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Analysis of Factors Affecting Numeracy Literacy of Students in Class VIII of SMP Darus Salam

Isnurani[1] , Mohamad Sukarya[2]
[1,2,] Mathematics Departement, Pamulang University, Indonesia
dosen01193@unpam.ac.id, mohamadsukarya@gmail.com

Abstract
This study aims to determine the ability of numeracy value as well as factors that influence the numeracy value of students in class VIII of Darus Salam Junior High School. Quantitative method is the method used in this research. The number of samples in this study were 54 students from a population of 62 students in class VIII of SMP Darus Salam. Questionnaires and tests given to 54 respondents were used as data collection techniques. The results of the data were analyzed by analysis. The results of this study are (1) The numeracy skills of students in grade VIII of SMP Darus Salam fall into the low category with a total percentage of 61.1%; (2) Factors that can affect the numeracy of students in grade VIII of SMP Darus Salam are (a) intelligence; (b) learning motivation; (c) fatigue; (d) family environment; (e) facilities and infrastructure; and (f) teacher competence; and (3) The factor that is more influential on the numeracy of students in grade VIII of SMP Darus Salam is teacher competence.

Keywords: numeracy, logistic ordinal

INTRODUCTION

An organization initiated by the Organisation for Economic Co-operation and Development (OECD) called PISA (Programme for International Student Assessment) is a study to evaluate education systems participated by more than 70 countries around the world. Numeracy in PISA (Programme for International Student Assessment) (OECD, 2019) is the ability of students to analyze, reason, and communicate ideas effectively, formulate, solve, and interpret mathematical problems. The aspects assessed in the Program for International Student Assessment PISA 2018 (OECD, 2019) are literacy, mathematical literacy, and science literacy. Mathematical literacy or numeracy literacy is defined as the ability of students to formulate, use and interpret mathematics in various contexts. This includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena (OECD, 2019).

The 2018 Program for International Student Assessment (PISA) results for the numeracy category placed Indonesia in 7th place from the bottom (73 participating countries) with an average score of 379, with China in first place with an average score of 591. At SMP Darus Salam, the numeracy levels are in brackets within two years, it is still below the minimum competency, namely less than 50% of students have reached the minimum competency. The numeracy results are students' ability to work on National Assessment questions in September 2021/2022 and September 2022/2023. Low numeracy scores are caused by several internal and external factors, including intelligence, motivation and fatigue. The problem that occurs in the intelligence factor is that many students do not understand the problem, identify and connect problems in the

previous material which results in students finding difficulties in working and presenting numeracy problems such as determining a formula, using the right symbols and determining the form of operations. Furthermore, the problem that exists in the motivation factor is that students cannot utilize the break time at night as much as possible as a result students do not go to class the next day. While the fatigue factor is the amount of memorization in lessons at the pesantren so that students when taking lessons in class many are sleepy and fall asleep resulting in many students not paying attention to the teacher when explaining, especially during math lessons. External factors include the family environment, facilities and infrastructure, teacher competence. The problem that occurs in the family environment is the lack of communication between children and parents which results in being a factor in constraining parents to find out their children's difficulties in learning. The problem that occurs in facilities and infrastructure is the lack of multi-media facilities that support teaching and learning activities, which results in students not understanding the use of technology as information. Meanwhile, the problem with teacher competence is that students have difficulty in receiving the material provided, because it is still found that the teaching materials used by teachers cannot support the achievement of competencies..

METHOD

The method in this study uses quantitative methods. According to (Sugiyono, 2019), quantitative methods are methods based on concrete data and data in the form of numbers measured by test instruments using statistics to draw a conclusion from the research. The population of this study were VIII grade students of Darus Salam Junior High School in the 2022/2023 school year consisting of VIII A and VIII B classes with a total of 62 students. While the number of samples was 54 students. Furthermore, the data analysis used is ordinal logistic regression analysis.

RESEARCH RESULTS

The data obtained from the test results to determine the numeracy skills of students in class VIII of Darus Salam Junior High School, which is used as the dependent variable (Y), are students whose numeracy scores are very low categories, there are 5 people (9.3%), 33 students in the low category (61.1%), 11 students in the medium category (20.4%), 4 students in the high category (7.4%) and 1 student in the very high category (1.9%) In the analysis there is no missing data, so it is declared valid in the next process. From this description, students in grade VIII of Darus Salam Junior High School fall into the low category.

1. The parallel lines assumption test in this study can conclude that the model used is Propotional Odds. Can be seen in table 3.

Table.3. Calculation results of Parallel Lines test values

Test of Parallel Lines[a]				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	56,594			
General	51.725[b]	4.869[c]	18	0,999

The significant p-value is 0.999 greater than the value of α = 0.05, and χ^2 count 4,869 < χ^2 table 12,591.

2. The results of the simultaneous test in this study that the independent variable affects the dependent variable simultaneously.

Tabel. 4. Hasil Likelihood Ratio Test

Model Fitting Information				
Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	120,102			
Final	56,594	63,509	6	0,000

Value χ^2 63,509 > χ^2 table 12,5915 and significant value 0.000 < value α=0,05

3. The teacher competency variable greatly affects the numeracy scores of students in class VIII of Darus Salam Junior High School obtained from the partial test results in the table. 5.

Tabel. 5 Hasil Uji Parsial

Parameter Estimates

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[Y = 1]	4,234	4,183	1,025	1	0,311	-3,965	12,434
	[Y = 2]	11,417	4,465	6,537	1	0,011	2,665	20,168
	[Y = 3]	15,967	5,051	9,993	1	0,002	6,067	25,866
	[Y = 4]	18,822	5,331	12,464	1	0,000	8,373	29,271
Location	X1	0,091	0,092	0,969	1	0,325	-0,090	0,272
	X2	-0,060	0,196	0,093	1	0,760	-0,445	0,325
	X3	-0,077	0,131	0,342	1	0,558	-0,335	0,181
	X4	-0,222	0,149	2,239	1	0,135	-0,514	0,069
	X5	0,042	0,122	0,119	1	0,730	-0,196	0,280
	X6	1,001	0,216	21,572	1	0,000	0,579	1,423

The W value (X6) is 21.572> Chi-square table value of 3.841 and a significant value of 0.000 < α = 0.05 so that the X6 variable is significant.

4. Model formation, from the partial test results, the formation of an ordinal logistic regression equation model is obtained..

$$Logit(Y_1) = 4{,}234 - 0{,}091X_1 + 0{,}060X_2 + 0{,}077X_3 + 0{,}222X_4 - 0{,}042X_5 - 1{,}001X_6{}^*$$
$$Logit(Y_2) = 11{,}417 - 0{,}091X_1 + 0{,}060X_2 + 0{,}077X_3 + 0{,}222X_4 - 0{,}042X_5 - 1{,}001X_6{}^*$$
$$Logit(Y_3) = 15{,}967 - 0{,}091X_1 + 0{,}060X_2 + 0{,}077X_3 + 0{,}222X_4 - 0{,}042X_5 - 1{,}001X_6{}^*$$
$$Logit(Y_3) = 18{,}822 - 0{,}091X_1 + 0{,}060X_2 + 0{,}077X_3 + 0{,}222X_4 - 0{,}042X_5 - 1{,}001X_6{}^*$$

5. The odds ratio value of teacher competence variable exp(1,001)=2.721 means that students who have a perception that teacher competence is "less" have a tendency of 2.721 to have a low numeracy score compared to students who have a perception of teacher competence "high". It can be said that the lower the student's perception of teacher competence, the lower the numeracy score, such as the teacher always arrives on time, the teacher can make the classroom atmosphere interesting, the teacher can explain the material well, the teacher always gives practice questions about everyday life, the teacher always uses props or other media as a tool in learning..

DISCUSSION

Based on statistical testing with ordinal logistic regression, it is obtained that the independent variables simultaneously affect the numeracy scores of students in class VIII of SMP Darus Salam. This is caused by several factors including: intelligence, learning motivation, fatigue, family environment, facilities and infrastructure, and teacher competence. Furthermore, when viewed based on partial tests from the results of the Parameter Estimates table, it can be seen that the value of W (X6) is 21.572> value χ^2 table 3.841 and a significant value of 0.000 < α = 0.05, then the X6 variable is significant. So the teacher competency variable greatly influences the numeracy scores of students in class VIII of Darus Salam Junior High School. The variables in question are: (a) the teacher always comes on time; (b) the teacher can make the classroom atmosphere interesting; (c) the teacher can explain the material well; (d) the teacher gives examples of problems related to everyday life; and (e) the teacher maximizes the use of tools and media in learning.

This is in line with the research of Dekriati Ate and Yulius Keremata Lede (2022), Farhan Gilang Fauzi, et al (2021), and Wahyu Pratama Mahiuddin, et al, 2019, stating that the factors that influence students' numeracy skills are teacher competence, in this case the role of the teacher is very influential, such as the learning methods used, teacher discipline, the use of media or tools in learning so that students more easily understand and understand.

However, based on the calculation of the odds ratio value, the odds ratio is exp(1,001)=2.721, meaning that students who have a perception that teacher competence is "less" have a tendency of 2.721 to have low numeracy scores compared to students who have a perception of "high" teacher competence. So that the lower the student's perception of teacher competence, the lower the numeracy score. This is caused by (a) the teacher is too serious in delivering the material so that the class atmosphere becomes tense; (b) the number of assignments given by the teacher; (c) the teacher cannot use tools and media in learning to the fullest; and (d) teachers rarely give numeracy questions that are tested in assessments.

This is in line with the findings of Nuzwatun et al (2023), which states that the low numeracy of students is that the teacher cannot motivate students in the form of praise, the teacher does not make a schedule to provide numeracy practice questions, the lack of learning tools and media used in explaining numeracy questions so that students get bored and bored quickly.

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CONCLUSIONS

The conclusions of the research results and discussion are as follows:

1. The numeracy skills of students in class VIII of Darus Salam Junior High School fall into the low category with a total percentage of 61.1%.
2. Factors that can affect the numeracy of 8th grade students of SMP Darus Salam are (1) intelligence; (2) learning motivation; (3) fatigue; (4) family environment; (5) facilities and infrastructure; (6) teacher competence.
3. The factor that is more influential on the numeracy of students in class VIII of Darus Salam Junior High School is teacher competence..

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