Analysis of Students' Motivation to Learn Mathematics in Class XII

Aqilla Cahyani [1], Shalsabilia [2], Jelia Novita [3]

[1] Universitas Riau, INDONESIA

[2] Universitas Riau, INDONESIA

[3] MA Darul Hikmah Pekanbaru, INDONESIA

ARTICLE'S INFORMATION	ABSTRACT
	In learning, motivation is very functioning to encourage students to act, determine the direction of action, go towards the goals to be achieved, and select the actions that must be done. Learning outcomes will be optimal if there is motivation. The more precise the motivation provided, the more successful the learning will be. This study aims to measure and analyze the learning motivation in mathematics among students of Class XII Religion 2 at MA Darul Hikmah Pekanbaru. Employing a mixed-methods approach, the study involved all students from Class XII Religion 2, totalling 18 participants. Data were collected through interviews, questionnaires, and observations. The findings indicate that the student's motivation levels are categorized into three levels: high (22%), moderate (28%), and low (50%). Further analysis revealed that the average motivation level for learning mathematics was 70.67%, which is classified as high. These results emphasize the importance of appropriate motivational strategies in mathematics education to enhance learning effectiveness. The study provides insights for educators to develop interventions that could boost students' motivation in mathematics learning.

Corresponding address:

Aqilla Cahyani,
E-mail: aqilla.cahyani6355@student.unri.ac.id

INTRODUCTION

Education is a very important thing in developing the potential of students, both as a support in raising intelligence, skills, religion and even self-control. This is in line with the contents of the Indonesian Law No. 20 of 2003 namely, education is a conscious and cyclical effort to create a learning atmosphere and learning process so that students actively develop their potential so that they have religious, spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, the people, nation and state [1].

Mathematics is one of the subjects that play a very important role to be learned by students. This is also described by Ike [2], who states that mathematics has benefits in various aspects of daily life, such as economics, society, politics, health, technology, and education, so it is important to learn. Mathematics is also a science that exists in the curriculum programme as one of the compulsory subjects in schools. Mathematics is one of the basic subjects that plays an important role in improving the quality of education at every level of formal education [3].

Learning mathematics is a process of understanding a mathematical concept (material). One must understand the previous concept (material) because learning mathematics requires steps from simpler things to more difficult things, making it easier for students to understand the concept or material [4]. In that case, mathematics is one of the subjects that students highly avoid, resulting in decreased student enthusiasm for learning. Therefore, learning motivation plays an important role in

encouraging and directing students' enthusiasm for learning activities [5]. Learning outcomes will be optimal if there is motivation. The more appropriate the motivation given, the more successful the learning will be [6].

In the concept of learning, motivation means the art of encouraging students to carry out learning activities so that learning objectives are achieved [7]. As parents, teachers, and as a society, we all feel called to participate in the development and education of our children; encouragement, enthusiasm, understanding, and understanding remain very important. Education is a way of motivating children [8]. One of the most important factors affecting students' active participation in learning, their ability to follow instructions, the achievement of learning objectives, and optimal results is learning motivation. Learning. Students will experience difficulties in learning if there is a lack of learning motivation within themselves.

According to Hamzah [9], learning motivation is an internal and external drive in students who are learning to behave, generally with several indicators or supporting elements. Motivation determines learning persistence; a child who has been motivated to learn something tries to study well and diligently to get better results [10]. Each student has a learning motivation that is different from the others. Some students are intrinsic, so their willingness to learn is stronger and does not depend on outside factors. Conversely, students are extrinsic, where the willingness to learn is very dependent on conditions outside themselves. However, in reality, extrinsic motivation is what happens a lot, especially in children and adolescents in the learning process. Highly motivated students are able to complete various learning tasks. Thus, it can be asserted that students need a lot of motivation in the learning process, which positively impacts achieving beneficial results for students at the end of learning [11].

According to Suprihatin [12], motivation is important in learning because it determines the strength of a student's learning effort. Sardiman suggests there are three functions of motivation, namely:

a. Encourage people to do things. In this case, motivation is the driving force behind any activity that is carried out.
b. To guide the direction of action towards the goal to be achieved so that motivation can provide the direction and the activities to be carried out in accordance with the formulation of the goal.
c. Selection of actions, i.e. determining which actions must be carried out in order to achieve the goal, leaving aside those that are not conducive to the goal.

Lestari in Rigusti & Pujiastuti [13] provides an overview of indicators of learning motivation, namely the need and motivation to learn, attention and interest in the tasks assigned, perseverance in completing them, persistence in overcoming obstacles, and the desire to succeed.

Based on the observations and interviews conducted with the mathematics subject teachers in Class XII Religion 2 MA Darul Hikmah Pekanbaru, information was obtained that many students were lazy in learning mathematics when following the lessons in class, many test scores and exam scores were below the Minimum Completion Criteria (KKM). The Minimum Completion Criteria (MCC) are the established minimum standards that students must meet to be considered to have achieved competence in a subject. Educational institutions set these criteria to ensure that students have reached a necessary level of understanding and skills. This is a concern for the mathematics teacher because the students are about to take the Final School Examination.

This is in line with research conducted by Wahyuni et al. [14] that students tend to do the assignments given by the teacher at school, namely during recess or during class changes. This shows

that students lack the drive to learn. Research conducted by Akbar, Rudi, et al. [14] shows that there is still a lack of students in class XI IPA1 working independently; students do not have the habit of learning independently because they never study at home.

Based on research conducted by [3], wherein learning mathematics, there are still students who do homework at school, rarely pay attention to the teacher during class, never study at home, or never ask the teacher about learning mathematics, and lack enthusiasm for learning mathematics.

The problems that occur indicate the characteristics of poor learning motivation. Learning motivation plays an important role in the learning process, and the level of student learning motivation that has been known can be used as a teacher's guide in carrying out a better learning process.

Based on this description, research is needed to help teachers know the level of student learning motivation and overcome the problem of student learning motivation in participating in mathematics learning in the classroom by analysing the mathematics learning motivation of students in class XII Religion 2 MA Darul Hikmah Pekanbaru.

METHODS

This research used a mixed method, which was conducted collaboratively. Mixed Research Method combines quantitative and qualitative techniques to gather and analyze data. This approach allows researchers to obtain broader and deeper insights into the phenomena being studied by utilizing statistical analysis for quantitative data and interviews or observations for qualitative insights. Collaborative means that the researcher worked together with the subject teacher during the research activities. According to Cresswell and Clark [15], the focus of mixed methods is to collect, analyse and combine quantitative and qualitative data in one study or one research session. This research was conducted at MA Darul Hikmah Pekanbaru in the academic year 2023/2024, with the research target being students of class XII Religion 2, totalling 18 people. The sampling technique used was purposive sampling, targeting this specific class due to its unique characteristics and relevance to the research objectives.

To ensure the validity and reliability of the data collection instruments, several steps were undertaken. The questionnaire used was developed based on existing literature and previously validated scales relevant to measuring learning motivation. Prior to the actual data collection, a pilot test was conducted with a different group of students from the same school, but they were not included in the main study. Feedback from the pilot test was used to refine the questions, ensuring clarity and relevance. Alongside questionnaires, interviews and observations were conducted to gather qualitative data, providing a deeper understanding of the students' motivational levels and their learning environment. Educational experts reviewed the interview questions to ensure they were comprehensive and unbiased.

The data collection in this study was done by conducting interviews, questionnaires, and observations. Questionnaires were given to students to obtain data on student motivation towards mathematics subjects. The questionnaire used consists of 4 answer choices, namely, strongly agree, agree, disagree, and strongly disagree. Furthermore, researchers used interviews to complement the questionnaire data. The results of data collection were then analysed descriptively and quantitatively.

Data analysis techniques are divided into two parts, namely quantitative data analysis methods and qualitative data analysis techniques. Quantitative data analysis techniques in the form of percentages of the results of distributing questionnaires of student motivation in class XII Religion 2 MA Darul Hikmah Pekanbaru towards mathematics subjects. The questionnaire data will be analysed

descriptively to see the increase in student learning motivation. The formula for analysing the percentage value of the learning motivation questionnaire score is:

$$P = \frac{W}{Q.R.S} \times 100\%$$

Descriptions:

P : Percentage score

Q : Highest score for each indicator

R : Number of indicators

S : Number of groups

W: Total score of data collection results

Table 1. Qualification of Observation Results and Questionnaire Results of Student Learning Motivation

Percentage Score	Category
81% - 100%	Very High
61% - 80%	High
41% - 60%	Medium
21% - 40%	Low
0% - 20%	Very Low

Source: [16]

Meanwhile, qualitative data analysis techniques are carried out by analysing the results of interviews and observations. Data obtained from interviews will be reduced by classifying, discarding unnecessary ones, and presenting narratively. Meanwhile, data obtained from observations will be analysed by recording data and describing it descriptively. The data that has been grouped is then presented in narrative form to make it easier to find information that occurs in the field and to conclude.

RESULTS AND DISCUSSION

This research was conducted using mixed methods. Therefore, the data obtained consisted of qualitative data and quantitative data. Researchers obtained quantitative data by giving questionnaires to 18 students, the results of which can be seen in Figure 1.
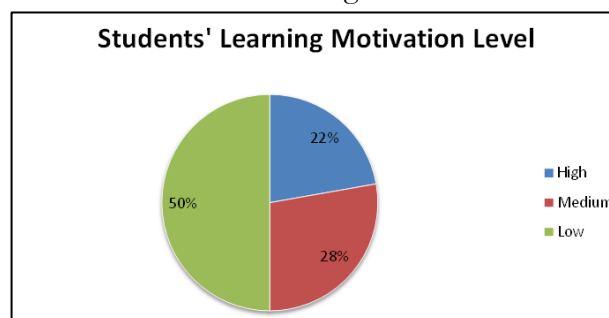

Figure 1. Students' Learning Motivation Level

Figure 1 shows the level of learning motivation of students in class XII Religious 2 MA Darul Hikmah Pekanbaru in mathematics subject. In the figure, it can be seen that there are three levels of learning motivation of students in class XII Religion 2 MA Darul Hikmah Pekanbaru, namely:

1. There are four students (22%) who have a high level of learning motivation
2. There are five students (28%) who have a medium level of learning motivation

3. There are nine students (50%) who have a low level of learning motivation.

After the questionnaire results were obtained, the data were analysed and presented in a descriptive percentage table.

Table 2. Analysis of Learning Motivation Indicator

No.	Aspects	Indicators	Percentage	Average	Criterion
1.	The desire and wish to succeed	Not easily discouraged	79,17		
		Not easily satisfied with results	81,67		
		Tenacious in the face of learning difficulties	73,33	74,25	High
		Independent in action	68,75		
		Effort in achieving goals	68,83		
2.	Encouragement and needs in learning	Curiosity	69,17		
		Interest in learning	68,33	68,75	High
3.	Persistence and effort	Courage in the face of failure	75,00		
		Ability to bounce back from failure	72,77	72,56	High
		Persistence to keep trying when the first attempt fails	70,00		
4.	The utilisation of learning media	Use of learning media in the classroom	70,56		
		Student's willingness to use media	66,25	67,27	High
		Benefits of using media	65,00		
		Average		70,67	High

In aspect 1, the desire and desire to succeed, the average percentage is 74.25% with high criteria. In this aspect 1, there are several indicators used to see student motivation, including not giving up easily, not being satisfied with the results achieved, resilience in facing learning difficulties, independence in learning, and efforts to achieve goals. From these indicators, it can be seen that students are not easily discouraged from doing the assignments given. If they get good grades, students are only satisfied with their results without wanting to be even better. In line with Syahniar's research, Erlamsah and Solina [17] state that if students are not diligent in facing tasks, they will be constrained in achieving their achievements and vice versa. To reach achievement, in addition to being diligent and resilient in facing assignments, students must also be diligent in learning.

However, from the results of the analysis carried out, it appears that there is still a lack of students working independently. Students do not have the habit of learning independently because they never study at home. Yeni states that data from questionnaire answers shown to students regarding their study habits showed that most students did not have independent study habits because they never repeated the lessons delivered by the teacher [18]. Students will study independently when there will be a test or exam.

Aspect 2, the existence of encouragement and needs in learning, the average percentage is 68.61% with high criteria. The indicators used in aspect 2 are curiosity and interest in learning. In this indicator, it can be seen that students' curiosity and interest in learning are in the high category. This can be seen from the students' efforts to explore their information about the subject matter to be learned. About the subject matter to be studied. In line with Herlina, Habibah and Mualimin's research, interest influences student learning activities. Therefore, teachers must generate student learning motivation [19]. The existence of high motivation in students will make them try to obtain high learning achievements. To increase students' interest in learning, teachers must try to make learning more interesting by linking subject matter with things that students like. According to research conducted by Muldayanti [20], a person's interest will arise if there are activities that he likes. With high student interest, it is expected to increase the level of mastery of concepts in learning mathematics.

Aspect 3, persistence in trying, has an average percentage of 72.56 with high criteria. The

indicators used in aspect 3 are courage in facing failure, the ability to recover from failure, and persistence in trying if the first attempt fails. From the answers to the questionnaire given, it is known that students are not afraid to face failure in doing assignments, but if they get criticised by friends for what they have done, they will feel discouraged and not try to correct their mistakes. Some students also do not do the assignments given by the teacher because they often fail to do them. In dealing with situations like this, teachers must create strategies and methods to raise student confidence. Meanwhile, Alfianis [21] states that teachers do not have to stick to using one method in teaching and learning activities. Still, teachers should use various strategies so that the course of teaching is not boring but attracts students' attention so that students are encouraged to learn.

In aspect 4, the average percentage of learning media utilisation is 67.27 with high criteria. The indicators used in aspect 4 are the use of learning media in teaching, students' attitudes towards the use of media, and the benefits of using media. From the students' questionnaire answers, it can be seen that students are very happy to learn by using learning media. However, if the media used by the teacher does not vary, students will get bored again when participating in learning. Students are happier to learn if the teacher uses IT-based learning media. In line with research conducted by Wahyuni, Andani, Afriyani, and Andini [22], students are very motivated to learn using learning media and more easily understand the material taught by the teacher. According to Sudjana and Rifai [23], using media during learning can make the learning material a clearer meaning so students can understand it. In addition, learning media can make the learning process more exciting and prevent students from quickly becoming bored. It can increase student learning motivation and make students more active in learning.

This study reveals significant variations in mathematics learning motivation among students, which is critical information for educators. To address this diversity, educators are encouraged to adopt a variety of teaching methods. Techniques such as integrating technology and educational games might particularly appeal to students who exhibit lower levels of motivation. Additionally, interactive methods like problem-solving activities and collaborative projects could cater to a range of motivational levels, thereby enhancing student engagement across the board.

Furthermore, teachers must provide consistent emotional support and praise to students, particularly those with lower motivation. Emphasizing praise for effort and progress rather than just outcomes can foster a growth mindset and encourage intrinsic motivation. This approach helps students develop resilience and a positive attitude towards challenging tasks.

Educators can also enhance motivation by fostering a sense of inquiry and discovery in their teaching methods. Allowing students to explore mathematical concepts through group projects or independent research makes learning more relevant and engaging. This method stimulates students' natural curiosity and helps them understand the practical applications of mathematics.

Lastly, recognizing and acknowledging each student's progress is vital for sustaining and increasing motivation. Teachers should provide constructive and personalized feedback, showing appreciation for each student's efforts and achievements. This recognition helps maintain student interest and encourages continued engagement in learning activities.

By incorporating these strategies into their teaching practices, educators can significantly improve the effectiveness of their instruction and the motivational levels of their students in mathematics. This tailored approach ensures that all students, regardless of their initial motivation level, have the opportunity to succeed and develop a positive relationship with mathematics.

CONCLUSIONS AND SUGGESTIONS

One of the most important factors in encouraging student participation in learning is learning motivation. It enables students to participate fully in their learning, achieve their learning goals, and achieve optimal results. Lack of learning motivation can have a negative impact on the students themselves.

Based on the results of the study, it can be concluded that the learning motivation of students in class XII Religion 2 MA Darul Hikmah Pekanbaru in mathematics subjects has three levels, namely a high level of learning motivation as many as four people (22%), a moderate level of motivation of 5 people (28%), and a low level of motivation of 9 people (50%). In analysing the aspects of the questionnaire, an average of 70.67% was obtained with high criteria. Although the average obtained is high, teachers are expected to encourage student motivation and build student confidence in learning mathematics so that students can gain more motivation in themselves in learning mathematics learning, and students can get maximum learning outcomes.

Building upon the findings of this study, future research should explore several key areas to further our understanding of learning motivation in mathematics. One area involves conducting longitudinal studies to track changes in motivation over time, particularly through critical academic periods such as the transition from middle to high school. This would help identify long-term trends and the effectiveness of different motivational strategies over sustained periods.

Additionally, replicating this study in different educational settings, such as in urban versus rural schools, could provide insights into the environmental or cultural factors that influence student motivation. Comparing these contexts may reveal unique challenges and opportunities for enhancing motivation that are specific to different types of school environments.

Further research could also investigate the impact of specific teacher interventions designed to increase student motivation. Experiments involving innovative teaching methods, such as gamified learning environments or project-based learning, could be particularly insightful. These studies should aim to quantify the effect of such interventions on motivation levels and academic performance in mathematics.

Moreover, exploring the interaction between student motivation and other educational outcomes, such as anxiety, engagement, and overall academic achievement, could provide a more holistic view of the student learning experience. Understanding these relationships is crucial for designing effective educational strategies that promote not only motivation but also broader educational success.

Lastly, qualitative studies that delve into the personal experiences and perceptions of students regarding their motivation could complement the quantitative findings of this study. Such research would offer deeper insights into the reasons behind varying levels of motivation and help identify potential psychological or social barriers to student engagement.

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BIOGRAPHY

Aqilla Cahyani
Aqilla Cahyani is currently studying in the Mathematics Education Program at Universitas Riau. Email: aqilla.cahyani6355@student.unri.ac.id

Shalsabilia
Shalsabilia is currently studying in the Mathematics Education Program at Universitas Riau. Email: shalsabilia0447@student.unri.ac.id

Jelia Novita
Mathematics teacher in MA Darul Hikmah Pekanbaru.