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ANALYSIS OF NUMERACY LITERACY ACTIVITIES OF PGSD STUDENTS THROUGH WRITING MATHEMATICS A MONTH

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Abstract
This study maps numeracy-based mathematics material through mathematics writing activities for 30 days. There are 4 (four) components of numeracy literacy, namely algebra, Numbers, geometry and measurement, and data and uncertainty. This type of research is a case study with a qualitative descriptive approach. The research subjects are PGSD students in the fourth semester of the 2021/2022 Academic Year who have taken the Introduction to Basic Mathematics and Geometry and Measurement courses in elementary schools comprising 3 classes. Data collection techniques use observation, interviews, and documentation with data analysis techniques, namely a) data collection, b) data condensation, c) data presentation, and d) data verification. To guarantee the correctness of the results of the study, it carried out techniques: a) the persistence of observers, which is carried out seriously and continuously and b) triangulation. The results of the study found that the material that most students presented in mathematics writing activities was geometry and measurement with an average percentage of 46.5%, because it was found in many daily lives and was easy to describe in writing. Meanwhile, with an average percentage of 1.67% in Algebraic material, which is the least written material for students because it requires accuracy in determining variables.

Keywords: literacy; numeracy; writing mathematics.

INTRODUCTION

The need and importance of mapping the quality of education through assessment reforms in order to improve the quality of the learning process. One of them emerged a policy from the Ministry of Education and Culture based on coordination with several relevant agencies and institutions and referred to Pisa results where the ability of students at the primary and secondary education levels was inadequate regarding the abolition of the National Examination (UN) which was officially replaced with the National Assessment (AN). Assessment needs to be carried out to improve the quality of education because, in fact, the achievements of students do not judge education in mastering the material alone. But student success achieves competencies that include aspects of knowledge, attitudes, and skills. Especially in the 21st century, students are required to have various life skills by learning and innovating, skills in using technology and information, and contributions to society used in facing challenges in the 21st century. (N.K.E. Muliastrini, 2020)

Literacy becomes part of the minimal competence that one must possess to face the challenges of the 21st century (Richard Murnane, Isabel Sawhill, & Catherine Snow, 2012) to be productive. According to Andereas Schleicher the OECD's numeracy ability is the best protection against unemployment, low income, and poor health. The results of research by

Huacong Liu, Frank Fernandez, and Gregor Dutz (2022) state that there is a positive relationship to someone who has the numeracy ability to increase their wages. Then, the results of the research of Valerie F. Reyna, et all. (2009) stated that a person who understands and is skilled in basic numerical will make the right medical decisions. So, we are required to understand numeracy as one of the important things in making the right decisions. (the Ministry of Education and Culture, 2017). The competency measured in the AKM (minimum Competency Assessment) is numeracy literacy, which measures the ability to think logically, systematically, reason in using the concepts learned, and the skills to sort and process information. (Yolanda and Wahyuni, 2020). Through numeracy a person is required to recognize and understand mathematics which uses his knowledge and skills to solve problems in real life (Subanji, 2015) which is characterized by rational (Nikola Erceg, Zvonimir Galic, Andreja Bubic, 2022) and logical (Irawan, A. 2016) abilities. The term numeracy appeared in 2016 which was started by the World Economic forum or the organization of Economic Cooperation and Development and stated that numeracy literacy is the determinant of the progress of a nation because it is related to someone decide in their daily lives and is one of the important ways to shape the world of education. (St.Clair, 2020). So, education has an important role in facing the challenges of the times to prevent risks and help improve the quality of human life sustainably. (Moretti, G. A. S. & Frandell, T., 2013)

As a prospective elementary school teacher, PGSD students of Slamet Riyadi University should be able to prepare themselves to become reliable educators who are under the needs of the times. Educators who can prepare material related to the National Assessment at the basic education level. Based on the results of observations and interviews with PGSD students in the fourth semester in the Geometry and Measurement course at SD. The background of the diversity of studies before becoming a student is the influence of the steadiness of mastering student mathematical concepts. Mathematics is still a scourge for those who take numerical-based courses. Whereas mathematics is one of the basic materials (Ojose, B., 2011) that is effective (Steen, L. & Turner, R., 2007) to live life in this 21st century. It is one of the separate questions for researchers to find out the extent of the mathematics material that PGSD students in the fourth semester master based on numeracy material. It took the numeracy literacy component from mathematics in the 2013 Curriculum which is divided into 4 (four), namely a) Numbers, b) Geometry and Measurement, c) Data and Uncertainty, and d) Algebra. (Center for Assessment and Learning. (2020). According to Lange (2006), numeracy literacy indicators are: a) knowledge and proficiency in using numbers and symbols related to numbers and basic mathematics in solving daily problems, b) analyzing information displayed in various forms such as graphs, tables, and charts), and c) using interpretation of analysis results to predict and decide. Thus, the development of literacy and numeracy in the future becomes very important, especially in the cognitive aspects of students in continuing their scientific concepts at the next level. It carried research activities out through writing mathematics to PGSD students in the fourth semester for 30 days as describing or presenting original problems and drawings and solutions related to daily life in consecutive records.

METHODS

The approach method used in this study is descriptive qualitative (Bodgan & Taylor, 1992). Which produces data as written and spoken words from subjects observed with the type of case study research. Case studies are used to investigate phenomena in real-life contexts (Robert K. Yin, 2014; Liz Taylor, 2020; Guba &Lincoln, 1994; Michael J. Rouse & Lina R. Bader, 2019). This research was conducted because of the interest and concern of researchers in preparing prospective elementary school teachers who are reliable in national assessments, especially in

the evaluation of numeracy literacy. The research was conducted periodically for 30 consecutive days by conducting literacy activities through writing mathematics about daily life near students. The research was carried out in an online class with a population of PGSD students in the fourth semester of the 2021/2022 Academic Year 3 (three) classes, with 108 students. The sample used was 80 students to map the material according to the Slovin technique (Sugiyono, 2011). To deepen the research, samples were taken again with purposive sampling techniques (Gregg G. Van Ryzin, 1995) 3 (three) students to find the truth from the results of the research findings. Data collection techniques use observation, interviews, and documentation. Data analysis techniques using Miles, Huberman, and Saldana (2014) model analysis with 4 (four) stages 1) data collection, 2) data condensation, 3) data presentation, and 4) data verification. To guarantee and convince the veracity of the results, researchers use techniques; a) the persistence of the observer carried out seriously and continuously and b) triangulation by rechecking his findings with various sources, methods, and theories.

RESULT AND DISCUSSION

Based on the findings made during the month of online mathematics writing activities about numeracy material discussed by PGSD students in the fourth semester, we can map it as follows.

Table 1. Numeracy material for PGSD students in the fourth semester of writing mathematics activities.

Material	Class 01 (%)	Class 02 (%)	Class 03 (%)
Algebra	2.59	1.48	0.95
Number	24.07	13.70	10.16
Geometry and Measurement	61.98	68.89	80.63
Data and Uncertainly	10.37	1.36	2.22
Blank/ no writing activity	0.98	14.57	6.03

Table 2. Percentage of numeracy material coverage in mathematics writing activities

Material	Average (%)
Algebra	1.67
Number	15.98
Geometry and Measurement	46.5
Data and Uncertainly	4.65
Blank/ no writing activity	7.2

Based on the results of table 1 and Figure 1 above, the material that is very mastered by students from the three regular classes of PGSD in the fourth semester is geometry and measurement material, then the next material numbers with an average of 15.97%, followed by data and uncertainty material which has an average of 4.65%, and mathematics material that is slightly written by PGSD students, namely Algebra with an average of 1.68%. Meanwhile, the average PGSD student who is incomplete or inactive in mathematics writing activities is 7.2% with the highest class being in grade 02. This shows that writing activities become an unimportant

activity. Thus, a deepening of the research was carried out on 3 students from each of the grades 01, 02, and 03, with criteria that carried out the task completely and who did not collect the assignment.

Based on the results of interviews with students from the three classes, they both stated that geometry material is material that is easy to write or present because contextual shapes exist in everyday life and most of the photos they present are objects around the house as geometry such as cupboards, mirrors, pigura, doors. However, for memorization of formulas, students still have difficulties and need help.

Discussion

Based on the findings of the research above, it was found that algebraic material is the material that is written the least by students with introducing variables. Then, the highest material data is on the Geometry and Measurement material. This is in line with the research of Asriyati Nadjamuddin and Evi Hulukati (2022) that information or data displayed in various forms get the first order in solving, continued on various kinds of numbers and symbols and finally in activities to analyze questions to decide. This is reinforced by the advantages of geometry material (Walle, 1994), namely a) geometry helps humans completely appreciate their world, b) exploration of geometry can develop problem-solving abilities, c) geometry plays a major role in other areas of mathematics, d) geometry is used by many people in everyday life, and e) geometry is enigmatic and fun. The development of abilities in geometry and measurement materials will be easier to teach by giving contextual problems (Bartell, 2011).

Based on the results of interviews with students who did not collect mathematics writing activities, it is known that most of those who are low in learning achievement and have difficulty learning mathematics. This is in line with the research of Nirmala, et al (2019) that low absorption supports low literacy in solving mathematical problems and low understanding of mathematical concepts causing students to have learning difficulties (Hasibuan, 2018). Evidenced by the lack of skill in students in managing their monthly finances. Researchers realized that post-pandemic has not awakened students to rise to learning as usual. Literacy activities need to be carried out actively so that students understand their meaning and purpose in everyday life. Writing activities are things that need to be considered being cultured in improving student numeracy literacy. (Kathryn S. McCarthy, et all, 2022). Because, based on the results of research by Clemens M. Lechner (2021) a person's literacy and numeracy can be forged and can change throughout their growing up.

CONCLUSIONS AND SUGGESTIONS

Based on the results of research analysis carried out in mathematics writing activities in Geometry and Measurement lectures in elementary schools, many PGSD students write Geometry and Measurement materials related to daily life. Meanwhile, the material that is rarely discussed in the mathematics writings of PGSD students is Algebra. This is because students from elementary school to high school level mathematics material in Geometry and Measurement material is always there. The hope is that with this case study research, there will be equity in the next learning so that students can answer the challenges of the 21st century to solve problems in daily life and provisions as prospective elementary school teachers. Suggestions need to be carried out further research to improve mathematical materials such as Algebra and Data and Uncertainty in daily life.

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