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The Influential Factors of Student Understanding in Mathematics Lessons

Miftah Fauzi[1] , Mastarita Nova Wulanda, Qamaruddin[3*]

[1,2]UIN Sulthan Thaha Saifuddin, Jl. Jambi Ma. Bulian KM.16, Jambi, 36363, Indonesia
[3]Sekolah Tinggi Ilmu Maritim "AMI", Jl. Pacuan Kuda Raya, DKI Jakarta, 13210, Indonesia

Abstract

The purpose of this study was to determine the factors that influence the understanding of student in mathematics lesson at elementary school in Jambi. The research approach is descriptive qualitative. Data collection techniques were carried out by interviews to teachers and students at Sekolah SD Islam Al Azhar 57 Jambi. The study was carried out from January to February 2023. The results showed that the dominant influencing factors of elementary school students in understanding mathematics lesson could be categorized as internal and external factors. The internal factors were students' interest, motivation, attitude and effort to grasp the lesson, while the external ones namely methods or ways of learning, planning for the teaching and learning process and media or learning facilities. The suggestions that can be put forward are the need for creativity of teachers to create interesting learning materials, for example using animation; and implementing interactive activities in the learning process, for example through games.

Keywords*: Creativity, External factors, Internal factors, Interactive, Mathematics lesson*

1. Introduction

In the education system in Indonesia, mathematics is one of the subjects that must be studied by all students from elementary, middle, high school, to college levels. Learning mathematics requires good understanding and arithmetic of students because the material is in the form of definitions and formulas which of course require good understanding. Learning mathematics will be fun when students enjoy learning it and this will make mathematics easier to understand. On the other hand, students would become bored, lazy and even become afraid of mathematics lessons.

Students' learning abilities are influenced by two aspects, namely internal and external aspects. Internal aspects refer to the students themselves, for example motivation, interests, attitudes, cognitive skills and student skills. External aspects that influence students include the teacher's teaching methods, teacher mastery of the material, the role of parents, the role of friends and the conditions of the learning place (Majidah, 2021).

The aspects or factors that influence student understanding are students' interests, motivation, attitudes and efforts to understand the lesson. As students are studying and bored- especially when they have to undergo online learning for a relatively long time- then their interest, motivation and effort to understand the lesson will decrease. This can make students feeling difficult and generally they do not understand well the material presented by the teacher. Another aspect that can influence students' understanding is the role of friends. If students are in a circle of friends who tend to influence and interact with diligent people, then students will also become diligent. However, when students associate with lazy people, students also become lazy (Majidah, 202; Safitri et al, 2021).

Success in studying mathematics is influenced by parental involvement, student learning motivation and emotional intelligence (Prajitno & Aulia,2022). Parental support is in the form of attention and encouragement for their children so that they find their strength when they are facing challenges. Motivation for learning in this case is a strong desire (enthusiasim) and self-motivation (encouragement) to love learning mathematics. Emotional intelligence means not being

[*)] Corresponding Author
E-mail: qomarudin.q@gmail.com

easily influenced by others and having sequential learning strategies.

Mayasari, Natsir and Zulfiah (2022), in their research, show that the ELPSA-based Student Worksheet method can improve the ability to understand mathematical concepts. ELPSA (Experiences, Language, Picture, Symbol, Applications) is a learning pattern created individually for the Indonesian context as a product of video data studies of the Trends International Mathematics Science Study (Rahayu, Mayasari and Pagiling, 2021).

Maamin et al (2022) conducted research on 1000 junior high school students regarding the effect of student involvement on achieving mathematics results. The results of this research show that there is a significant influence of cognitive, affective and behavioral involvement variables on the achievement of mathematics results. Cognitive involvement is a combination of motivation and strategy use, affective involvement is related to feelings (emotion) and behavioral involvement means being willing to do the work and obey the rules.

Nasri et al (2022) show that the factors that influence students' low mathematics test achievement are (1) instrumental factors and social environment, (2) motivation and interest, (3) school social environment, physical tone and family social environment, (4) the social environment of society, attitudes and states of physical function, and (5) intelligence. Nisa (2022) examined students' ability to understand mathematical concepts in solving problems in Algebra topics. The research subjects were 13 class VIII students in one of the junior high schools in Serang City . The results of the research show that students experience difficulties in expressing the algebraic concept of many terms, determining variables, determining constants and determining coefficients, distinguishing between examples including one, two or many terms, determining or replacing variables, creating mathematical models, determining calculation operations that are appropriate to questions given .

Rosmaini (2023) conducted research on 100 class VIII students at SMPN 1 Bojongsoang regarding the factors that influence critical thinking skills in learning mathematics. The results of his research show that: 1) Physical condition has a positive and significant effect on critical thinking skills in mathematics learning, 2) Intellectual development has a positive and significant effect on critical thinking skills in mathematics learning, and 3) Motivation has a positive and significant effect on critical thinking skills in mathematics learning.

Ridho'i (2022) in his research shows that the factors that influence the mathematics learning outcomes of 33 MTs students are internal factors including learning behavior, learning interest, learning motivation, emotional intelligence, and external factors, namely the family environment, school environment, and society. Mayasari & Habeahan (2021) conducted research on students ' conceptual understanding abilities in solving story problems. The research subjects were 28 class VII students of SMP Negeri 8 Merauke. The results of the research show that students' ability to understand concepts in story problems is still low. Dalimunthe (2021) in his research shows that the factors that influence interest in learning mathematics in children aged 6-10 years in Kampung Aur are internal factors that encourage children's interest in curiosity, and external factors that influence interest in learning are school factors and family factors

Rahmad and Siduppa (2022) researched errors in understanding basic mathematical objects of students at SMPN 4 Sungguminasa, Gowa Regency, class VIII with the subject of 3 class VIII students. The results of the research show that: 1) students' errors in understanding mathematical facts include: errors in applying plus or minus signs and brackets in algebraic forms, 2) students' errors in understanding mathematical concepts include: errors in understanding the concept of terms, like terms and unlike terms, 3) students' errors in understanding mathematical principles include: errors in understanding the properties that apply to algebraic forms, and 4) errors in understanding students' mathematical operations include: errors in understanding in completing, adding and subtracting algebraic forms; errors in understanding in completing multiplication and division of algebraic forms; and errors in understanding in simplifying algebraic fractions.

Based on the background of the problem stated above, the aim of this research is to find out the factors influencing students' understanding in mathematics lessons at Al Azhar 57 Jambi Islamic Elementary School

2. Method

This research apply a descriptive qualitative approach. The data collection method is by conducting interviews with teachers who teach mathematics and students as informants. The teachers being interviewed were elementary school teachers who taught Mathematics in grades 4 and 5. The second informants were elementary school students in grades 4 and 5. The place of research was carried out at Al Azhar 57 Jambi Islamic Elementary School. The research was carried out for approximately one month from January 7th to February 7th 2023.

3. Results and Discussion

a. Interview with 4th and 5th Grade Elementary School Mathematics Teachers

The subject taught by the teacher is Mathematics for grades 4 and 5 elementary school, namely Thematic. Factors that influence students' understanding so that they can learn well, are related to learning methods, learning strategies and learning media that make students understand.

The difficulty faced in teaching is student focus because teaching during the day. Another difficulty in the last two years has been the Covid-19 pandemic so it needs to be repeated because the lessons start from the beginning again. The tip to make the lesson interesting is to teach it interactively, don't be monotonous, don't just lecture but intersperse it with good learning media, for example teaching aids, namely cubes and for multiplication, use flashcards.

Based on the results of the interview with the teacher, it can be concluded that the factors that influence students' understanding are learning methods, strategies or planning for the teaching and learning process and media or learning facilities.

b. Interviews with 4th and 5th Grade Elementary School Students

Their favorite subject is Mathematics. The reason why they like, because mathematics is fun. As for mathematics, the part that they don't like is geometry because they don't know how to do it or how to solve it. Their favorite calculation is multiplication because it is easy to understand.

Based on the results of interviews with students, it can be concluded that the factors that influence students' understanding are their interest or interest in the content or subject matter, and the teacher's method of delivery so that they can understand it.

Theoretically, there are two factors that influence student understanding, namely internal factors and external factors. Internal factors are students' interest, motivation, attitudes and efforts to understand learning, and external factors are teachers' teaching methods and delivery, the role of parents, the role of friends and the conditions of the learning place.

Based on the results of interview with teachers, it can be concluded that the factors that influence students' understanding are learning methods, strategies or planning for the teaching and learning process and media or learning facilities. This results support previous research by Mayasari, Natsir and Zulfiah (2022) that the learning method (ELPSA-based Student Worksheet) has an effect on improving the ability to understand mathematical concepts. It is also in line with Nasri et al (2022) who stated that one of the factors that influence students' low mathematics test achievement is instrumental factors which can be categorized as learning methods. Specifically, based on the results of interviews, learning media such as cubes and flashcards play a role in facilitating the understanding of mathematics lessons at Al Azhar 57 Jambi Islamic Elementary School.

In addition to method, based on the results of interviews with teachers, it was also found that tools used in the teaching and learning process, for example teaching aids and flashcards, had an influence on the learning process. This result is in line with research by Nasri et al (2022) who call it an instrumental factor.

Additionally to learning methods and media factors, in the interviews it was also mentioned environmental factors during the day which caused students not focus. Nasri et al (2022) and Ridho'i (2022) mention them as school environmental (social) factors, while Rosmaini (2023) calls them as physical condition factors (students are not focused).

Based on the results of interviews with students in grades 4 and 5 of elementary school, it was concluded that interest or interest in the content or subject matter and the teacher's method of delivery had an influence on understanding mathematics lessons. The results of this research support previous research by Majidah (2021), Safitri et al (2021), Nasri et al (2022) and Ridho'i (2022) that interest has a significant effect on student understanding. In relation to teacher factors, the interview results support Majidah's (2021) research which states that teacher performance influences students' understanding in mathematics lessons.

By referring to the results of the interview, it would be necessary to offer solutions to improve students' understanding, especially of mathematics lessons. The solution is in the form of creating creative animations to attract students' interest and attention. Additionally, it is also important to implement a relaxed and challenging learning atmosphere and encourage students to express their opinions or ideas so that students feel that learning is something like playing.

4. Conclusion

Based on the results of the discussion in the previous chapter, the following conclusions can be drawn: The factors that influence students' understanding in mathematics lessons are: First, internal factors, namely students' interest, motivation, attitudes and efforts to understand the learning material; second , external factors, namely methods or ways of learning, strategies or planning for the teaching and learning process and media or learning facilities.

The suggestions that can be put forward are the necessary for creativity of teachers to create interesting learning materials, for example with animation, implementing interactive activities in the learning process, for example through games.

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