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ANALYSIS OF SCIENCE LITERACY ABILITY IN CLASS V STUDENTS AT MIN 9 MEDAN

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Abstract: *The purpose of this study is to be able to parse and find problems in scientific literacy activities through online media so that they can be improved and developed further and better in the future. . The research subjects were students of Class V SD MIN 9 Medan. The instrument used is a scientific literacy test tool developed by the author with reference to the indicators contained in the development of the TOSLS test. The data collection technique is by observing the activities of teachers and students and a questionnaire containing 20 questions concerning student learning activities. Results of Students' Science Literacy Ability Based on the TOSLS Indicator with Good Category there are 5 indicators, then with Enough Category there are 2 indicators and Poor Category there are 2 indicators. With a total of all categories included in the assessment of "PAIR"*

Keywords: Science Literacy, Creative and Innovative Learning, Elementary Science

INTRODUCTION

In responding to the demands of 21st century learning, education providers are required to provide 21st century skills to students, namely the 4Cs which include (1).Communication, (2).Collaboration, (3).Critical Thinking and Problem Solving, and (4). Creative and Innovative (Rozi, 2019:246). Mastery of 21st century skills in the form of 4C competencies are very urgent to be taught (Mandra Saragih, 2021).

The changes that have occurred have changed the way of viewing learning which was originally a teaching paradigm into a learning paradigm. In other words, that learning that was previously teacher-centered has changed to student-centered, the teacher is not the main focus of learning resources but the teacher will predominantly be directed as a facilitator in the learning process. In the tight challenges faced by society, a paradigm shift in the education system is needed that can provide a set of 21st century skills needed by students to face every aspect of global life (Soh, Arsad & Osman, 2010:546-554). Three 21st century education concepts have been adapted by the Ministry of Education and Culture of the Republic of Indonesia to develop new curricula for Elementary Schools (SD), Junior High Schools (SMP), Senior High Schools (SMA) and Vocational High Schools (SMK). The three concepts are 21st Century Skills, Scientific Approach and Authentic Assessment (pratiwi, et al., 2019:35).

The challenge of implementing this concept in Indonesia is facing a real obstacle, namely the threat of the spread of the Covid-19 Virus, new things that arise cause upheaval in habits, face-to-face learning in the classroom changes as a whole to lectures and even online exams with all their limitations. (Hariani, 2020). Starting from the current situation in Indonesia, the organizers must have sensitivity and adaptation regarding the implementation of learning in the Covid-19 Era, especially learning science (Natural Sciences).

It is known that science/science is a science that can be applied to anyone, from elementary school to university level (Aiman & Ahmad, 2020:1-5). Therefore, science at various levels should be able and able to be given to any student, especially elementary school as a basic means of cultivating basic science values that have ties to human behavior as well. Studying science aims to believe and believe in the existence of one God who is able to create the entire universe; able to know and understand the basic concepts of science so that they can apply them in everyday life; deepening thoughts about the benefits of studying science and knowing the

reciprocal relationship between science and the surrounding environment and society; able to use skills to investigate, solve problems and be able to make decisions; able to have awareness of maintaining, caring for, and preserving the surrounding natural environment as a form of appreciating the creation of God Almighty so that the basis found will be able to be a provision to continue to the next level (BNSP, 2010).

Understanding learning in general which is a process of optimal activity from those who don't know to know, from those who don't understand to understand (Suci Perwita Sari, 2020). Study activities or learning is a unifying process between cognitive, emotional, environmental and experience to acquire, improve, or make changes to someone Some common problems in science learning are related to low scientific literacy skills, especially at the primary and secondary indicator levels. One indicator of dislike shown by students is the lack of linkage between the content or material being studied, with things that happen in everyday life (Permanasari, 2010). Several previous studies on scientific literacy showed that knowledge and application of scientific literacy that only relied on textbooks or texts had not fully touched the souls of students. The lecture method used was also less relevant which caused students to only become passive listeners. If this is continued, later students will not be able to compete in the 21st century era (Kristyowati & Purwanto, 2019: 184). This scientific literacy approach will be ineffective because the nuances of learning that are present are not interactive, innovative, creative and fun, in fact what happens is the opposite, especially teaching and learning activities are adjusted to local regulations that adapt to the COVID-19 pandemic era. This is also indicated by the PISA (Programme for International Students Assessment) assessment in 2006 to 2019 which stated that learning in Indonesia cannot guide students to achieve scientific literacy (Setiawan & Wahyu, 2020:144-152).

Based on the arguments above, the researchers saw the same symptoms and problems in the initial observations that had been made in Class V SD MIN 9 Medan, which even though they had used the Google Class Room media in online learning, there was no implementation evaluation of the results of learning by teachers in class. to determine the students' ability to master scientific literacy with Simple Plane material. (Gormally, 2012). Through indicator measures, the Test of Scientific Literacy Skills (TOSLS) indicators include (1) Identifying appropriate scientific arguments, (2) Using an effective literature search, (3) Evaluation of using scientific information, (4) Understanding research design elements and how they impact towards scientific findings, (5) Creating graphs that can represent data, (6) Reading and interpreting data, (7) Solving problems using quantitative skills including probability statistics, (8) Understanding and being able to interpret basic statistics, (9) presenting conclusions , predictions based on quantitative data. Through the indicator measure of the Test of Scientific Literacy Skills (TOSLS) indicator with this aim, researchers can parse and find problems in scientific literacy activities through online media so that they can be improved and developed further and better in the future.

RESEARCH METHODS

The type of research used in this research is descriptive research which aims to identify students' scientific literacy skills on the measurement material. The research subjects were students of Class V SD MIN 9 Medan City. The instrument used is a scientific literacy ability test tool developed by the author with reference to the indicators contained in the development of the TOSLS test. The data collection technique is by observing the activities of teachers and students and a questionnaire containing 20 questions concerning student learning activities.

Tabel 1. Kriteria Interpretasi Skor

Kriteria Interpretasi Skor	
Interval Kriteria Skor	Kriteria
80 – 100	Very Good

66 – 79	Good
56 – 65	Enough
40 – 55	Not Enough
30 – 39	Very Less

(arikunto, 2013)

Results and Discussion

Based on the processing of the research data obtained from the data on the scientific literacy abilities of the fifth grade students of SD MIN 9 Medan through the indicators of the Test of Scientific Literacy Skills (TOSLS) below:

Tabel 2. Indikator TOSLS

	Indikator	Sub Indikator
I	Understand the method of inquiry that leads on scientific knowledge	1. Identify the right scientific argument 2. Using an effective literature search 3. Evaluation in using scientific information 4. nderstand the elements of research design and how they impact scientific discoveries
II	Organize, analyze, and interpret quantitative data and scientific information	1. Create a graph that can represent the data 2. Read and interpret data 3. Problem solving using quantitative skills including probability statistics 4. Understand and be able to interpret basic statistics 5. Presenting conclusions, predictions based on quantitative data

Tabel 3. Results of the Validation of Questionnaire Items

	Jumlah Soal			
Validator	Valid	Kurang Valid	Tidak Valid	**Total Soal**
1	18	2	0	20
2	17	3	0	20

From the processing of the validity results above, all questions can be used on the condition that the questions that are less valid can be corrected. After validating each item, the validator validates the question as a whole by filling out a validation questionnaire at the next stage.

Tabel 4. Results of Students' Scientific Literacy Ability Based on TOSLS Indikator Indicators

Indikator	Persentase	Kategori
Identify appropriate scientific arguments.	69,25	Good
Using an effective literature search.	57,44	Not Enough
Evaluation in using scientific information	66,35	good
Understand the elements of research design and how they impact scientific discoveries	58,44	Enough
Create graphs that can represent data.	66,42	Good
Reading and interpreting data	67,35	Good
Problem solving using quantitative skills including probability statistics	51,23	Not Enough

Understand and be able to interpret basic statistics	56,34	Enough
Presenting conclusions, predictions based on quantitative data	68,52	Good
Amount	561,34/9= **62,4**	**Enough**

Sourch. Data Analysis 2021

Discussion on the results of students' scientific literacy skills through the TOSLS indicator Based on the results of the TOSLS indicator, the scientific literacy ability of the fifth grade students of SD MIN 9 Medan showed "ENOUGH" with a score of 62.4. Although the implementation of teaching and learning shows the value of adequacy, on the other hand there are several shortcomings, especially in several indicators as 1). Using an effective literature search. Broadly speaking, an effective scientific literacy search by tracing the ability to use natural science, to identify questions and draw conclusions based on evidence that aims to understand and help make decisions about the natural environment and changes through human activities. built on human knowledge and inquiry. Sensitive to how science and technology shape the material, intellectual and cultural environment (OECD, 2014) 2). Problem solving using quantitative abilities including probability statistics. That learning is not linked to real-life contexts, learning rarely starts from actual problems, science learning in elementary schools tends to start from subject matter not from the main objectives of science learning and the needs of students, and acts of science learning tend to only anticipate When viewed from the characteristics of elementary school students in general, they are at the stage of concrete operational thinking, this has an impact on the selection of learning media to be used which in learning should the media used be concrete media that can be operated directly so that the concepts learned can be more easily accepted and understood by students. But media selection must also always be based on representativeness. the media in developing students' critical thinking skills (Yulianti, 2017: 21-28).

CONCLUSION

The following conclusions from the results of this study are

1. In the results of the analysis of the data obtained which shows the results of the student's scientific literacy ability based on the TOSLS indicators with the Good Category there are 5 indicators, then with the Enough Category there are 2 indicators and the Less Category there are 2 indicators. With a total of all categories included in the assessment of ENOUGH.
2. Analysis through the TOSLS (of Scientific Literacy Skills) indicator has an analytical effectiveness that is in accordance with the application of learning through online media such as GCR (Google Class Room).
3. Creativity and Innovation, which are one of the demands of 4C in 21st century learning, especially regarding scientific literacy in Class V SD Negeri 132415 Tanjungbalai City have not occurred significantly and tend to be monotonous and do not vary

REFERENCES

Aiman, U., & Ahmad, R. A. R. (2020).ModelPembelajaran Berbasis Masalah (PBL)terhadap Literasi Sains Siswa Kelas VSekolah Dasar.*Jurnal PendidikanDasar Flobamorata*, 1(1), 1–5.

BSNP.(2010). *Paradigma Pendidikan Nasional Abad XXI*. Jakarta: BNSPPress.

Gormally, Cara et al.(2012). *Developing a Tests of Scientific Literacy Skills (TOSLS); Measuring Undergraduates Evaluation of Scientific Information and Argument*. CBE-Life Science Education, Ed.[11]. 364-377.Kristyowati,R. & Agung Purwanto(2019),Pembelajaran

Literasi Sains MelaluiPemanfaatan Lingkungan, *Scholaria: Jurnal Pendidikan dan Kebudayaan*, 9(2).183-191.

Hariani, P. P. (2020). Pemanfaatan E-Learning Pada Pembelajaran Jarak Jauh di *BIBLIO COUNS* , *3* (2), 41-49.

Mandra Saragih, H. S. (2021). Desain Model Pembelajaran 4cs (Creativity, Critical. *Jurnal EduTech* , 236-244.

OECD. 2014. *PISA 2012 Results in Focus. Programme for International Student Assessment*, 1–44. http://doi.org/10.1787/9789264208070-en

Permanasari, A. (2016). STEM Education: *Inovasi dalam Pembelajaran Sains. Prosiding Seminar Nasional Pendidikan Sains.*

Pratiwi,S.N.,Cari & Aminah (2019), Pembelajaran IPA Abad 21 dengan Literasi Sains Siswa, *Jurnal Materi dan Pembelajaran Fisika (JMPF)*, 9 (1). 35

Rozi & Hanum(2019), *Seminar Nasional Pendidikan Dasar Universitas Negeri Medan*, ISBN: 978-602-53076-1-4, hal.246.

Setiawan, A.R & Wahyu Eka Saputri(2020),Pembelajaran Literasi Saintifik untuk Pendidikan Dasar, *Media Penelitian Pendidikan Jurnal Penelitian dalam Bidang Pendidikan dan Pengajaran*, 14(2).144-152

Soh, T., Arsad, N., & Osman, K.(2010). The relationship of 21st century skills on students' attitude and perception towards physics.*Procedia Social and Behavioral Sciences*, 7(C), 546–554

Suci Perwita Sari, d. (2020). Penggunaan Metode Make A Match Untuk Meningkatkan Hasil Belajar Siswa Sd. *EJoES* , 19-24.

Yuliati, Yuyu.(2017). Literasi Sains Dalam Pembelajaran IPA. *Jurnal Cakrawala Pendas*. 3(2)21-28.