



Students' Reading Skills in Science Lessons in the Education 4.0 (E4.0)

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Abstract: Low interest in reading is a problem that must be overcome. To overcome this problem of intense interest in reading, steps must be taken are optimizing the literacy movement for students. To overcome the problem of common interest in reading, parents have an essential role. Apart from parents, the family environment is also very decisive in fostering interest in reading for their sons and daughters by giving gifts to read on historic days, such as providing storybooks to children. This article uses qualitative research. Research informants conducted in this study were the principal of SMAN 17 Palembang and the head of administration as critical informants and school assistants and educators as supporting informants. Data collection techniques in this study are through observation, interviews, and documentation. Data analysis techniques include data reduction, presentation, verification, and conclusion. The results showed that implementing the Reading Tradition of Class X Students of SMAN 17 Palembang was exemplary. This could be seen from 1) the frequency (often or not) visiting the library or reading garden twice a week; 2) the visiting time is 1- 2 hours; 3) the type of reading; 4) the number of reading sources read; 5) determines and trains students' habits in fostering interest in reading. Several activities are carried out to foster reading interest: 1) there should be students' interest in reading first; 2) motivate students, and 3) strategies for learning to read that are relevant and reading diligently will improve students' creative thinking skills.

Keywords: Education 4.0; Science lessons; Students' reading skills

Introduction

Education 4.0 (E4.0) is related to the use of technology in learning, so learning objectives are achieved as expected. The existence of technology is expected to help students access all information to enrich their knowledge. E 4.0 has shifted the old literacy concept into a new literacy. New literacy related to individual literacy to read data, use technology, and self-improvement. The component that must be considered in new literacy is the ability to read data (Rosyidi & Darmanto, 2020). Reading is an important thing to cultivate. Especially in the information age like today, reading is necessary for everyone. Reading has the meaning of making students literate in a context (Frankel et al., 2016). Thus, a reading culture needs to be developed from an early age. Reading plays a vital role

in the learning process in schools because knowledge is obtained through reading (Tavera & Casinillo, 2020).

In the era of Education 4.0, it is important for students to develop their reading skills in the context of Science, Technology, Engineering, and Mathematics (STEM) education. The ability to read and comprehend scientific texts is essential for students to understand scientific concepts, theories, and principles.

Reading means translating and interpreting symbols or letters in the language the reader impregnates. Education in Indonesia refers to the concept of learning (Palupi, 2018). This concept implies that we continue to learn throughout life, and one of the efforts that can be made in learning is reading. Through reading, one's ability can be improved, especially in terms of understanding various concepts (Ismail et al.,

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2017). Homework activities can also develop students' critical thinking skills (Purwaningsih & Wangid, 2021).

The culture of fondness for reading is contained in Government Regulation 24 of 2014 concerning the Implementation of Law Number 43 of 2007 concerning Libraries. Article 74 concerning the Award for Cultivating a Passion for Reading paragraph 1 states that a love of reading is carried out through a national movement for the fondness of reading, the provision of cheap and quality books, development and utilization of libraries as a learning process.

Reading skill is indeed understood as the ability to read and write (Sari et al., 2018). Reading can be interpreted as translating language symbols so that they are processed into an understanding (Pradita, 2016). Student must be given support in the process of carrying out this reading skill (Briones et al., 2022). There are many ways that educational institutions can do so that students make reading a necessity, for example, by being given tiered books that are interesting with pictures according to students' abilities (Popoola et al., 2021a). Each child reads with a book determined by the teacher according to their reading level (Kodan, 2017). The tiered reading book is beneficial for the literacy level of students.

Based on the observation that class X students of SMAN 17 Palembang have grown a reading skill for students in class X, this school is one of the leading schools in Palembang City, with a rigorous selection process so that students who enter or are accepted in this class excellent quality students. the Principal appreciates and hopes that with this literacy program, students will get used to reading besides being able to add knowledge and insight. Increasing Literacy will increase achievement, especially in writing and reading.

Low interest in reading is a problem that must be overcome. To overcome this problem of intense interest in reading, steps must be taken are optimizing the literacy movement for students in elementary schools. To overcome the problem of common interest in reading, parents have an essential role. Apart from parents, the family environment is also very decisive in fostering interest in reading for their sons and daughters by giving gifts in the form of books to read on historic days, such as providing storybooks to children. Birthday gifts, then accompany their children to read books or read fairy tales to children. Teacher support is also very much needed to increase interest in reading. Efforts that the teacher can make include setting up a reading corner and changing books at any time so that children feel interested in reading. The assignment involves all students' activities and thinking skills in understanding and reproducing a written discourse.

The Ministry of Education and Culture developed the School Literacy Movement (GLS) to realize schools

as learning organizations. GLS is a movement that involves all school members (teachers, students, parents/guardians of students) and the community as part of education providers. This program is implemented to foster students' reading interest in improving reading skills so that knowledge is mastered better. The GLS contains values of character in the form of local, national, and global wisdom, which are conveyed according to the student's educational level. The GLS program is not only aimed at students. This program also requires teachers to be role models in reading.

Piaget's theory of intellectual development, children aged 7-11 years are in a concrete operational stage where children have begun to understand the cumulative aspects of the material, for example, volume and amount, as well as having the ability to know how to combine several classes of objects whose levels vary (Evans, 2021). As mentors of the learning process in schools, teachers must understand students as individuals with diverse abilities and unique characteristics (Handrianto et al., 2022). Thus, a teacher is desired creatively to develop teaching materials to the needs and development of students with the professional development of teachers in terms of literacy in all subjects.

The term "reading skills" refers to the ability to decode, comprehend, and analyze text. In the context of STEM education, students need to have specific reading skills that enable them to understand scientific texts. These skills include understanding scientific vocabulary, interpreting graphs and charts, and making inferences based on evidence.

In this paper, we will explore the importance of reading skills in STEM education, and the challenges that students face in developing these skills. We will also discuss strategies that educators can use to improve students' reading skills, including the use of technology and collaborative learning. Ultimately, we hope to highlight the importance of reading skills in STEM education and encourage educators to prioritize the development of these skills in their teaching practices.

Method

The type of research in this research is field research (field research) which is qualitative, namely field study where the data is obtained directly from the area, either in the form of observations, interviews, and documentation. While the purpose of qualitative is field research using theories without statistical formulas (Irgil et al., 2021).

Data analysis techniques involve taking and compiling data from interviews, field notes, and documents, grouping data into categories, describing

them in units and selecting important content that you and others can understand. Data reduction is a summarizing activity where only the important ones are chosen. To reduce data by providing precise shading and making it easier for researchers to collect further research. After the problem is found in the observation stage, the problem is included in this stage, so the investigation is more focused.

Research informants are believed to have extensive knowledge about the problem being studied. The qualitative research process begins with determining people who are vital informants and supporting informants who are trusted informants (Aguinis & Solarino, 2019).

By studying the data, organizing and collating it in an easy way to understand and draw conclusions. The final step in the qualitative data analysis process is concluding. Furthermore, the conclusion of the qualitative research process is to classify the results of interviews as unimportant with the results of information about research conducted by researchers, taking into account several factors needed for research.

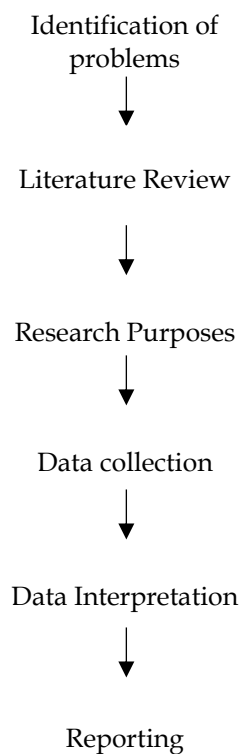


Figure 1. Research flow

Result and Discussion

Frequency (often or not)

Reading literacy activities helps students discover, recognize and develop their potential. Even if you only use 15 minutes before the learning day to read books

other than subject books, because it is done every day, it will help boost their achievement, and the critical thing is *istiqomah*. Literacy is an ability related to reading, thinking, and writing activities that aim to improve the ability to critically, creatively and reflectively understand information. According to Van Laar et al. (2020), literacy as the basis for the development of effective and productive learning enables students to be skilled at finding and processing information that is much needed in knowledge-based life in the 21st century. 21st century learning is based on literacy skills based on science and technology based on solid character, dignity, and human dignity (Malik, 2018).

According to the principal, reading is a process of gaining understanding from a combination of several letters and words. Reading can also be interpreted as an activity or thought process that seeks to understand the text contained in writing (Lustyantie, 2015). The critical role of reading cannot be denied in everyday life. Reading is the beginning of mastering knowledge, and all existing knowledge can never be learned if it is not preceded by the ability to read (Agarwal, 2019). Frequency and time used by someone to read, someone who has an interest in reading will often do a lot of reading activities and vice versa (Sartika et al., 2020).

According to the head of the library, the frequency of students visiting the library/reading garden is that most of the students spend their time twice a week and the visiting time of students visiting the library/reading garden is 1-2 hours. This can be seen from the list of student visits to the library or reading garden provided by SMAN 17 Palembang. the habit of reading student books is that most students actively read books every day, regarding the types of reading material they like, namely story books and fiction reading materials (Andreani et al., 2021). Reading habits are related to preferences and tastes in reading (Nagaraja & Manalan, 2016). The practice of reading implies that actual readers carry out reading activities whenever, wherever, and in all life situations (Ramos-Navas-Parejo et al., 2022).



Figure 2. Students of SMAN 17 Palembang Visit the Library Time (Long or Not)

In the aspect of reading time, interest is needed. Interest dramatically influences a person's activities, especially in reading. Readers who are highly interested in their reading will feel happy reading and find it easy to understand what they read. Interest is a strong motivator to do an activity. Interest is also interpreted as a positive attitude towards environmental aspects. Arikpo argues that interest is a feeling of preference and interest in something or activity without being told (Arikpo, 2015). Reading can be an activity that can affect a person's cognitive function (Stine-Morrow et al., 2022).

Interest in reading is a positive attitude towards lesson activities and a sense of interest in reading books. Interest in reading is a solid and deep concern accompanied by a feeling of pleasure towards lesson activities so that it can direct a person to read on their own accord or encouragement from outside (Putri, 2021). Our interest in reading is still shallow, especially among school children. According to survey data for East Asia released by the IEA (International Association for the Evaluation of Education Achiever), Indonesian people's interest in reading is still very low. Philippines 52.6, Thailand 65.1, Singapore 74.0, Hong Kong 75.5. Based on survey data from the Central Bureau of Statistics, Indonesian people did not read their primary sources in 2006. 85.9% of people wanted to watch TV, and 40.3% listened to the radio instead of reading newspapers (Wijayanti, 2020).

If we don't overcome this situation, we will always be left behind by other developing and developed countries in global competition. All social, political, economic, cultural and other problems cannot be overcome except for competitive human resources due to a lack of science and technology, poor literacy and literacy. According to the head of the library, it is essential to instil the cultural value of reading in students. When students have invested in them the habit of reading, all that remains is the duration that must be added. Also, something that is read becomes an essential value for students to do.

Learning activities in children start from how individuals read, and reading books is very important for children (Jung, 2016). From interviews with several teachers, it was found that children could not grasp the information or messages they heard because they had a poor vocabulary or were unable to understand sentence structure. The school principal added another factor because the information was too foreign to him, or the background experience he had about the message or data heard was minimal.

Reading is the beginning of the mastery of knowledge. All the lowdown on this earth can never be learned if it is not preceded by the ability to read. By

reading, it is hoped that the link to mastering a science will not be lost (Popoola et al., 2021b). The link is listening, reading and seeing. As one of the links in the mastery of knowledge, reading is still difficult to make a habit or even culture in everyday life. According to the research results, Tegmark said that using the time to read books was 85.5%, indicating that students' desire to read books was good (Tegmark et al., 2022). Some of the benefits of reading for students, which can develop interest in reading, change the way of thinking, and provide student experience.

Reading habits that start at school age (for example, from elementary school) can shape reading skills and, in the long run, can continue to increase literacy as adults (Joseph, 2020). The duration of reading is essential to instil in students because a long time will make students gain more knowledge. Reading should be seen as a lifelong habit and an important life skill. so there are many efforts made by schools so that students go to the library more often and provide the best service so that students spend more extended reading. Reading can develop students' interest in reading by fostering students' enjoyment of reading by applying various methods and using tools or media according to students' wishes. Changing the way students think about reading is an obligation as a student or students to reading is a hobby that must be owned by every human being, and provide students with an understanding of the importance of reading to add their insights to the reading and work through the love of reading program.



Figure 3. Number of books and library facilities for frequent and long visiting students

Variety (Life of Reading)

Human activities are generally carried out in two ways: reading aloud and silently. According to Rahayu, reading aloud is an action that is a tool for teachers, students or readers together with other people or listeners to capture or understand an author's information, thoughts and feelings (Rahayu & Mustadi, 2022). Reading aloud activities are often implemented in lower grades (I and II) because, according to (Eko Priyantini & Yusuf, 2020), reading aloud helps to contribute to the overall development of children, including: (a) reading aloud provides teachers with a fast and valid way to evaluate the progress of essential reading skills, especially word fragments and phrases,

and to identify specific teaching needs; (b) reading aloud provides oral communication exercises for readers and listeners to improve listening skills; (c) reading aloud can also train students to dramatize stories and play the actors in the story; (d) Reading aloud provides a medium in which teachers, with wise guidance, can work to improve adjustment abilities, especially with shy children (Badawi et al., 2021).

According to the Indonesian teacher, determining the reading students is also crucial for the Institute to do because the correct kind of reading will affect the development of these students. The principal also said that the types of homework, students should read books or references appropriate to education. Even though there were other books, there had to be educational value for these students. There are several ways that students can do reading activities, one of which is by reading silently. This reading can improve comprehension, namely extensive reading and intensive reading. Extensive reading includes survey reading, skimming and superficial reading.

In contrast to skimming, reading surveys are only done by researching what the reader needs, which makes the eyes move faster to obtain the required information from the reading material. At the same time, superficial reading is an activity carried out to gain understanding but not in-depth and is for personal enjoyment. According to the Indonesian language teacher in class X, there are several types of books read by students: textbooks, picture story books, comics, magazines, novels, fantasy books, dictionaries, and others. These books are usually located in the library or reading room equipped with other supporting facilities. Exciting books that can foster student interest are books with pictures and various colours that students often like. These books are commonly found in fantasy, for example, fables, legends, myths, sages, and adventure stories.

So many types or varieties of books are offered in the school library or reading room, and these books become an attraction for students when they want to visit the library. Several books are available, such as Educational Books, comic books, Keong Ema's folklore books, Nada Syahdu novels under the Bridge, The Legend of Lake Toba, and others. Variations in the types of books can affect students' reading interests. If the reader has attractive pictures and colours, students will be interested in the book, for example, books of fairy tales and fables. The school library has prepared several types and adequate facilities to make students happy and wants to visit the library.

Tips for Reading (How to get it)

Active reading is an essential basic ability because reading is needed for the progress of society and

individuals so that they are not fooled. By reading, they can see and understand the contents of the reading in front of them (Suzanne, 2016).

Several efforts to improve students' reading comprehension skills can be discussed in this section, namely cultivating students' interest in reading, motivating students, selecting relevant learning strategies for reading, and increasing students' creative thinking skills.

a. Growing Students' Interest in Reading

To generate interest in reading and how to read well lies at a high level of curiosity increases curiosity, it must be faced with questions that make people curious, and history wants to know.

For example, many children read Harry Potter's fifth book to millions of children worldwide today, not because the book is good or exciting. Because excellent or enjoyable judgments will be known after reading them. It can be believed that the book was read because of the level of curiosity and curiosity of children about the contents of the next Harry Potter story. However, it can be surmised that the previous Harry Potter books contained quite interesting stories (Suardi et al., 2021).

Based on this, it can be stated that several efforts to foster students' reading interest in schools are as follows:

- 1) Schools always provide new and exciting books or reading materials. Besides fostering students' interest in reading, providing fresh and exciting books or reading materials in schools (libraries) regularly can enrich students with new knowledge or experiences. They can read these books or reading materials during breaks.
- 2) In planning a reading comprehension learning program, the teacher always chooses reading material expected to attract students' attention. By using exciting reading materials, the excitement of reading will arise in students when they study or take part in reading exercises
- 3) Always strive for reading books and materials as learning materials that have a level of readability relevant to students. Because facing reading material that is too difficult can reduce their enthusiasm for reading.

b. Giving Motivation to Students

Motivation is a driving force, a conscious effort to influence a person's behaviour so that his heart is moved to act to do something so that specific results are achieved (Casakin & Kreitler, 2015). Based on this assumption, teachers can motivate students by providing guidance. They can arouse students' enthusiasm to take part in learning to read at school and to take self-taught reading exercises seriously. By giving advice, students are expected to know and realize that:

- 1) The most strategic and relevant acquisition of science and technology in this globalization era is through reading,
- 2) considering that science and technology continue to increase, relatively high reading comprehension skills are needed, and
- 3) the ability to read a comprehension and its improvement can only be obtained through continuous learning or practice of reading.

c. Choosing Relevant Reading Learning Strategies

Strategy means the general pattern and sequence of teacher-student actions in the embodiment of teaching and learning activities (Tang, 2020). Learning implies any activity designed to help someone learn a new ability and value (Deslauriers et al., 2019).

According to the class X teacher, the learning strategy is the general pattern and sequence of actions that students and teachers must carry out in the embodiment of teaching and learning activities. Therefore, it can also be stated that reading learning strategies are general patterns and sequences of actions that students and teachers must carry out to embody teaching and learning activities to read.

d. Improving Students' Creative Thinking Ability

This creative thinking ability has a positive effect on students' reading skills. The reading comprehension ability of students with high creative thinking skills is higher than that of students with low creative thinking abilities (Sulistiyarini et al., 2020).

According to some teachers, improving students' reading comprehension skills at school is necessary to enhance their creative thinking skills. The principal added that an effort could be made to improve reading comprehension skills. Students can be motivated to always look for something new in reading or try to be as unique as possible in developing the ideas expressed in reading. Furthermore, the teacher can also train students to produce a comprehensive understanding and the ability to create original ideas even though they are related to one Indonesian reading.

Absorbency

Interest in reading is a form of interest (inclination) for someone to engage in reading activities which in turn creates an urge to actively seek reading material and provide time to read it (Amelia, 2020). For a student, reading will make it easier to achieve his achievements. Understanding the contents of what is written, spelling or memorizing, pronouncing, knowing, predicting, guessing, and calculating what is written. This method is the most effective way to absorb knowledge because the more often students do reading activities, their

understanding will increase so that it can be helpful in their lives (Ismail et al., 2017). The rooting steps read the beginning as follows:

- a. Determine the main objectives of the discussion that will be given. This goal can be taken from GBPP
- b. Develop teaching materials
- c. After the lesson and practice materials are prepared, you have to think about how to deliver them. What is the sequence of giving the materials, and how to activate students? At the practice stage, the teacher can make new combinations, both with words and syllables and letters. This is easy to do using the available cards, and children can play with these cards. For example, they are forming syllables, words or sentences.
- d. The teacher can make formative tests to monitor whether the child has achieved the goals set. In this case, the teacher can use various methods that are considered the best for the continuity of learning (Ligozat et al., 2018).

Based on the above, the teacher should stipulate that the steps are carried out repeatedly to achieve the goal of pursuing reading properly. Strong or high absorption will lead to an easy effort in dealing with problems or problems, especially in the field of education. If a student has a high absorption of the subject conveyed by the teacher, he can quickly understand, absorb and understand the lesson (Winarto et al., 2020). According to Cronqvist, absorption for children increases insight, driving force, achievement, and interest in learning (Cronqvist, 2021).

So based on the results of the research above, absorption can increase children's insight and mindset. For example, children with high absorption in subjects have broad insight into lessons and can think broadly about the benefits of knowledge absorbed during studies. Absorption is a solid driving force. A child's absorption in mastering lessons can encourage him to continue learning and want to know more deeply. Achievement is always influenced by high absorption.

To be able to work on test questions properly and correctly, of course, it is expected that students have a high absorption of subjects, and absorption can increase interest in learning. Someone's interests are different even though they are taught by the same teacher and given lessons, but one child and another get an additional amount of knowledge.

Conclusion

Implementing the Reading Tradition of Class X Students of State Senior High School 17 Palembang is exemplary. This can be seen from the frequency (often or not), the frequency or often not visiting the library or reading centre, the habit of reading students at least to

spend their time visiting the library/reading garden twice a week and when students visit the library for one or two hours. Variety (type of reading) is the number of reading sources read by students, such as textbooks, picture story books, comics, and others. This indeed determines and trains students' habits in fostering interest in reading. The amount of reading material for students makes students not bored with one reading material. There are several activities carried out to encourage reading tips, and there should be students' interest in reading first, then there are those who motivate students. Having relevant learning strategies and reading diligently will improve students' creative thinking skills. Absorption is a strength for students to arouse students' interest in reading. This is not an accessible business, and students should have a high absorption of the reading material available.

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