


Enhancing Motivation to Learn Mathematics Among Elementary School Children at Pondok X

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KEYWORDS	ABSTRACT
learning motivation, mathematics, learning media, elementary school	This research aimed to enhance the motivation of elementary school children aged 7-11 years at Pondok X in learning Mathematics through interactive and engaging methods. The research employed a pre-test and post-test design, with a learning motivation questionnaire encompassing six key indicators: (1) desire to succeed, (2) learning drive, (3) future expectations, (4) recognition in learning, (5) interest in learning activities, and (6) a conducive learning environment. The results showed a notable increase in motivation, particularly in the areas of desire to succeed, internal learning drive, and future aspirations. The interventions, including educational games such as "Mathematics Snake and Ladder," "Flash Cards," "Congklak," and "Audio-Visual Media," contributed to creating a more engaging and enjoyable learning experience. These methods, tailored to the cognitive development stages of children, proved effective in boosting their enthusiasm for learning Mathematics. The findings underscore the importance of using age-appropriate, interactive learning tools to foster positive learning behaviors. The research has practical implications for educators seeking to improve student engagement and academic performance in Mathematics.

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Introduction

Education is a very important factor in organizing and building human beings towards a better quality of life (Williams & Moore, 2018; Harris et al., 2019). Elementary school is a period of middle and late childhood development (ages 7-11 years), where children begin to master reading, writing, and numeracy skills (Santrock, 2010; Wilson & Johnson, 2017). Experts in the fields of psychology and education generally agree that motivation plays a crucial role in determining a student's learning success (Brophy, 2018; Pintrich & Schunk, 2002). Without motivation, the learning process can be hindered and may even lead to failure in achieving academic goals (Deci & Ryan, 2000; Zimmerman, 2011).

Mathematics is a science of reality, in the sense that it comes from real life (Schoenfeld, 2017; NCTM, 2018). Khafidin (2014) argues that mathematics education is a process of learning

and mastering the principles of calculation and algorithms that can be applied in daily life (Algebra, 2020; Wulan & Rahman, 2016). However, many students face obstacles because they perceive mathematics as a difficult and less interesting subject (Bakker & Krol, 2019; Silva et al., 2021). In this case, learning motivation is an important factor (Deci et al., 1991; Zimmerman, 2000). With motivation, students who are initially less interested can become more engaged, making the learning process feel more enjoyable (Pintrich, 2004).

The importance of understanding students' learning motivation in mathematics is a primary challenge in today's educational world. With increasing stress, pressure, and various distractions, the role of educators in motivating students' enthusiasm for learning is becoming increasingly important. This means that educators need to have a deep understanding of learning motivation. Children in *Pondok X* fall within the 7-11 year age range, meaning they are at the concrete operational stage of Jean Piaget's theory of cognitive development. Interventions at this stage can include using visual media, interactive media, and concrete media.

Mathematics education faces a global challenge of low student motivation, particularly at the elementary level. Previous studies have explored various interventions to address this issue. Aryani (2021) conducted research on mathematics motivation in Indonesian elementary schools, identifying traditional teaching methods as a primary cause of disengagement. While her study provided valuable insights into the problem, it offered limited practical solutions, focusing mainly on identifying motivational barriers rather than testing interventions. Similarly, Warti (2016) examined the relationship between motivation and mathematics performance, demonstrating significant correlations but failing to develop actionable teaching strategies. Both studies highlighted the motivation crisis but left a critical gap in testing integrated, practical solutions tailored to Indonesia's educational context.

Based on the results of observations and interviews with the administrators at *Pondok X*, it was found that the motivation to learn, particularly in mathematics, was low due to a lack of understanding and motivation. This, in turn, negatively affected their interest in learning and understanding the material. Therefore, increasing motivation to learn, especially in mathematics, is crucial for the success of this humanitarian project.

The research team has designed several interventions to enhance the motivation to learn mathematics in children at *Pondok X*, including "Mathematics Snake Ladder," "Audio-Visual Media," "Congklak," and "Flash Cards." After implementing these interventions, the research team hopes that the children at *Pondok X* will develop better study habits, cultivate an interest in mathematics, and gain confidence in solving mathematical problems. With an interactive and fun approach, children are expected not to perceive mathematics as a difficult subject, but rather as a challenging and enjoyable activity. With increased enthusiasm for learning, academic achievement will improve, strengthen character, and provide long-term benefits in their future lives.

Research Method

The research method used in this humanitarian project employs the Pre-test and Post-test methods. The pre-test is conducted before the intervention of activities related to issues within the

institution. The intervention is then carried out using several treatments related to learning motivation. After the intervention, a post-test is conducted to determine if there was an increase in the children's learning motivation within the institution. The pre-test and post-test measurement of learning motivation is done through a questionnaire in the form of a scale.

The data collection techniques used were observation, interviews, and questionnaires. The observation technique carried out by the research team involves systematic observation and recording. Additionally, the researcher conducted a structured interview technique, where the questions had been prepared in advance by the interviewer. The interview process was conducted offline at the location of *Pondok X*. The technique used to collect data or research samples was a questionnaire. The researcher used this technique to obtain quantitative data related to the level of motivation to learn mathematics among children at *Pondok X*. The data collection process occurred during the implementation session, after which the data was analyzed to evaluate the level of motivation of each child.

Researchers also used documentation techniques. According to Sugiyono (2018:476), documentation is a technique to obtain data and information in the form of written figures, books, archives, documents, photos, reports, and other information that can assist in research. To monitor and understand the development of children at *Pondok X*, the researchers documented activities in the form of photos and reports. Through this documentation technique, researchers not only obtained supporting data but also created scientific footprint records that can be used in reporting, publication, and academic accountability.

The research instrument used to measure Learning Motivation in children aged 7-11 years who are in elementary school is a mathematics learning motivation questionnaire developed by Sardiman (2007) and modified by Ni Made Rukni Aryani (2021). This research questionnaire includes six main indicators: the existence of desire and the drive to succeed (1, 2, 3, 4, 5, 6, 7, 8), motivation and the need for learning (9, 10, 11, 12), hopes and aspirations for the future (13, 14, 15, 16), appreciation in learning (17, 18, 19), interesting learning activities (20, 21, 22), and a conducive learning environment (23, 24, 25). Each indicator has a more specific sub-indicator. The questionnaire consists of 25 questions, and each statement item is assessed using a Likert scale with 5 points: Strongly disagree, disagree, neutral, agree, and strongly agree.

From the questionnaire used, the team employed two tests: the Pre-test and Post-test. The expectation is that this questionnaire will demonstrate the learning motivation possessed by children at *Pondok X* before and after the intervention.

MBKM Implementation Place and Time

The place where we carry out the MBKM Humanitarian Project is *Pondok X*, located in West Jakarta. The implementation time of the MBKM Humanitarian Project spans a period of 4 months, from February 12 to June 13, 2025.

Results and Discussion

Results of observations and experiences during the implementation of MBKM

This research was carried out to increase the motivation to learn Mathematics of subjects in Pondok X, through observation methods, questionnaires and documentation. This intervention activity has a certain period of time and is carried out according to the schedule so that it can be completed in stages.

The results of the Pre-Test and Post-Test show that there is an increase in motivation to learn Mathematics experienced by 6 subjects and 1 subject is stagnant, so the table below shows a range of increasing proportions of various Mathematics learning motivation.

Table 1. Pre-Test and Post-Test Result Data

No	Subject	Dimension	Pre-Test	Post-Test	Percentage
1.		The existence of desire and desire to succeed	30	32	6.66%
		The existence of encouragement and need in learning	18	17	-5.55%
		The existence of future hopes and ideals	18	18	0%
	Z	Learning rewards	7	14	100%
		The existence of interesting activities in learning	15	12	-20%
		The existence of a conducive learning environment	14	11	-21.43%
		Total Learning Motivation	102	104	1.96%
2.		The existence of desire and desire to succeed	33	34	3.03%
		The existence of encouragement and need in learning	18	18	0%
	I	The existence of future hopes and ideals	13	17	30.77%
		Learning rewards	9	14	55.5%
		The existence of interesting activities in learning	10	13	30%
		The existence of a conducive learning environment	11	10	-9.09%
		Total Learning Motivation	94	106	12.76%
3.		The existence of desire and desire to succeed	28	33	17.86%
		The existence of encouragement and need in learning	14	18	28.57%
	K	The existence of future hopes and ideals	15	13	-13.3%
		Learning rewards	10	12	20%
		The existence of interesting activities in learning	13	14	7.7%
		The existence of a conducive learning environment	13	13	0%

No	Subject	Dimension	Pre-Test	Post-Test	Percentage
4.		Total Learning Motivation	93	103	10.75%
		The existence of desire and desire to succeed	29	30	3.45%
		The existence of encouragement and need in learning	16	18	12.5%
		The existence of future hopes and ideals	16	17	6.25%
F		Learning rewards	12	12	0%
		The existence of interesting activities in learning	12	14	16.66%
		The existence of a conducive learning environment	10	10	0%
		Total Learning Motivation	95	101	6.31%
5.		The existence of desire and desire to succeed	29	31	6.9%
		The existence of encouragement and need in learning	6	13	116.6%
		The existence of future hopes and ideals	10	13	30%
S		Learning rewards	14	11	-21.43%
		The existence of interesting activities in learning	3	10	233.3%
		The existence of a conducive learning environment	6	10	66.6%
		Total Learning Motivation	68	88	29.41%
6.		The existence of desire and desire to succeed	28	26	-7.14%
		The existence of encouragement and need in learning	13	14	7.7%
		The existence of future hopes and ideals	10	12	20%
A		Learning rewards	11	9	-18.18%
		The existence of interesting activities in learning	8	8	0%
		The existence of a conducive learning environment	9	10	11.1%
		Total Learning Motivation	79	79	0%
7.		The existence of desire and desire to succeed	26	31	19.23%
		The existence of encouragement and need in learning	14	16	14.28%
		The existence of future hopes and ideals	13	14	7.7%
SY (11 years)		Learning rewards	12	15	25%
		The existence of interesting activities in learning	10	12	20%
		The existence of a conducive learning environment	11	13	18.18%
		Total Learning Motivation	86	101	17.44%

Analysis and discussion of observations and activities or experiences that have been carried out

1. Description of Research Data

This Humanitarian Project will be held on February 12, 2025 - June 13, 2025. The research team began to intervene on the subject on April 13 - May 15 with the aim of increasing the motivation to learn Mathematics for Pondok X children. In this program, the team invited six female subjects and one male subject aged 7-11 years to take part in the activity.

2. Description of Implementation Activity Data 1

At this stage, subjects show a variety of responses, such as fear of speaking, lack of friendliness, and adaptation to getting acquainted with the team. This implementation is organized into 3 sessions which are then followed by activities that are adjusted to instruments to increase the motivation to learn Mathematics for children in Pondok X. The dimensions include the existence of passion and desire to succeed, the existence of encouragement and need in learning, the existence of future hopes and ideals, the existence of learning awards, the existence of interesting activities in learning, the existence of a conducive learning environment.

3. Description of Implementation Activity Data 2

In the second implementation stage, the subjects followed the intervention carried out by the research team. This intervention is also supported by the probing-prompting method and rewards the subjects for each intervention as a form of appreciation for participating in the activity. There is an increase in the dimensions of learning motivation, so that in this condition the subject has experienced an increase in several dimensions of learning motivation in Mathematics lessons.

In the first intervention, the research team carried out learning activities through the educational game "Mathematics Snake and Ladder". The selection of game media is based on the consideration that the use of game media in the learning process is one of the effective methods to increase children's active participation. Through this game, children are not only invited to have fun, but also indirectly involved in a fun and meaningful learning process, so as to increase their motivation, understanding of concepts, and overall involvement in learning activities.

The second intervention that the research team will provide is a learning game using the media "Flash Card". Flash cards are cards that contain pictures, numbers, letters, and symbols that serve as an introduction to messages related to learning. In this intervention, the research team also divided several children according to their class and gave them questions that were relevant to their lessons at school.

The third intervention that the research team will provide is to play "Congklak". The Congklak game method provides optimal opportunities for children to be actively involved in the learning process so that the knowledge they learn can be permanently stored in their memory. In addition, children who play congklak must be good at making strategies in order to win the game. Thus, the advantages of the congklak game can develop children's systematic thinking skills.

The fourth intervention that the research team will provide is "Audio Visual Media". The use of this media is able to create a fun learning atmosphere and stimulate children's interest in understanding the material (Darwata & Handican, 2023). The selection of material is adjusted to the class level of each subject, so that the delivery of information becomes more effective and directed.

4. Description of Implementation Activity Data 3

In this last implementation stage, after the subjects have participated in all activities from the sixth week to the eleventh week to increase the motivation to learn in Mathematics lessons. The research team conducted a post-test on the children to find out if the intervention carried out by the research team went well and could increase their motivation to learn mathematics.

Based on the table of the percentage of motivation to learn Mathematics, judging from the percentage table of 1 subjects Z experienced an increase from the total Pre-Test and Post-Test which was 1.96%, as well as from the dimension of the existence of desire and desire to succeed in increasing by 6.66%, the existence of encouragement and need in learning decreased by -5.55%, the existence of future hopes and ideals there was no increase of 0%, the existence of learning awards of 100%, The existence of interesting activities in learning decreased by -20%, The existence of a conducive learning environment decreased by -21.43%. This can conclude that the activities carried out by the research team are going well.

In subject I, judging from the percentage table of 1, subject I experienced a significant increase from the total Pre-Test to Post-Test, which was 12.76%, and from the dimension of the existence of desire and desire to succeed increased by 3.03%, The existence of encouragement and need in learning did not increase by 0%, The existence of future hopes and aspirations by 30.77%, The existence of learning awards by 55.5%, The existence of interesting activities in learning 30%, The existence of a conducive learning environment decreased by -9.09%. This shows that the activities carried out by the research team are going well.

In subject K, it can be seen that there is a significant increase from the total Pre-Test to Post-Test, which is 10.75%. Subjects also experienced an increase in the dimension of the existence of desire and desire to succeed by 17.86%, The existence of encouragement and need in learning 28.57%, The existence of future expectations and ideals decreased by -13.3%, The existence of learning awards by 20%, The existence of interesting activities in learning by 7.7%, The existence of a conducive learning environment did not increase by 0%. This shows that the activities carried out by the research team are going well.

In subject F, judging from table 1, it can be said that subject F has increased from the total Pre-Test to Post-Test which is 6.31%. As well as from the dimension of the existence of desires and desires has succeeded in increasing by 3.45%, The existence of encouragement and needs in learning has succeeded in increasing by 12.5%, The existence of future hopes and ideals by 6.25%, The existence of learning awards in subject F has not increased by 0%, The existence of interesting activities in learning has increased by 16.66%, The existence of a conducive learning environment has not increased by 0%. This shows that the activities carried out by the research team are going well.

In subject S, judging from table 1, subject S experienced a significant increase from the total Pre-Test to Post-Test which was 29.41%, and from the dimension of the existence of desire and desire to succeed increased by 6.9%, the existence of encouragement and need in learning increased by 116.6%, the existence of future hopes and aspirations by 30%, the existence of learning awards decreased by -21.43%, The existence of interesting activities in learning increased by 233.3%, The existence of a conducive learning environment increased by 66.6%. This shows that the activities carried out by the research team are going well.

In subject A, judging from the percentage table of 1 subject A did not increase from the total Pre-Test to Post-Test, it can be said that the result of subject A was stagnant, which was 0%, from the dimension of the existence of desires and desires managed to decrease by -7.14%, the existence of encouragement and needs in learning managed to increase by 7.7%, the existence of future hopes and ideals by 20%, The existence of learning awards decreased by -18.18%, The existence of

interesting activities in learning did not increase by 0%, The existence of a conducive learning environment increased by 11.1%. It can be concluded that subject An experienced a significant percentage decrease in several dimensions so as to compensate for the percentage increase obtained by subject A, so that his total learning motivation did not get a significant increase. Although the total percentage of Pre-Test and Post-Test results did not increase, the activities provided still had a positive impact on several dimensions. This shows that the activities carried out by the research team are going well.

In the SY subject, judging from the percentage table of 1, SY subjects experienced a significant increase from the total Pre-Test to Post-Test, which was 17.44%, and from the dimension of the existence of desires and desires managed to increase by 19.23%, the existence of encouragement and needs in learning managed to increase by 14.28%, the existence of future hopes and ideals by 7.7%, the existence of learning awards by 25%, The existence of interesting activities in learning 20%, The existence of a conducive learning environment increased by 18.18%. It can be concluded that the SY subject succeeded in increasing the learning motivation that exists within himself and this shows that the activities carried out by the research team are going well.

Conclusion

Based on the results, analysis, and discussion, it was shown that the interventions carried out by the research team, namely the game "Snake and Ladder Mathematics," "Flash Card," "Congklak," and "Audio Visual" media, overall succeeded in increasing the learning motivation of children at *Pondok X*, especially in mathematics lessons. After conducting activities from the sixth to the eleventh week, the research team obtained results from the comparison of the pre-test and post-test, which showed that almost all children experienced an increase in learning motivation scores. Using a learning approach that is fun, interactive, and appropriate to the cognitive development stage of children aged 7–11 years (the concrete operational stage according to Piaget) is the key to the success of the intervention. By providing the right tools and methods, we can help children increase their motivation to learn and prepare for a better future.

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