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Analysis of the Increase in Efficacy and Motivation to Learn Mathematics towards the Use of Interactive Learning Model in Elementary School

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ABSTRACT

Learning mathematics is very important as a guide in problem solving, logical reasoning in everyday life. In increasing the desire of students in the field of mathematics, which in most students' views is learning that is difficult to understand and scary. so that an innovation is needed along with the times of science and technology in the form of using interactive learning models with the help of media according to the existing material. the use of interactive learning models can foster self-efficacy and motivation in students so that they are able to implement mathematics in solving problems in everyday life.

Keywords: Mathematics, Self-efficacy, Learning Motivation, Interactive Learning Model

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1. INTRODUCTION

Learning is a process that involves many affective elements, including attitudes, values, interests, appreciation, and social emotional adjustment (Dimyati et al., 2002: 18). Mathematics is considered a boring and daunting subject due to a lack of understanding of the importance of the subject (Lasut et al., 2022; Masril et al., 2020; Zagoto, 2018). As a result, math becomes a very subjective component and is no longer systematic and objective. This causes students to not have a high desire to learn mathematics and have a negative attitude towards automatic math lessons. Learning mathematics is essential to teach students the skills of quantitative analysis, logical reasoning, and problem solving. This is very important in today's era of globalization.

According to Arifin and Mahmud (2022), students get the greatest benefit from learning mathematics when they can implement the knowledge they have gained in their personal and professional contexts. During the learning process, early exposure to mathematics promotes children's self-efficacy and motivation, especially in the process of learning mathematics. This can improve attitudes and abilities in everyday life and in the classroom.

Most students see math as a scary and difficult subject to understand. They experience tension during the learning process in the classroom, which inhibits many learners from asking questions, expressing opinions, or actively participating in the learning process. Learners dislike math lessons due to high anxiety. As a result, their understanding of math decreases. According to Jbeili (2003), mistakes in understanding math can lead to missed opportunities or even being unable to complete other daily tasks. Learning seems boring, which causes learners to choose to remain silent while taking notes and listening. Not only the low efficiency of the learning process, but also students' low desire to learn shows the impact of the above learning process. To achieve this, the learning environment should provide a sense of comfort for students. Students may be more motivated to learn in this comfortable environment. This may improve their learning outcomes and improve their attitude towards mathematics (Anomeisa & Ernaningsih, 2020; Dakhi, 2022; Sarumaha et al., 2018; Zulhelmi & Mahidin, 2017).

To achieve educational goals and achieve desired learning outcomes, the development of self-efficacy and learning motivation is essential. In the book Self-Efficacy, Bandura (1994) and Friedman & Schustack (2008) define self-efficacy as the ability each student has to solve problems and achieve set learning goals.

Self-efficacy is a basic belief in learning as it affects what will be learned in the future. Primary school is the place where learning begins to enable students to continue to the next level hence the admission

of new students in schools and education is an important part of human history always needed in every stage of civilization (Ramadhini & Kowiyah, 2022).

Motivation to learn can be defined as an internal drive that encourages a person to actively participate in learning activities (Ormrod, 2009). There are two types of motivation to learn: intrinsic motivation and extrinsic motivation. Intrinsic motivation is motivation that comes from within a person, such as curiosity. While extrinsic motivation comes from outside, such as praise, appreciation, or gifts from others. (2018) Motivation is one of several important components that help achieve learning goals. To improve learning effectiveness and increase student motivation, teachers must be able to develop the latest innovations.

To improve the learning process, teachers can use various types of media to help the learning process to be more optimal. Learning media can also help reduce boredom in learning. Technology-based media is commonly used in mathematics learning. Educators can do many things by creating interactive learning models in the learning process. Both the model and the learning media used can be adjusted to the needs and teaching materials, especially in the process of learning mathematics.

Self-efficacy and self-motivation are two concepts that are interrelated and very important in determining a person's behavior and achievements, especially in the context of education and self-development. Self-efficacy** refers to a person's belief in their ability to succeed at a task or achieve a goal. These beliefs influence how hard a person will try, how they face challenges, and how they persevere in the face of adversity. The higher a person's self-efficacy, the more likely they are to succeed because they are more motivated to act and have more confidence in their abilities. Self-motivation** is an internal drive that encourages a person to act and achieve goals. This motivation can be intrinsic, where a person is motivated by personal satisfaction or interest, or extrinsic, where the drive comes from external rewards such as praise, awards, or grades.These two concepts are very important in the learning process. Individuals with high self-efficacy and strong self-motivation tend to be more persistent in pursuing their goals, more resistant to failure, and better prepared to learn from their experiences. Therefore, developing positive self-efficacy and strong self-motivation is very important to achieve success in various areas of life.

2. RESEARCH METHOD

The researcher used a descriptive-analytical qualitative approach in the research to be conducted. Sandelowski (2000) asserts that this method allows researchers to maintain fidelity to the data while facilitating more nuanced interpretation and analysis. In descriptive qualitative research, the researcher can focus on the description of events while emphasizing data analysis to reveal the meaning that lies beneath the surface. Therefore, the researcher plans to go directly to the field to collect factual data through interviews and observations, with the aim of developing hypotheses or conclusions based on the evidence obtained.The population of this study consisted of 48 children from class IV A and IV B at SD N 1 Bumi Waras representing class IV.Data collection techniques and instrusmen;data collection technique this research carries out data collection techniques through interviews, direct observation in the field, and photo and video recordings. The interviewees were the guardians of class IV A and IV B and the students of class IV of SDN 1 Bumi Waras.

Data collection instruments the data collection instruments used in this study used qualitative methods, where the researcher acts as the main instrument. The researcher's responsibilities include determining the research focus, identifying sources of information, collecting data, evaluating data quality, analyzing data, interpreting findings, and drawing conclusions from the overall research process.

3. RESULTS AND DISCUSSION

In the process of collecting research data, the researcher conducted several stages as follows;planning and determining a problem that will be studied by researchers;preparing the focus of research problems and methods that will be used in research;making instrusment data for the data collection process to the object to be studied;the researcher then conducted field observations to see the problem directly in the field, after previously requesting permission from the object of research, namely SD N 1 Bumi Waras;collecting research data in the field.

Based on the results of field observations conducted by researchers by taking sample data through the interview process using analytical descriptive qualitative methods, the data on mathematics learning outcomes on efficacy and motivation in students towards the use of interactive learning models are as follows.

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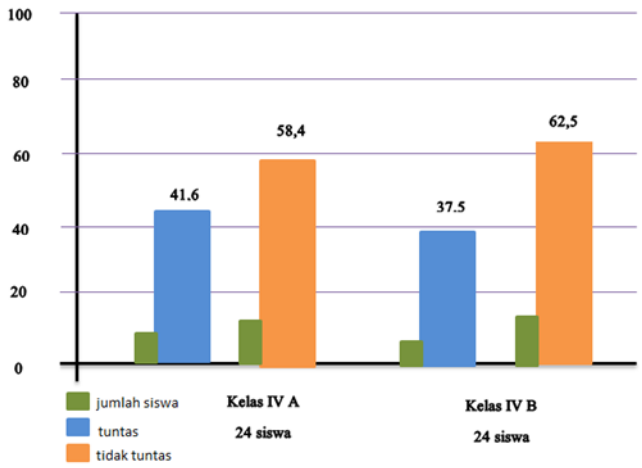


Fig 1.
Grade IV Mathematics Learning Exam Score

Table 1.
Grade IV Mathematics Learning Exam Score

Class	Total Participants Learners	Completeness			
		Completed ≥ 70		not complete ≤ 70	
		figures	presentation	figures	presentation
IV A	24	10	41,6%	14	58,4%
IV B	24	9	37,5%	15	62,5%
Amount	**48**	**19**	**39,5%**	**29**	**60,5%**

Source: documentation of initial observations of class IV SD Negeri 1 Bumi Waras school year 2024/2025

Based on the table above, it can be observed that a less innovative learning model has an impact on the efficacy and motivation of students to learn mathematics so that low and unachieved learning outcomes in accordance with learning objectives. Based on data obtained from the source of the data population, namely educators in learning mathematics, students have difficulty in basic mathematics so that if students have not been able to master the basis of mathematics, for a more in-depth learning process it will be more difficult for students to understand, so with this it is important to increase efficacy and motivation in students,According to educators, there are several things that can be done in increasing efficacy and motivation such as, according to class IV A educators by making fun learning such as models, games, interesting media so that students are motivated and interested in learning materials and according to class IV B educators with interesting learning and providing motivation by telling stories that can foster students' interest in learning so that learning outcomes will increase.Efforts made by educators in this case such as several ways made by educators so that students are active, modified learning models and innovations using media that are in accordance with learning materials. Meanwhile, according to data statements from students in learning mathematics, students are happy with basic arithmetic operations and are less interested in other mathematics material in fostering motivation and solving problems in learning mathematics they can study with friends, ask the teacher and at least study alone in solving them, students like game-based learning and video quizzes, while the statements of students vidoe stories and explanations and explanations on the blackboard seem boring. So the importance of using interactive learning methods in fostering efficacy and motivation in students, especially in learning mathematics.

Based on the observations of the researchers, it can be said that through the activities of learning model innovations in line with the development of science and technology carried out by educators in the form of using interactive learning models in accordance with the independent curriculum, it has a stimulating impact on increasing the self-efficacy and learning motivation of students in the learning process, especially in learning mathematics, which in general is a difficult and stressful learning.

This can be proven by the increasing enthusiasm of students in learning mathematics based on interactive learning models assisted by game media, in this case indirectly fostering, familiarizing self-efficacy and motivation in each student.

4. CONCLUSION

The results and discussion show that self-efficacy and motivation greatly influence the learning process. Students who have higher levels of self-efficacy and motivation can obtain better learning outcomes, especially in mathematics, which is generally a difficult and stressful subject.

One of the steps that can be taken to foster efficiency and motivation is fun learning, fun learning is created from interactive learning models with the help of media, so it takes awareness in educators to be able to create a fun and exciting class, especially in learning math.

Based on the above, the researcher can conclude that the use of interactive learning models in mathematics learning can increase stimulate the ability of self- efficacy and motivation in students.

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