2. The Effect of Language Skills on Science and Technology Literacy

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The Effect of Language Skills on Science and Technology Literacy

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Abstract

Science and technology literacy can be interpreting as knowledge and scientific skills for someone to be able to identify questions; acquire new knowledge; explain scientific phenomena; make conclusions based on facts; understanding the characteristics of science; awareness of how science and technology shape the natural, intellectual and cultural environment; and willingness to be involved and care about issues related to science. Language has an essential role in scientific and technological literacy, namely to support the development of technology and science. Language can make the development of science and technology in Indonesia develop rapidly. Language can also be it as a means of transferring knowledge and technology. Through language, humans can communicate and convey ideas, thoughts, and concepts on existing problems. Thus, language skills can make humans obtain information and develop science and technology. The purpose of the study was to identify the roles of language and to make a correlation between language skills and the increase of scientific and technological literacy studied using descriptive data analysis methods. The data was it by collecting respondents' opinions (college students from semester 2 to semester 6) through online questionnaires (google form) and interviews.

Keywords: science and technology literacy, language skills, vocabulary mastery, understanding of terminology.

1. Introduction

Language ability is a unique characteristic of humans. Humans can communicate well through mastery and the use of language. Language is an essential factor in human life as a social being because humans

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will always need other people and cannot live alone. According to Dardjowidjoyo (2003), language is used as a tool to convey, express, or explain something that others can understand or understand (Herman et al, 2020). The language used is a proof of human intellectual activity. Humans will not reach the peak of maturity as rational beings if they do not have language proficiency. In addition, language has a dual-position, function, and role, namely as a cultural root and product that simultaneously functions as a means of thinking and supporting the growth and development of science and technology. Without such a role for language, knowledge cannot develop. The implication is in the development of reasoning power, making language the infrastructure of modern thinking. This paper discusses the role of language in scientific and technological literacy. Nurdiyanti dan Suryanto (2010) states that literacy begins with the topic introduction stage, presentation, collaboration stage, and independent ability stage. In addition, Miranda (2018) explains the results of her research that children's storybooks with picture books were choosing as a tool to build religious character, tolerance, friendship, social care, discipline, and peace love and used as a basis for developing creativity.

Learners are exposing to language for various purposes, audiences, and contexts. Literacy is critical; according to (Manurung, 2021), literacy is the most effective way to increase the reading interest of the millennial generation by finding out what the millennial generation is interested in, and providing books according to topics they like. Science is a human activity characterized by thinking that takes place in the minds of people involved in a particular field. The mental activity of scientists provides a snapshot of human curiosity and desire to understand natural phenomena. Scientists are driving by curiosity, imagination, and strong reason trying to describe and explain natural phenomena. Their work, by philosophers of science and cognitive psychologists, is considered a creative activity, in which ideas and explanations of a natural phenomenon are arranging in mind. Therefore, the arguments of scientists in their work provide vital signs related to the nature of science (Fatonah and Prasetyo, 2014). Science and technology literacy fosters environmental awareness, development of life skills, learning that involves hands-on and minds-on, developing creativity, and understanding of science symptoms (Herman et al, 2022). According to Manurung (2021), the role of parents is vital today. When a pandemic requires most people to self-quarantine at home, parents should direct their millennial generation to read books more often than play gadgets and access things that are not. Helpful (van Thao et al 2021). Based on the phenomena, symptoms, and data described above, the purpose of the discussion discussed in this study is to identify the role of language in science and

technology literacy and determine the relationship between the importance of language skills in science and technology literacy.

According to Wibowo (2001), language is a system of sound symbols that are meaningful and articulate (produced by speech instruments) that are arbitrary and conventional, which are used as a means of communication by a group of people to have feelings and thoughts. Almost in line with Wibowo's opinion, Walija (1996), stated that the definition of language is the most thorough and effective communication to convey ideas, messages, intentions, feelings, and opinions to others (Silalahi et al, 2022). Another thought about the definition of language was expressing by Syamsuddin (1986). He gave two meanings of language. First, language is a tool used to shape thoughts and feelings, desires, and actions, which influence and influence. Second, language is a clear sign of good and bad personalities, a clear sign of family and nation, and a clear sign of humanity (Herman, Saputra, Ngongo and Fatmawati, 2022). According to Tarigan (2013: 1), language skills have four components, namely: listening skills, speaking skills, reading skills, and writing skills.

2. METHODS AND MATERIALS

The method used in this research is quantitative in the form of descriptive analysis. The analytical research method is obtained from the field objectively and is accurate. Therefore, the researcher must have a broad theoretical and insightful provision to easily ask, analyze, and construct the object to be studied more transparently.

The research used as the basis of writing includes quantitative and qualitative research types with descriptive analysis methods. This research went through three stages of research, namely the stage of data collection, data analysis, and data presentation. Data were collected using the online questionnaire method (Google Form), which 66 respondents followed. This analysis technique is carrying out by distributing questionnaires through WhatsApp, Instagram, and Line applications. The purpose of this questionnaire analysis technique is to collect and analyze respondents' answers related to research data, both primary and secondary data, in the form of questions related to the object of research. This technique is using to collect data and determine what respondents think about the role of language in science and technology literacy.

The method steps in the research are as follows.

1) Initial data collection through observation and in-depth interviews with students in semesters 2 to 6, both technical and non-technical study programs.

2) Mapping problems, analyzing the results of observations and interviews through a matrix that describes the situation so that the submission of alternative solutions to problems becomes effective and does not overlap.

3) Making a questionnaire to identify the impact of language learning on the level of science and technology literacy.

4) Data processing

5) Presentation of results and discussion

3. RESULTS AND DISCUSSION

3.1 Results

From the results of interviews with ten students, they found that language learning is essential for them. Because it can be used as a vehicle to get the opportunity to relate the science knowledge they learn to the phenomena that occur around them, using the scientific concepts they learn to solve problems in everyday life. Through language learning, students experience learning and reasoning to relate scientific concepts to phenomena in their environment through reading and writing literacy skills.

The following shows the research data by filling in an online questionnaire (Google Form) filled in by 66 respondents (college students from semester 2 to semester.

1). Language has a vital role in the development of scientific and technological literacy

The Role of Language

■ Strongly Agree ■ Agree ■ Disagree ■ Strongly Disagree

1414
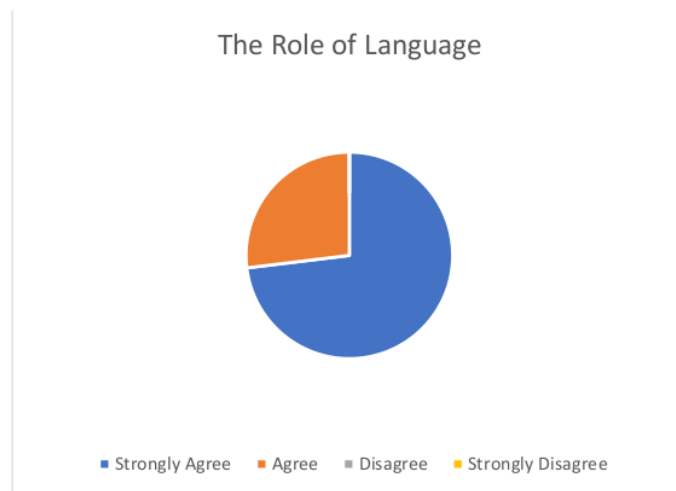
From the research results using this online questionnaire data collection technique, we can see that the role of language in science and technology literacy is an absolute, a need, and a challenge because language plays a role in life, significantly improving the quality of life. With language, scientific and technological literacy, we can provide essential information to develop decision making. This science and technology literacy focuses on the implications of a problem in society that are local, regional, and national in nature.
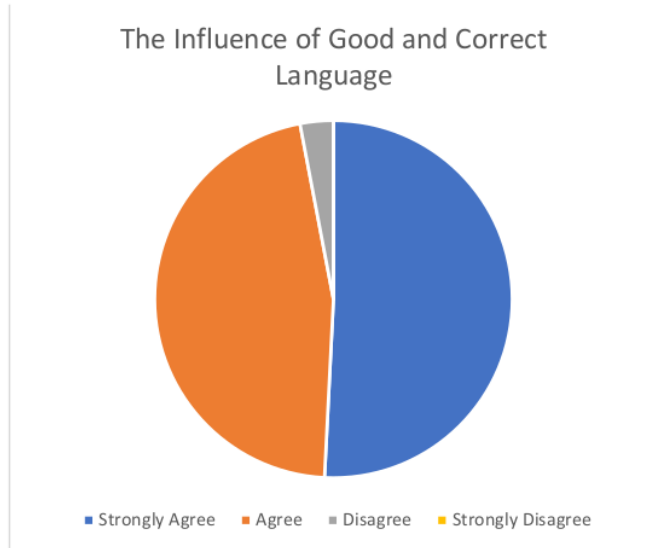
2) Science and technology literacy cannot be separated from language skills

Language Proficiency in Literacy

■ Strongly agree ■ Agree ■ Disagree ■ Strongly Disagree
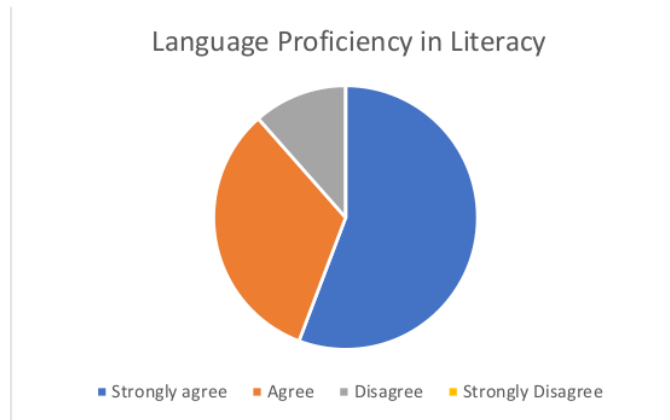
3) The use of language by correct writing rules or standard language can make it easier for someone to understand scientific and technological literacy

Strandard Language in Literacy

■ Strongly Agree ■ Agree ■ Disagree ■ Strongly disagree
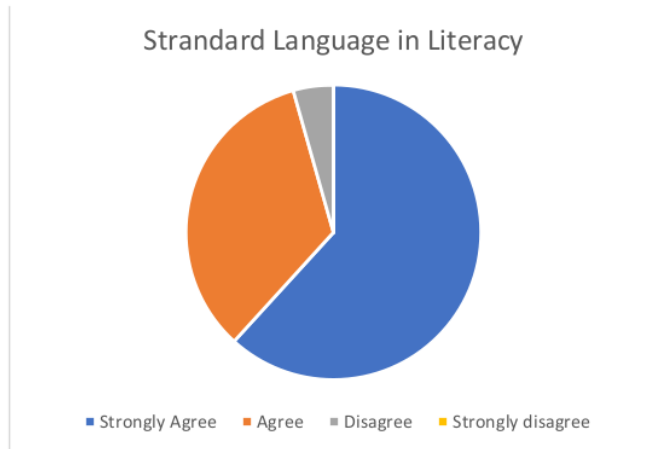
4) The use of sound and correct language can affect a person's literacy skills

The Influence of Good and Correct Language

■ Strongly Agree ■ Agree ■ Disagree ■ Strongly Disagree

There are essential things that need to be considering in science and technology literacy, namely language skills. Judging from the results of the questionnaire research, the respondents agreed that the use of language by the correct writing rules could make it easier for someone to understand scientific and technological literacy.

5) Good knowledge of language shows a person's high education

The Need for Knowledge of Language

■ Strongly Agree ■ Agree ■ Disagree ■ Strongly Disagree

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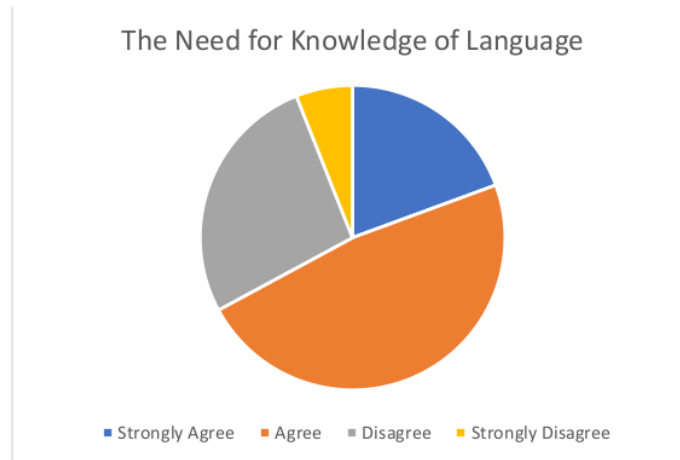
Language is also an essential medium for the process of developing science in its function as a means of communication and exploration. Humans can convey ideas and thoughts through language. The opinions presented and published can serve as a basis for future similar research and science development.

3.2 Discussion

Language in science and technology is revealing by the function of language as a medium for thinking. Through thinking activities, humans acquire and develop knowledge by collecting and manipulating expertise and knowledge through activities of remembering, analyzing, understanding, assessing, reasoning, and imagining. During thinking activities, language acts as symbols (experimental representations) needed to think about abstract things and are not obtaining through sensing. It is showing that the use of language has a vital role in science and technology. Skills are skills to complete tasks, and language is a person's ability to use language in writing, reading, listening, or speaking. Language skills are essential for humans because by mastering language skills, they will find it easier to capture information and understand an intent. Language skills include four aspects, namely: listening, speaking, reading, and writing skills.

These aspects of skills have a very close relationship with scientific and technological literacy. According to the National Institute for Literacy (1991), literacy is an individual's ability to read, write, speak, count, and solve problems at the level of expertise required in work, family, and society. Thus, language skills are critical because they can provide clear directions in scientific and technological literacy. Good knowledge of language can also show a person's high literacy skills.

In line with the goals of sustainable development, language learning based on science and technology literacy is a means of responding to the challenges of the world of science education in Indonesia in the era of globalization in efforts to develop science, namely the gap between scientific progress and education, our educational achievements are lagging behind and global education issues. The success of sustainable development depends on the economic, social, and cultural sectors. Still, there needs to be the absorption of information and knowledge through scientific and technological literacy to implement sustainable development to achieve equitable welfare.

4. CONCLUSIONS

From the results of the discussion above, it is clear that language is critical in scientific and technological literacy. Because without language, the spread of science and technology in Indonesia will not occur. Language also has a solid relationship with the mind, namely as

a medium for human thinking. By thinking, humans can acquire and develop technology found in daily activities in public spaces, campuses, and homes.

Language proficiency and skills are also a must-have competence because language skills can help someone solve a problem, think critically, and understand the characteristics of science and technology literacy. Language skills can improve a person's thinking ability and understanding in a matter or field that is being done. Language proficiency needs science and technology literacy to solve problems well and create opinions, suggestions, criticism, and innovative ideas. This digital era suggests that students maintain consistency in using language, develop language skills, and use them daily.

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