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Mathematical Communication Ability Profile Based on Student Learning Interests (Case Study at *Sekolah Dasar Unggulan Terpadu* Bumi Kartini Jepara)

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Abstract: This study was motivated by the importance of mathematical communication skills in mathematics learning and the variation in students' learning interests that can affect these skills. The research method employed was a descriptive qualitative approach. The research subjects were fifth-grade students at SDUT Bumi Kartini Jepara. Data was collected through learning interest questionnaires and in-depth interviews. This study aims to describe the profile of students' mathematical communication skills in terms of their learning interests in elementary school. This research used a qualitative case study method with data collection techniques including questionnaires, interviews, observations, and documentation. The conclusion is that mathematical communication skills and Learning interests are interrelated, where mathematical communication skills refer to the ability of students to convey mathematical ideas clearly, both orally and in writing. Mathematical learning interest is a student's tendency to be interested in and engaged in mathematics learning activities. Subjects with a high level of learning interest, after analysis, were found to be able to complete all indicators of mathematical communication skills well, namely representation, writing, reading, discussion, and listening. Subjects with moderate levels of learning interest, after analysis, it was concluded that subjects could complete four indicators of mathematical communication skills, namely listening, discussion, writing, and representation. Subjects with a low category of learning interest still have difficulty understanding problems and developing problem-solving strategies. These subjects are still elements of their abilities and are unwilling to try to solve problems, so they often discuss when answering questions.

Keywords: Mathematical communication skills, learning interest, elementary school students.

1. Introductions

As social beings who cannot live individually, humans must equip themselves with knowledge and communication skills, making communication skills crucial. Students are the ones who will carry the baton and determine the progress of this nation. Therefore, students, especially elementary school students, must be equipped with all the essential skills needed for their lives, including communication skills. One of these essential skills is how students can express their thoughts verbally or in writing, which are essential for interacting with others. Acquiring these communication skills can be taught in almost all school subjects, including mathematics.

Mathematics is a subject taught at every grade level, so that later all students are able to develop creative and innovative thinking by using mathematical communication language. The content standards in elementary and secondary education units for mathematics subjects (Regulation of the Minister of National Education number 22 of 2006 dated May 23, 2006 concerning content standards), states that one of the objectives of mathematics learning is that students are able to communicate ideas using tables, symbols, diagrams, or other media that aim to clarify a situation. Mathematical communication skills are an ability that students have in conveying mathematical thinking ideas both orally and in writing (Hadiyanto, 2017). Mathematics itself is a science that studies everything about life, one of which is logic that can help students' thinking skills.

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1.1 Conceptual Framework

Mathematical communication plays an active role in helping students not only develop concepts but also connect abstract ideas with language using mathematical symbols. Students should also be given the opportunity to express their ideas by speaking, writing, or drawing. Communication opens up space for students to talk and discuss mathematics. In addition to mathematical communication, students' learning interest greatly influences learning success. However, during the COVID-19 pandemic, students' learning interest tended to decline after becoming accustomed to online learning. Therefore, it is important for students to readapt to the school environment after almost two years of the pandemic. The pandemic factor significantly influenced students' learning interest, although the pandemic has now disappeared, it has impacted students' learning interest. Research conducted by Hamdan, Nurdin. (2020) shows that students' learning interest significantly influences students' mathematical communication skills.

A study conducted by Hotipah Putri, Yani Setiani and Fakhrudin in 2021 with the title "Mathematical Connection Ability Reviewed from Students' Learning Interest in Cube and Block Material". This study aims to describe mathematical connection ability reviewed from students' learning interest in cube and block material. The subjects in this study were 6 students of class VIII C of SMP Negeri 9 Kota Serang consisting of 2 students with high learning interest, 2 students with moderate learning interest, and 2 students with low learning interest. The results of this study are (1) the mathematical connection ability of students who have high learning interest has fulfilled all indicators of mathematical connection ability, (2) the mathematical connection ability of students who have moderate learning interest fulfills two indicators of mathematical connection ability, (3) the mathematical connection ability of students who have low learning interest only fulfills one indicator of mathematical connection ability.

1.2 Research Objectives

The researcher's aim in conducting this research is to analyze the profile of mathematical communication abilities of fourth grade students of SDUT Bumi Kartini Jepara based on students' learning interests.

2. Methodology

2.1 Research Design

This research uses a qualitative case study method. This method involves information, data, and detailed examination. This involves a detailed examination of the subject, the storage location of documents, or a specific event. In this context, the use of the case study method in this research is based on Robert K. Yin's formulation, which states that a case study is an empirical research that examines a particular phenomenon within the research object. Furthermore, Yin also adds that the distinctive style of the case study method can be revealed or explored through various forms of data, including interviews, observations, documents, and so on, thus providing a comprehensive picture of the phenomenon being studied.

Based on observations that have been conducted by researchers at SDUT Bumi Kartini Jepara and looking at the mathematics learning environment of elementary school students, especially grade 5, several findings have been found, namely that there are several students who experience a decrease in learning interest and a lack of mathematical communication skills in mathematics subjects. In addition, in these observations, researchers also want to know more about how mathematics teachers at SDUT Bumi Kartini Jepara grade 5 in the learning process considering that teachers are the main key for every student's learning so that later students can understand better and have a better interest in learning.

2.2 Respondents of The Study

The respondents in this study were 27 5th grade students of SDUT Bumi Kartini Jepara.

2.3 A sample of how the table should be placed is as below

The instruments in this study are observation, questionnaires, in this study the researcher used a closed questionnaire by choosing strongly agree, agree, disagree, and strongly disagree. Tests, the tests used in this study are mathematical fraction questions with various mathematical symbols. Interviews, in this study, the researcher will conduct interviews with several people related to this study such as: the Principal, mathematics teachers, and selected students of SDUT Bumi Kartini Jepara and documentation.

3. Findings and Discussion

The data obtained from this study are data sourced from students. Starting from the provision of a learning interest questionnaire and a mathematical communication ability test which was then followed up with an interview. The learning interest of students in grade V with 27 students was obtained in the high learning interest category of 10 and the medium category of 14, and 3 students for the low learning interest category. Then in the aspect of students' mathematical communication abilities, 7 students were obtained with the high level of mathematical communication ability category, 15 students in the medium mathematical communication ability category, and 5 students in the low mathematical communication ability category. After that, the researcher selected 2 subjects for each category. The following are the selected subjects from the results of the learning interest questionnaire test.

Table 1. Student Learning Interest Score

No	Initials	Student Learning Interest Score	Category
1	AYL	95	High
2	JNR	94	High
3	JOV	82	Moderate
4	CIT	84	Moderate
5	RER	54	Low
6	ELG	56	Low

After selecting six students as research subjects, the researcher conducted interviews with the six students. The interviews were conducted with indicators of mathematical communication skills, namely Reading, Listening, Writing, Discussing, and Representation. The interviews were semi-structured interviews with questions that had been provided previously. Based on table 1.1, subjects JNR and AYL fulfilled the five subjects of mathematical communication ability indicators with a score of 100 and were included in the high-level category. Hulukan (2018) stated that students' mathematical communication abilities have five aspects which state that if they have all five aspects of these indicators, the student is categorized as having high-level mathematical communication abilities. The five categories are discussing, writing, listening, reading, and representation. So it can be concluded that subjects JNR and AYL have high mathematical communication abilities and based on students' high-level learning interests as well. subjects who fulfill the indicators of high-level mathematical communication abilities are subjects AYL and JNR.

Subjects CIT and JOV met four of the five indicators, with scores of 84 and 80, respectively, which fall into the moderate category. Therefore, it can be concluded that subjects CIT and JOV possess mathematical communication skills based on a strong interest in learning mathematics. Regarding listening, they admitted to paying attention and listening, but not fully because some of their peers distracted them by talking.

The ELG and RER subjects met two indicators: discussion and writing, with both scoring 46 on the test questions. This puts RER in the low-interest mathematical communication ability category. This is reinforced by observations and interviews, which showed the subjects appearing confused when answering the test questions.

4. Conclusions and Recommendations

Based on the research results, it can be concluded that mathematical communication skills and learning interest are related. Mathematical communication skills are students' ability to convey mathematical ideas clearly, both orally and in writing. This ability is very important because it allows students to actively participate in mathematics learning, solve problems collaboratively, and explain their mathematical thinking. Meanwhile, interest in learning mathematics is a student's tendency to be interested and involved in mathematics learning activities. High learning interest will encourage students to be more active in finding out, practicing, and discussing mathematical concepts.

Subject of mathematical communication ability based on high level learning interestAfter analyzing subjects with a high level of interest in learning, it was concluded that the subjects were able to complete all indicators of good mathematical communication skills, namely representation, writing, reading, discussion, and listening. Subjects with a high level of interest in learning attempted to complete the test correctly, coherently, and completely. Based on this, it shows that subjects with a high level of interest in learning always strive to solve problems well to obtain maximum results.

Subjects with moderate learning interests were analyzed and concluded to be able to complete four indicators of mathematical communication skills: listening, discussion, writing, and representation. Subjects with moderate learning interests attempted to complete the test correctly and coherently. This finding indicates that subjects with moderate learning interests consistently strived to solve problems effectively to achieve optimal results.

Subjects with low learning interest, after analysis, concluded that the subjects could only solve one problem with a writing indicator and the subjects were not yet able to determine representation, reading, writing, and listening. Subjects with low learning interest still had difficulty understanding the problem and developing problem-solving strategies. These subjects were still unsure of their abilities and did not want to try to solve the problem, so the subjects often continued to discuss when answering questions.

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Conflict of Interest
The authors declare there is no conflict of interest.

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