specific social unit over a period to understand its context, interactions, and current status (Hastie & Hay, 2012). This methodological choice provides a comprehensive overview of the literacy process among Grade IV elementary school students in learning science at SD N 01 Raguklampitan Batealit Jepara. Research subjects are carefully selected based on their ability to provide relevant information about the research focus. Purposive sampling, a deliberate and non-random selection technique, is employed to choose 12 Grade IV students (6 male and 6 female) and one fourth-grade teacher. This selection is based on their knowledge, experience, and willingness to participate in exploring learning interests and influencing factors.

Data collection comprises primary and secondary sources. Primary data, obtained through interviews and observations, captures firsthand accounts and behaviors of teachers, students, and the school principal directly involved in the research focus. Secondary data is sourced from books, personal documents, and official school records to provide contextual background and supplementary information. Data collection techniques include participant observation, interviews, and documentation, aligning with natural conditions in qualitative research. These methods facilitate a holistic understanding of the literacy process in science learning. Data analysis involves systematic categorization, synthesis, and pattern recognition of data obtained from interviews, field notes, and documentation. This process ensures clarity and coherence in presenting findings that are both meaningful and comprehensible to researchers and stakeholders (Maxwell, 2018; Sugiyono, 2013).

RESULTS

This research was conducted at SD Negeri 01 Raguklampitan Batealit Jepara during the 2023/2024 academic year, focusing on Grade IV students. Initially, the researcher interviewed the fourth-grade teacher, regarding the Analysis of the Literacy Process of Grade IV Elementary School Students in Science Learning. Based on the findings, Grade IV students at SD Negeri 01 Raguklampitan Batealit Jepara exhibit varying levels of interest in science learning: high, moderate, and low. Students with high interest demonstrate active engagement in learning activities, enjoyment in the learning process, enthusiasm during lessons, and proactive participation. Those with moderate interest tend to follow along with lessons but show limited responsiveness during teacher explanations. Conversely, students with low interest display disengagement behaviors such as reluctance to take notes, avoidance of assignments, and lack of motivation in science subjects (Suharninuk et al., 2023). The researcher administered an AKM test to Grade IV students at SD Negeri 01 Raguklampitan Batealit Jepara to assess their literacy skills. Following the test, the results were systematically analyzed, revealing that out of the 12 students tested, 3 demonstrated high literacy skills, 7 showed moderate literacy skills, and 2 exhibited low literacy skills. For the purposes of this study, two students from each literacy indicator were selected as research subjects, resulting in a total of 6 subjects. The detailed results and discussion are presented below.

Student Literacy Process in Science Lessons Based on High Student Interest in Learning

The results pertaining to students' interest in learning science lessons with a high level of interest are presented below. Subject 1 expressed a sense of happiness during the science lesson on energy sources, indicating no difficulties in comprehending the material delivered by the teacher. Subject 1 actively engaged in solving questions and demonstrated a clear understanding of the content. These observations suggest that Subject 1 experiences joy and exhibits a high interest in learning.

Pn : With Muhammad's younger brother Reihan Bilar S, right?
Sb1 : Yes Sir.
Pn : Now you will ask Reihan a question for Reihan to answer, okay? Regarding the questions you gave me earlier and what you have done. Ready, okay?
Sb1 : Yes, sir
Pn : first question, what do you know about energy sources?
Sb1 : something that exists in nature that can produce small or large amounts of energy.
Pn : OK, now Reihan's second question, what do you know about the benefits of energy sources?
Sb1 : benefits for human life, benefits for plants, benefits for everyone.
Pn : now the third question, where does Reihan's main heat energy come from?
Sb1 : Sun.
Pn : Yes, clever... Reihan's fourth question, name a device that can convert electrical energy into heat energy. Explain!
Sb1 : It's a light, sir, because it's plugged into electricity. OK, you can use a lamp, you can also... an iron. Fifth question, right? Give examples of energy savings in everyday life
Pn : what you do.: Turn off the TV if you are not watching it, turn the lights on

midday.
Pn : OK Reihan, last question. Are there any difficulties in working on this question?
Sb1 : There are a few questions that I'm confused about, the others are easy, sir.
Pn: OK Reihan, thank you... keep up your enthusiasm for learning so you can be smart.

Subject 2 also demonstrated significant interest in science lessons focused on energy sources. They expressed joy and creativity in their learning experiences, underscoring their active engagement and ease with the instructional practices during the teaching and learning process.

Pn : With Azzahra's sister Asyila Rahma?
Sb2 : Yes Sir.
Pn : Now you will ask Rahma a question for Rahma to answer, okay? Regarding the questions you gave me earlier and what you have done. Ready, okay?
Sb2 : Yes Sir.
Pn : first question, what do you know about energy sources?
Sb2 : As energy that can be used in various daily activities.
Pn : OK, now Rahma's second question, what do you know about the benefits of energy sources?
Sb2 : benefits for humans, benefits for other living creatures.
Pn : now the third question, where does Rahma's main heat energy come from?
Sb2 : Sun.
Pn : Yes, clever... Rahma's fourth question, name a device that can convert electrical energy into heat energy. Explain!
Sb2 : Iron
Pn : OK, that's great, yeah. Fifth question, right? Give examples of energy savings in your daily life do.
Sb2 : Turn off the TV when you are not watching it, turn off the lights during the day, use enough water
Pn : OK Rahma, last question. Are there any difficulties in working on this question?
Sb2 : No Sir.
Pn : Good Rahma, thank you... the spirit of continuing to study to be smart.

Student Literacy Process in Science Lessons Based on Medium Student Learning Interest

Regarding students with moderate interest in learning, Subject 3 acknowledged the need for increased attention during science lessons, particularly concerning energy sources. Subject 3 encountered challenges in understanding certain theoretical aspects of the lesson, reflecting their moderate level of engagement. The teacher's emphasis on practical applications rather than theoretical explanations required Subject 3 to concentrate more on the material.

Pn : With Eza Rifky's sister, right?
Sb3 : Yes Sir.
Pn : Now you will ask Eza a question for Eza to answer, okay? Regarding the questions you gave me earlier and what you have done. Ready, okay?
Sb3 : Yes Sir.
Pn : first question, what do you know about energy sources?
Sb3 : objects that exist in nature that can produce energy sources.
Pn : OK, now Eza's second question, what do you know about the benefits of energy sources?
Sb3 : benefits for human life, benefits for other living creatures.
Pn : now the third question, where does Eza's main heat energy come from?
Sb3 : Sun.
Pn : Yes, clever... Eza's fourth question, name a device that can convert electrical energy into heat energy. Explain!
Sb3 : fan, iron.

Pn : Well, more precisely iron. Fifth question, right? Give examples of energy savings that you do in your daily life.
Sb3 : Turn off the TV when you are not watching it, turn off the lights during the day.
Pn : OK Eza, last question. Are there any difficulties in working on this question?
Sb3 : No Sir.
Pn : Good Eza, thank you... keep studying it so you can be smart.

Subject 4 exhibited limited participation in science lessons, influenced by several factors. They faced difficulties comprehending both theoretical concepts and practical applications in science. Subject 4's engagement was hindered by inadequate teacher attention, contributing to their moderate interest in learning. In line with opinion Puspitasari and Ana (2023) that student involvement results in feelings of joy and interested in working on or carrying out activities for that object depends on interest in an object. From these indicators shows that there are still some students who are interested in science lessons caused by students who are less enthusiastic and make students less enthusiastic active in following IPA learning.

Pn : With Ali Warkham's sister, right?
Sb4 : Yes Sir.
Pn : Now you will ask Ali a question for Ali to answer, okay? Regarding the questions you gave me earlier and what you have done. Ready, okay?
Sb4 : Iya pak
Pn : first question, what do you know about energy sources?
Sb4 : something that exists in nature that can produce small or large amounts of energy.
Pn : OK, now Ali's second question, what do you know about the benefits of energy sources?
Sb4 : benefits for human life, benefits for plants, benefits for everyone.
Pn : now the third question, where does the main heat energy come from Ali?
Sb4 : Sun.
Pn : Yes, clever... Ali's fourth question, name a device that can convert electrical energy into heat energy. Explain!
Sb4 : Iron
Pn : Yes, clever... iron. Fifth question, right? Give examples of energy savings that you do in your daily life.
Sb4 : Turn off the TV when you are not watching it, turn off the lights during the day, save water
Pn : OK Ali, last question. Are there any difficulties in working on this question?
Pb4 : No sir.
Pn : Good Ali, thank you... the spirit of continuing to study it to be smart.

Student Literacy Process in Science Lessons Based on low student interest in learning

For students with low interest in learning, exemplified by Subject 5, challenges were observed during science lessons on energy sources. They expressed difficulties in comprehending the material due to distractions from classmates and gaps in foundational knowledge. Subject 5's engagement in learning was negatively impacted, highlighting their low interest and participation in science lessons.

Pn : With M. Riyan Ardiansyah's younger brother, right?
Sb5 : Yes Sir.
Pn : Now you will ask Riyan a question for Riyan to answer, okay? Regarding the questions you gave me earlier and what you have done. Ready, okay?
Sb5 : Yes Sir.
Pn : first question, what do you know about energy sources?
Sb5 : hhmmmm electricity
Pn : Yes, electricity, what you mean by an energy source is something that exists in nature that can produce a source of... Energy, do you understand, Riyan? now Riyan's second question, what do you know about the benefits of energy sources?
Sb5 : to dry clothes.

Pn : Yes, apart from drying clothes, its benefits are for the daily lives of humans or living creatures, that's right. now the third question, where does the main heat energy come from Riyan?
Sb5 : Sun.
Pn : Yes, clever... Riyan's fourth question, name a device that can convert electrical energy into heat energy. Explain!
Sb5 : Lamp sir,
Pn : OK, you can use a lamp, you can also... an iron. Fifth question, right? Give examples of energy savings that you do in your daily life.
Sb5 : Turn off the TV.
Pn : OK Riyan, last question. Are there any difficulties in working on this question?
Sb5 : Yes, it's difficult.
Pn : OK, Riyan, keep adding to your learning, yes, that's enthusiastic. So that you become a smart child.... That's it, thank you...

Similarly, Subject 6 faced challenges maintaining focus during science lessons, particularly regarding energy sources. They encountered difficulties understanding the material presented by the teacher and were affected by peer distractions. Subject 6's limited engagement and understanding underscored their low interest in learning science.

Pn : With M. Iqbal Maulana Malik's younger brother, right?
Sb6 : Yes Sir
Pn : Now you will ask Iqbal a question for Iqbal to answer, okay? Regarding the questions you gave me earlier and what you have done. Ready, okay?
Sb6 : Yes, yes
Pn : first question, what do you know about energy sources?
Sb6 : electric
Pn : Yes, electricity, what do you mean by an energy source is something that exists in nature that can produce a source... Energy, do you understand, Brother Iqbal? now Iqbal's second question, what do you know about the benefits of energy sources?
Sb6 : to dry clothes.
Pn : Yes, apart from drying clothes, its benefits are for the daily lives of humans or living creatures, that's right. now the third question, where does Iqbal's main heat energy come from?
Sb6 : Fire.
Pn : Yes Iqbal, more precisely the answer is the sun, yes that's okay, fourth question Iqbal, name a device that can convert electrical energy into heat energy. Explain!
Sb6 : Lamp sir,
Pn : OK, you can use a lamp, you can also... an iron. Fifth question, right? Give examples of energy savings that you do in your daily life.
Sb6 : Turns off the TV.
Pn : OK Iqbal, last question. Are there any difficulties in working on this question?
Sb6 : Yes, it's difficult.
Pn : OK, Iqbal, keep adding to your learning, yes, that's enthusiastic. Study with your father or mother to become a smart child.... That's it, thank you, Iqbal.

DISCUSSION

The literacy process was assessed using test questions and interviews with students to characterize numeracy literacy based on their learning interests. The literacy abilities of fourth-grade students at SD Negeri 01 Raguk Lampitan Batealit Jepara were evaluated through these methods. Each subject's performance in the 25 multiple-choice questions and 3 essays was categorized as follows:

Subject 1 demonstrated excellent performance, indicating high interest in learning. The interview confirmed Subject 1's accurate explanations and alignment with test results, highlighting strong numeracy literacy and high learning interest. Similarly, Subject 2 achieved excellent grades and

exhibited a high interest in learning during the interview. Subject 2 effectively reasoned and communicated their understanding while solving questions, reflecting a creative approach to learning. Subject 3 achieved good grades and showed moderate interest in learning. The interview revealed Subject 3's ability to understand and explain concepts, although with a need for concentrated attention during learning activities. Subject 4 also achieved good grades with moderate interest in learning, facing challenges in comprehending IPA lessons and practices. Subject 4's participation was influenced by various factors, suggesting a moderate level of engagement in learning. Subject 5 attained sufficient grades, indicative of low interest in learning. Subject 5 encountered difficulties in understanding and explaining concepts during the interview, highlighting challenges in engagement and motivation. Similarly, Subject 6 achieved sufficient grades with low interest in learning. Subject 6 faced obstacles in understanding the material, compounded by distractions from peers during lessons.

Literacy skills encompass listening, reading, speaking, and writing abilities. Listening involves receiving and interpreting sound waves, reading focuses on understanding written information, speaking entails conveying thoughts verbally, and writing involves expressing ideas through written language (Fikrat-Wevers et al., 2021; Çakıroğlu, 2018; Nittrouer & Caldwell-Tarr, 2016; Goodrich et al., 2013). These skills are essential for comprehending, applying knowledge, and problem-solving in everyday life. The goals of literacy include fostering a lifelong learning culture among students and enhancing literacy skills within the school environment. Specifically, these goals aim to cultivate a vibrant school literacy culture, empower residents to become literate, create a conducive learning environment, and sustain continuous learning through diverse reading materials and strategies. The School Literacy Movement (GLS) in Indonesia, implemented in stages across schools, emphasizes developing reading habits and improving literacy skills (Kartikasari & Nuryasana, 2022; Kristiyaningrum & Ismanto, 2020). This initiative progresses through stages of habituation, development, and learning, promoting enjoyable reading activities, critical thinking, and creative communication skills among students. In conclusion, the analysis of fourth-grade students' literacy processes in science learning at SDN 01 Raguklampitan Jepara reveals varying levels of engagement and challenges. While the school promotes literacy through its environment, further integration of literacy skills into science education could enhance student learning outcomes.

CONCLUSION

Based on the research conducted during the 2023/2024 academic year at SD Negeri 02 Raguklampitan Batealit Jepara, the following conclusions can be drawn: 1) Students demonstrating high interest in learning, such as subjects 1 and 2, exhibited enjoyment during science lessons. They performed well in tests, indicating a strong grasp of the material without encountering significant challenges; 2) Students with moderate interest in learning, namely subjects 3 and 4, received varying levels of attention from teachers. While they demonstrated adequate performance in tests, they encountered difficulties with some concepts, highlighting the need for focused support; 3) Students with low interest in learning, represented by subjects 5 and 6, struggled significantly during tests. They demonstrated limited understanding of the material, resulting in lower scores.

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