



Students' Motivation in Learning Mathematics Using Uno Math Media

Ahmad Lutfi^{1*}, Husnul Khatimah Rusyid², Ahmad Mukhibin³, Mochamad Abdul Basir⁴

1,2,3 Mathematics Education Department, Universitas Pendidikan Indonesia

4 Mathematics Education Department, Universitas Islam Sultan Agung Semarang

*Corresponding author: Jl. Dr. Setiabudi No. 299, Bandung, West Java, 40154, Indonesia.

e-mail addresses: ahmadlutfi@upi.edu

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abstract

Learning motivation is one of the important aspects in learning mathematics. Students with high motivation will enable enthusiasm and tend to obtain high mathematics learning achievement. Students often feel bored in learning mathematics because mathematics learning is abstract and difficult. Learning by utilizing games in several studies has proven to have a positive effect on learning mathematics. This study aims to describe students' motivation to learn mathematics after using Uno Math media. This study used a quantitative approach with descriptive method. The population in this research were all grade X students in one of the high senior schools in Semarang. Sampling was conducted using random sampling technique in which class X MIPA 1 was selected as the research sample with a total of 25 students, consisting of 5 male students and 20 female students. The results showed that students' motivation to learn mathematics reached 69.96% in the high category. Teachers can make use of Uno Math media in learning mathematics to help students understand formulas, and make students not bored in learning mathematics because there is a new method in teaching mathematics with fun.

Keywords:

Learning Media, Students' Motivation, Uno Math



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INTRODUCTION

Mathematics is one of the knowledge disciplines that has a crucial role in the advancement of science and technology (Siagian, 2016). Mathematics not only serves as a supporting tool in various other fields of science, but also plays an important role in its own development. Mastery of mathematical concepts by students is a must that cannot be ignored in mastering 21st century skills. Rittle-Johnson (2017) revealed that having a solid understanding of mathematics is one of the keys to success in academics, economics, and life as a whole. But in fact, many students experience difficulties in learning mathematics (Acharya, 2017). Research conducted by Gafoor and Kurukkan (2015) even mentioned that there were only 3 out of 48 students who liked mathematics, while the other students disliked the subject. Furthermore, Ukobizaba et al. (2021) stated that students' dislike of mathematics was influenced by low grades, harsh teachers, and teachers' lack of clarity in providing material examples.

Students' dislike of mathematics causes low student learning outcomes (Suan, 2018). This is also in line with Fadilah et al. (2021) and Harun et al. (2021) who said that mathematics learning outcomes are influenced by external factors and internal factors. External factors, according to In'am and Sutrisno (2020), are factors that come from outside students. This factor can be in the form of parental support, giving gifts, or interesting learning activities. Meanwhile, internal factors, according to Blum (2015), are factors that come from within students. These factors include student perception, interest, and motivation to learn.

Nugraha et al. (2021) said that learning motivation and mathematics learning outcomes have a positive correlation relationship, so if students have high learning motivation, their learning outcomes are also high. The importance of motivation in encouraging learning outcomes is also conveyed by Puspitarini and Hanif (2019) that motivation is an important indicator to measure student success in participating in the learning process. Motivation is also a key factor in determining the level of student engagement and learning outcomes. By understanding the factors that influence student motivation, teachers can identify effective learning strategies to improve students' mathematics achievement. Mayangsari and Mahardhika (2019) said that generating learning motivation is not an easy task. Therefore, innovative methods and media are needed to increase students' learning motivation. Ukobizaba et al. (2019) revealed that the use of games in mathematics learning activities can encourage students to like mathematics subjects and increase students' motivation to learn. The same thing was also conveyed by Jumaroh et al. (2022) who said that game-based learning media can encourage active participation and create a fun learning atmosphere.

One of the game-based learning media that can be used in learning mathematics is Uno Math. Uno Math, according to Suciati (2020), is a learning media that combines elements of the Uno card game with mathematical concepts. The Uno card game is popular among students and also has simple rules so it makes Uno Math very easy to apply and play in learning mathematics by students aged seven years and over (Hikmah, 2017). In addition, the use of a fun and interactive approach in Uno Math also adds to the uniqueness of this card game.

Research related to Uno Math learning media has been conducted by several researchers, including research conducted by Harahap et al. (2022) related to the development of Uno

Math to measure understanding of the concept of flat shapes, and research conducted by Rahmatin and Khabibah (2016) regarding the development of Uno Math card game media on integer operation material. From these previous studies, researchers have not found research related to the use of Uno Math media in fostering students' motivation to learn mathematics, especially in the geometry material of three dimensional objects. Therefore, researchers are interested in examining student motivation in learning mathematics using Uno Math media. This study aims to explore and analyze student motivation in learning mathematics using Uno Math learning media.

METHODS

Research Design

This research is descriptive research with a quantitative approach. Quantitative descriptive research is research that describes, examines, and explains something that is studied as it is with numbers, and does not test a particular hypothesis (Sulistyawati et al., 2022).

Population and Sample

The population in this research were all grade X students in one of the high senior schools in Semarang. Sampling was conducted using random sampling technique where class X MIPA 1 was selected as the research sample with a total of 25 students, consisting of 5 male students and 20 female students.

Research Procedures

This research procedure uses three stages, namely: planning, implementation, and preparation of results. The research procedure is described in more detail in Figure 1.

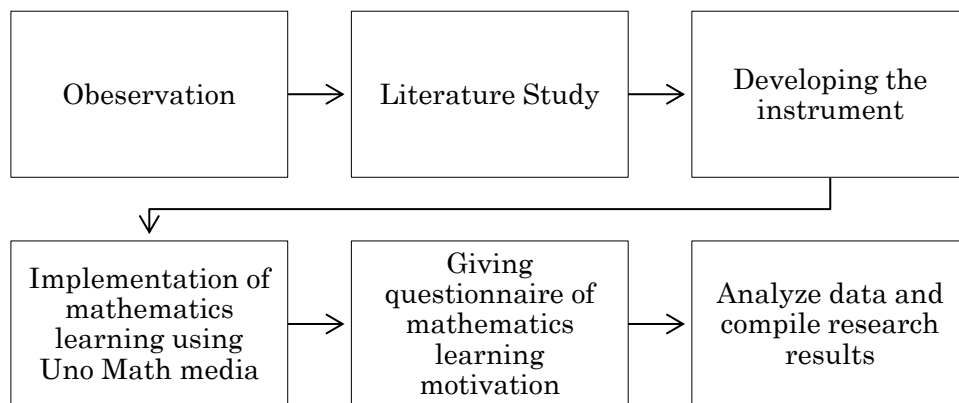


Figure 1
Research Procedures

Data Collection and Analysis

The media used in this study is Uno card media which contains the formula for the geometry material of three dimensional objects to make it easier for students to understand the material. Uno Math media used in this study is presented in Figure 1.

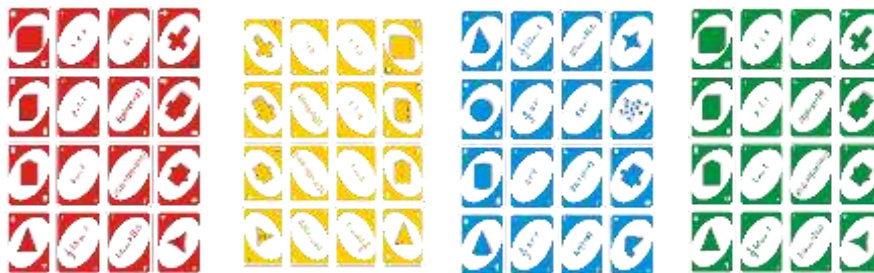


Figure 2

Design of Uno Math Media

The instrument used is a mathematics learning motivation questionnaire consisting of 25 statements with 14 positive statements and 11 negative statements. The questionnaire was prepared using a Likert scale consisting of four attitude scales, namely strongly agree (SS), agree (S), disagree (TS), strongly disagree (STS). Indicators of student motivation to learn mathematics use adaptations from research conducted by Kaniawaty (2016) which consists of: 1) confidence in using mathematics; 2) flexibility in using mathematics; 3) willingness to leave other obligations or tasks; 4) perseverance in doing math; 5) can defend opinions; and 6) persistent and resilient in doing math tasks.

Furthermore, data related to students' motivation to learn mathematics after the implementation of Uno Math media were analyzed descriptively quantitatively. The calculation used for this analysis uses the formula.

$$P = \frac{F}{N} \times 100\%$$

Description:

P = Percentage

F = Number of responses from respondents

N = Number of respondents

The criteria for assessing the level of students' motivation to learn mathematics will be analyzed using categorization from Putra (2015). The categorization of student learning motivation is presented in Table 1.

Table 1

Categorization of Student Motivation

Criteria	Interval
Very high	85%-100%
High	69%-84%
Low	53%-68%
Very low	36%-52%

RESULT AND DISCUSSION

Data related to students' mathematics learning motivation after the implementation of mathematics learning using Uno Math media is presented descriptively in the form of percentages based on the category of mathematics learning motivation level, based on the indicators of mathematics learning motivation, and based on gender. The percentage of

the acquisition of mathematics learning motivation questionnaire is presented in Figure 3.

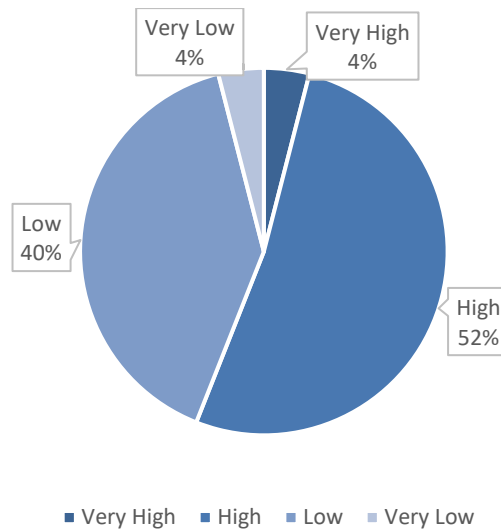


Figure 3
Mathematics Learning Motivation

Based on Figure 3, it can be seen that the majority of students' mathematics learning motivation is in the high category with a percentage of 52%, while the students' math learning motivation in the very high and very low categories obtained the same results, namely 4%. This is in line with Divjak and Tomić (2011) who stated that the use of games in learning mathematics has an impact in shaping students' positive attitudes in participating in mathematics learning. In addition, research conducted by Nurjanah et al. (2021) also shows that the use of hands-on math media, such as Uno Math media, is effective in developing skills in mathematical learning. Other studies also show that the use of manipulative media has a good preference over traditional learning (Garrity, 1998). One of the manipulative media that can be applied is card media (Saragih, 2019).

In addition to the category of students' mathematics learning motivation, descriptive analysis is also based on each indicator of mathematics learning motivation. The results of the questionnaire of students' mathematics learning motivation after the use of Uno Math media based on indicators of mathematics learning motivation are presented in Table 2.

Table 2
Students' Mathematics Learning Motivation Based on Indicators

No	Indicator	Percentage	Category
1	Confident in using math	72.20%	High
2	Flexible in using math	63.50%	Low
3	Willingness to leave other obligations or tasks	66.75%	Low
4	Perseverance in doing math	70.50%	High
5	Can defend opinions	76.65%	High
6	Persistent and resilient in doing math tasks	69.75%	High

No	Indicator	Percentage	Category
	Average	69.96%	High

Based on Table 2, it can be seen that the second indicator, which is flexible in using mathematics, obtained the lowest result of 63.50% in the low category. While the highest result is in the fourth indicator with an acquisition of 76.65% in the high category. The average student motivation to learn mathematics is at 69.96% with a high category. This is in line with research conducted by Chung and Chang (2017) which state that games combined with subject knowledge have a positive impact on learning motivation.

In the first indicator, namely confidence in using mathematics, an average of 72.20% was obtained in the high category. To measure this indicator, several statements were used, namely enjoying learning mathematics, not understanding mathematics material clearly, knowing the purpose of learning mathematics, understanding the usefulness of learning mathematics, and daring to ask questions when there is material that is unclear. In the statement of not understanding math material clearly, a percentage of 68.00% was obtained in the low category. This shows that students do not understand math material well. As explained in the research of Gafoor and Kurukkan (2015) which states that students still have difficulty in understanding math subject matter. Some factors that can cause students' difficulties in understanding mathematics include the lack of connection between concepts that have been learned and those to be learned, negative views of mathematics, economic conditions and backgrounds, school management systems, and school infrastructure (Acharya, 2017).

In the second indikator, which is flexible in doing math work, an average of 63.50% was obtained in the low category. To measure this indicator, several statements were used, namely feeling lost when there is material that is missed, feeling that there is too much time to study math in class, not happy when the teacher explains math in a hurry, and arriving late in math learning. In this aspect, the feeling of loss when there is missed math material and displeasure when the teacher explains math hastily still obtained a percentage of 56% in the low category.

In the third indicator, namely the willingness to leave other obligations or tasks, an average of 66.75% was obtained in the low category. To measure this indicator, several statements were used, namely learning math because the curriculum at school requires it, prioritizing math lessons over other subjects, avoiding learning math because of a lot of homework, bored studying math. In the statement prioritizing math lessons over other lessons still obtained low results, namely 47% in the very low category.

In the fourth indicator, namely perseverance in doing math, an average of 70.50% was obtained in the high category. To measure this indicator, several statements were used, namely taking notes on mathematics explanations delivered by the teacher, enjoying participating in math discussions in class, paying less attention when friends ask math questions, and feeling restless when learning mathematics.

In the fifth indicator, namely being able to maintain an opinion, an average of 76.65% was obtained in the high category. To measure this indicator, several statements were used, namely trying hard to find solutions to difficult math problems, learning mathematics independently makes you understand mathematics better, rejecting friends' opinions

when discussing, and getting angry when in mathematics discussions friends oppose opinions.

In the sixth indicator, namely persistent and resilient in doing math tasks, an average of 69.75% was obtained in the high category. To measure this indicator, several statements were used, namely refusing when the discussion of math problems was extended, persisting in completing math problems, stopping asking questions even though they did not understand math, and trying to finish finding the correct solution before I asked someone else.

In addition, this study also analyzed students' mathematics learning motivation after using uno math learning media based on gender. The results of data analysis showed that the average math learning motivation of male students was 63.00% with a low category while female students were 71.70% with a high category. This shows that female students' math learning motivation is higher than male students. Previous research conducted by Degol et al. (2018) and Martin (2004) showed that women have higher motivation than men in learning mathematics.

Overall, Uno Math media can be classified as a mathematics learning media that has a positive influence, including that Uno Math media can sharpen students in learning while playing without feeling bored, attracting attention and can facilitate students in learning mathematics (Jumaroh et al., 2022). So that Uno Math media can be used by teachers in facilitating students in dealing with boredom and generating motivation in learning math.

CONCLUSION

Indicators of students' mathematics learning motivation in this study were measured through six indicators, namely confidence in using mathematics, flexibility in doing mathematical work, willingness to leave other obligations or tasks, perseverance in doing mathematics, being able to defend opinions, and being persistent and resilient in doing mathematics tasks. Based on the results of data analysis, it can be concluded that the students' motivation to learn mathematics after using Uno Math media as a whole obtained a percentage of 69.96% in the high category. This shows that the use of Uno Math learning media can lead to high student math learning motivation. In addition, this media is useful in helping students memorize formulas, and making students not easily bored and bored in learning mathematics because there are new variations in learning mathematics.

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