ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jul455

Teacher Self-Efficacy and Learner Motivation: Their Relationships to Mathematics Achievement of Students

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Publication Date: 2025/07/16

Abstract: This study examined the teacher self-efficacy and learner motivation to their relationships to athematics achievement of students. A survey was conducted to a sample of 15 Mathematics six teachers and 100 Grade six students from Loreto South District of Loreto Agusan del Sur. The results showed the Teacher Self-Efficacy of efficacy of student engagement, efficacy in instructional strategies, efficacy of classroom management were evaluated 3.8 with descriptive equivalent of highly relevant. Further, the result of the level of Learners Motivation as measured by Intrinsic, Extrinsic, and Procrastination were evaluated 3.0 with descriptive equivalent of quite relevant. The result also revealed that there was no significant relationship between teacher self-efficacy and learner motivation: their relationships to mathematics achievement of students. From the results of study, it was recommended that the teacher should receive targeted training on engaging hard-to-reach students and building strong school-family partnerships. This will enhance their already strong self-efficacy and improve overall student engagement in mathematics. Professional development might focus on differentiated instruction, diverse assessment strategies, and educational technology integration. These areas will strengthen teachers' instructional practices and support varied learner needs in math.

Keywords: *Elementary Education, Classroom Management, Descriptive Correlational Study, Extrinsic Motivation, Intrinsic Motivation, Instructional Strategies, Learner Motivation and Student Engagement.*

How to Cite: Lorelie C. Calib-Og[1]; Roel P. Villocino, Ed. D (2025). Teacher Self-Efficacy and Learner Motivation: Their Relationships to Mathematics Achievement of Students. *International Journal of Innovative Science and Research Technology*, 10(7), 863-880. https://doi.org/10.38124/ijisrt/25jul455

I. INTRODUCTION

Students' difficulty in learning Mathematics is one of the major problems faced by educators across different grade levels, and it is crucial to consider that this could be influenced by several factors such as teachers' self-efficacy and learners' motivation. Teachers also play a very significant role in fostering students' motivation. Teacher self-efficacy and learner motivation have a significant impact on students' mathematical success. A pleasant classroom atmosphere is created when a teacher has faith in their abilities to instruct, which increases student confidence and engagement. Students' intrinsic motivation is increased in this encouraging environment, which is essential for taking on difficult subjects like arithmetic. Math achievement is strongly impacted when teachers feel competent because they encourage students to be motivated, resilient, and curious. The researcher wanted to examine this dynamic relationship to clarify how improving student motivation and teacher efficacy can greatly improve math academic results.

International studies consistently highlight the direct impact of teacher self-efficacy on mathematics achievement. Teachers with high self-efficacy tend to implement more innovative teaching strategies, which positively influence student motivation and, consequently, their performance in mathematics (Klassen & Tze, 2019; Zee & Koomen, 2020). For example, in high-performing countries like Singapore, teacher professional development programs have successfully enhanced teacher efficacy, leading to improved student engagement and mathematics outcomes (OECD, 2019).

Given the Philippines' most recent results in the 2022 Programme for International Student Assessment (PISA), the relationship between learner motivation, teacher self-efficacy, and students' mathematical proficiency is especially pertinent. According to the survey, only 16% of Filipino pupils achieved a baseline competency level in mathematics, which is much lower than the OECD average of 69%. Given the lack of progress since the Philippines' initial PISA participation in 2018, it is possible that learner motivation and instructor efficacy would be crucial in resolving this problem.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jul455

According to research, educators who possess a high level of self-efficacy confidence in their ability to teach are better able to engage and motivate their pupils, which may have an impact on their academic performance. Furthermore, motivated students are more likely to work hard to become proficient in mathematics. Improving Filipino kids' mathematics proficiency in upcoming tests may depend on addressing these factors. Research indicates that both low teacher self-efficacy and weak learner motivation are key contributors to these poor results (Bernardo et al., 2020; Gumban & Tan, 2020).

Teachers who lack confidence in their ability to teach mathematics may struggle to implement effective strategies that engage students, while unmotivated learners are less likely to persist through the challenges posed by the subject. While previous research has examined the individual impacts of teacher self-efficacy and learner motivation on mathematics achievement, there remains a critical gap in understanding how these factors interact, especially in developing regions like the Philippines. This study aimed to fill this gap by investigating the relationship between teacher self-efficacy and learner motivation in the context of mathematics education. The findings provided valuable insights into how these elements can be leveraged to improve mathematical competencies among Grade 6 learners, particularly in rural and underserved areas in Loreto South District.

II. METHOD

- *Research Design*

The design of the study used was quantitative descriptive-correlational research design. It was appropriate for this study as it allowed for the examination of naturally occurring variables without manipulating them (Creswell, 2017). This approach enabled the researcher to identify the extent to which variations in teacher self-efficacy and learner motivation are related to mathematics achievement, providing empirical insights into how teacher confidence and student motivation contributed to academic success.

This study employed a quantitative descriptive-correlational research design to investigate the relationships between Teacher Self-Efficacy, Learner Motivation, and their relationship with Mathematics Achievement among students at Loreto South District during the 2024-2025 school year. The descriptive aspect of the design used to systematically quantify and describe the levels of teacher self-efficacy and learner motivation (both intrinsic and extrinsic) among the participants, while the correlational component examined the statistical relationships between these variables and mathematics achievement.

- *Rese Research Locale*

This study was conducted at Loreto South District within the Caraga Region specifically in Agusan del Sur. This district was selected due to their geographic locations in a rural setting, which provided a unique opportunity to capture diverse teaching and learning experiences, particularly in the field of mathematics. It provided a variety of activities aimed at fostering students' academic and personal growth. The school strived to raise its students' reading and numeracy rates with a committed faculty and encouraging classroom atmosphere. In order to promote holistic development, it incorporated values education into its curriculum and actively engaged in community and governmental activities to improve educational quality.

Academic success was the main goal of Binucayan Central Elementary School, especially in the areas of reading and math. The school's teachers were committed to creating an atmosphere that encouraged critical thinking and curiosity. The school prepared students to be responsible citizens of their communities by fostering cooperation, respect, and cultural awareness through involvement in educational activities and community events.

In order to give pupils a well-rounded education, Cabuga Elementary School was dedicated to both academic performance and community involvement. To accommodate a range of learning demands, educators combine conventional and contemporary teaching techniques. In addition to encouraging students to participate in local and national events, the school placed a high value on literacy and numeracy abilities. Through a variety of community-oriented activities, students can improve their social and intellectual skills.

Datu Hilad Elementary School offered a curriculum that honored local heritage while encouraging academic success, placing a high value on cultural sensitivity and community involvement. With an emphasis on enhancing students' reading, math, and science abilities, the school encourages extracurricular activities. Its teachers regularly participated in professional development, guaranteeing that students receive modern and efficient teaching techniques that equipped them for advanced learning and active community engagement.

The mission of Don Flaviano Elementary School was to foster both academic success and individual growth in a nurturing setting. The school provided a curriculum that integrated values education with a focus on science, literacy, and numeracy. The school regularly collaborated with the community to offer meaningful experiences that improved social and academic abilities, and teachers work hard to make learning interesting and accessible for all children.

Student welfare and educational excellence were given top priority at Ferdinand Sabud Elementary School. The school's curricula prioritized science, math, and literacy while also emphasizing the development of critical thinking abilities and a love of learning. At Ferdinand Sabud Elementary, extracurricular activities included initiatives that promoted environmental stewardship and community involvement, assisting children in cultivating a healthy feeling of accomplishment and accountability.

Ilang-Ilang Elementary School offered high-quality instruction with an emphasis on values development and academics. The school is well-known for its active participation in neighborhood educational initiatives and for

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jul455

creating a friendly atmosphere that encourages diversity and active learning. Teachers put a lot of effort into helping students develop the fundamentals of reading, writing, and math while also emphasizing environmental awareness and community involvement in their lessons.

Johnson Elementary School prioritized student success in foundational topics like numeracy and language arts while aiming for academic excellence and community involvement. To create a nurturing learning environment, the school collaborated closely with local authorities and parents. Johnson Elementary's extracurricular activities fostered students' exploration of their interests, particularly in fields linked to athletics and the arts, which improved their overall development and sense of belonging.

At Kauswagan Elementary School, community cooperation and excellent academic standards were prioritized. To enhance student learning results, particularly in reading and math, teachers employed creative teaching strategies. The school's activities encouraged students to make constructive contributions to society by helping them developed their leadership abilities and character. Kauswagan Elementary strived to establish a supportive learning environment for all kids' growth and sense of community pride by actively participating in national educational projects.

The goal of Mabuhay Elementary School was to create a stimulating and encouraging learning environment, particularly for basic courses. The school encouraged academic performance while cultivating a culture of accountability and respect. Mabuhay Elementary teachers encouraged pupils to take pride in their education and get involved in the community by making learning interesting and relevant. An essential component of its extracurricular activities was environmental awareness.

Natividad Elementary School was dedicated to both social responsibility and academic excellence. The school incorporated values education with a curriculum that prioritized environmental awareness, numeracy, and literacy. Teachers created a friendly, inclusive atmosphere that accommodated a range of learning requirements. The school's approach placed a strong emphasis on teamwork and community involvement, which helped students grow both academically and personally.

The goal of Pacencia Elementary School was to promote both academic achievement and individual development. The curriculum offered by the school promoted principles like respect and accountability while emphasizing the fundamentals of language arts, science, and arithmetic. Student life is greatly impacted by extracurricular activities, such as community service and the arts, which assist to shape well-rounded people ready for challenges in school and in life.

San Mariano Elementary School served as a central site for the study, known for its varied performance levels in mathematics. This variability allowed for a nuanced exploration of the relationships between teacher self-efficacy, learner motivation, and academic achievement in a real-world educational context. The rural nature of the school enhanced the study's relevance, as it reflected the specific challenges and opportunities faced by educators and students in remote areas. To improve student progress in these crucial areas, San Mariano Elementary School placed a heavy emphasis on literacy and mathematics. The school often took part in initiatives aimed at improving education and supported strong parent-teacher engagement to support student development. San Mariano Elementary aimed to increase student confidence and performance, particularly in difficult areas, through a variety of learning camps and programs.

San Isidro Elementary School contributed to the research by offering insights into the educational practices and outcomes within a different rural community. Its inclusion allowed for a comparative analysis of how local context can impact teaching efficacy and student engagement. Students at San Isidro Elementary School were inspired to strive for both academic achievement and personal development in a cooperative setting. With teachers offering directions that encouraged active learning, the school placed a heavy emphasis on developing students' reading, writing, and math skills. The goal of San Isidro Elementary's values education and community service programs were to develop responsible, well-rounded children who are ready for challenges in the future.

Sta. Teresa Elementary School was renowned for providing a supportive atmosphere that encourages both academic and individual development. To give pupils a well-rounded education, teachers were committed to raising student achievement in math, science, and literacy. The school offered a well-rounded curriculum that fostered students' intellectual and social growth while actively participating in initiatives that encouraged cultural appreciation and environmental care.

Sto. Niño Elementary School, with its own distinct demographic and educational landscape, further enriched the study. This school represented the complexities of rural education in the Caraga Region, where socioeconomic factors may play a significant role in shaping the educational experience.

By incorporating these schools, the study aimed to reflect a broad range of contextual factors that influence educational dynamics in rural settings. This comprehensive approach not only enhanced the reliability of the findings but also contributed to a more holistic understanding of the interplay between teaching practices and student success in mathematics across different rural environments.arch Locale

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III. RESEARCH RESPONDENTS

The study involved Grade six Mathematics teachers and students from Loreto South District. A purposive sampling technique was employed to select participants, ensuring a representative mix of 15 teachers exhibiting diverse levels of self-efficacy in mathematics instruction. This approach allowed for an in-depth exploration of how self-efficacy influenced teaching practices and student outcomes.

There were 327 Grade 6 learners enrolled from Loreto South, stratified random sampling technique was employed based on their grade level, then randomly selected respondents from each group proportionally. The selection of student participants focused on 100 learners which was based on the book Practical Research 2 by Barrot 2017 for correlational research design, demonstrating varying degrees of motivation and competence in mathematics, providing a holistic understanding of the factors that affected student engagement and achievement in the subject. Parental consent was obtained for all participants to ensure ethical compliance, and only those who provided consent were included in the study. This participant pool facilitated a rich collection of experiences, insights, and perspectives.

The conversation went into detail about how participants were recruited. It explained through random selection, or another technique was used to draw the sample and provided justification for the strategy used. A better grasp of the study sample's representativeness and the findings' generalizability resulted from this addition. The study attained higher methodological rigor and increased its reputation in the academic community by resolving these protocol-related concerns.

Table 1 below presents the distribution of respondents.

Table 1 Distribution of the Respondents of the Study

School	Number of Student per Section	Number of Student Random Participants	Number of Teacher Participants
Binucayan Central Elementary School	22	7	1
Cabuga Elementary School	22	7	1
Datu Hilad Elementary School	4	4	1
Don Flaviano I Elementary School	20	6	1
Ferdinand Sabud Elementary School	23	6	1
Ilang-Ilang Elementary School	30	7	1
Johnson Elementary School	20	7	1
Kauswagan Elementary School	27	7	1
Mabuhay Elementary School	11	7	1
Natividad Elementary School	13	7	1
Pacencia Elementary School	35	7	1
San Mariano Elementary School	24	7	1
San Isidro Elementary School	25	7	1
Sta Teresa Elementary School	30	7	1
Sto Niño Elementary School	21	7	1
TOTAL	327	100	15

➢ *Research Instrument*

The research aimed to examine the relationship between Teacher Self-Efficacy, Learner Motivation, and Mathematics Achievement among students at during the school year of 2024-2025. Two distinct research instruments were developed to collect data: one for teachers and one for students. These instruments were designed to explore the constructs of self-efficacy among teachers and motivation among students, linking them to mathematics performance. The questionnaires used Likert scale responses to measure participants' perceptions and experiences, ensuring that the data can be quantitatively analyzed to identify significant trends and correlations. Respondents can select from a variety of categories on a Likert scale, a psychometric tool, to express their thoughts, feelings, or attitudes regarding a given topic. Most commonly, Likert-scale surveys have been utilized in studies of factors that affect individual differences, including self-confidence, motivation, and anxiety (Nemoto & Beglar, 2014).

The first questionnaire focused on measuring Teacher Self-Efficacy in relation to mathematics instruction. It included items that evaluated a teacher's confidence in employing Efficacy in Student Engagement, Efficacy in Instructional Strategies, and Efficacy in Classroom Management for Mathematics instruction. The questions assessed how effectively teachers believed they can teach math, engage struggling learners, maintain classroom discipline, and adapt teaching methods to suit the diverse needs of students. The instrument aimed to capture how these factors influenced students' mathematics achievements, as perceived by the teachers.

The second questionnaire for students was centered on measuring Learner Motivation in mathematics. It distinguished between Intrinsic Motivation, such as the enjoyment and satisfaction derived from learning mathematics, and Extrinsic Motivation, like the desire for high grades and external rewards. The students were asked to evaluate their engagement and attitudes toward math learning, including their efforts to meet external expectations

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jul455

and their internal satisfaction when solving challenging problems. This instrument was crucial for understanding how different motivational drivers impacted students' academic performance in mathematics.

➢ *Validation of Research Instrument*

To ensure validity and reliability, the research instrument underwent a thorough review by a panel of experts in education and research. A pilot test was conducted with 10 teachers from a non-participating school within the same district to identify potential issues related to the clarity, relevance, or structure of the questions. Feedback from the pilot test guided necessary revisions to improve the instrument's clarity and effectiveness. The reliability of the questionnaire was assessed using Cronbach's alpha, aiming for a coefficient of 0.70 or higher to ensure internal consistency across the scales measuring personality traits and teaching performance.

➢ *Data Collection Procedure*

The following steps were undertaken during the data collection process for the study investigating the relationship between Teacher Self-Efficacy, Learner Motivation, and Mathematics Achievement among the students.

- *Ethics Review Approval.*

Before beginning the study, the research proposal was submitted to an ethics review board to ensure that all ethical standards were met, particularly regarding the protection of participants' rights and welfare. Given that the study examines both teacher self-efficacy and student motivation areas sensitive to personal and professional perceptions, ethical considerations were included ensuring confidentiality, securing informed consent, and assessing the potential impacts on participants. The review aimed to guarantee that all responses were handled with confidentiality and that participants felt secured in their involvement.

- *Seeking Permission to Conduct the Study.*

After receiving ethics approval, formal requests for permission to conduct the research were sent to the three elementary school administration, as well as to the relevant district school authorities. These letters specified the study's objective of examining the interplay between teacher self-efficacy, learner motivation, and their correlation to student mathematics achievement. Explicit permission sought to distribute surveys to both teachers and students during the academic year 2024-2025, ensuring transparency and institutional support throughout the process.

- *Distributing Informed Consent Forms.*

Upon approval from the school authorities, informed consent forms were distributed to all participating teachers and students. The forms detailed the purpose of the study, the research methods, potential benefits, and risks, as well as the rights of participants, including the option to withdraw from the study at any time. Specific attention was given to ensuring teachers and students (with parental consent for students) fully understood the role of teacher efficacy and student motivation in the research, with an emphasis on how these factors relate to mathematics performance. Only those who voluntarily consent was included in the study.

- *Validating the Research Instruments.*

The research instruments, specifically designed to measure teacher self-efficacy and learner motivation, underwent a thorough validation process. A panel of educational experts reviewed the questionnaires to ensure they accurately captured the dimensions of self-efficacy (instructional strategies, practices, and preparedness) and student motivation (intrinsic and extrinsic). The instruments were then pilot tested with a small group of teachers and students from a non-participating school to identify any ambiguities or issues. Feedback from this pilot phase was used to refine the instruments for the main study.

- *Administering the Questionnaires.*

Once permissions and consents were secured, the questionnaires were distributed to the teachers and students. The teacher questionnaire measured their self-efficacy in teaching math, while the student questionnaire assessed both their intrinsic and extrinsic motivation toward mathematics. The surveys were administered during scheduled school hours, with the researcher present to provide guidance and ensure the clarity of instructions. This systematic approach was critical to obtaining reliable data on how teacher self-efficacy and student motivation influence math achievement.

- *Statistical Treatment of Data*

The data collected in this study, which investigated the relationships between Teacher Self-Efficacy, Learner Motivation, and Mathematics Achievement during the 2024-2025 academic year, were analyzed using appropriate statistical tools. These tools enabled the interpretation of the relationships between teacher efficacy, student motivation, and academic performance in mathematics. The primary statistical techniques used were as follows:

- *Mean.*

The mean was employed to assess the overall levels of Teacher Self-Efficacy and Learner Motivation among the study's participants. Specifically, this measure was used to evaluate the average responses to questions related to teachers' confidence in instructional strategies, instructional practices, and preparedness. Similarly, it assessed students' intrinsic and extrinsic motivation in mathematics. By calculating the mean scores for each construct, the study gained insights into the general tendencies of both teacher efficacy and learner motivation, which were critical in addressing the study's research questions on how these factors influenced mathematics achievement.

- *Standard Deviation (SD).*

Standard deviation was utilized to measure the variability in responses within the teacher and student populations. For teachers, it helped determine the extent of variation in self-efficacy beliefs across different instructional dimensions, such as their ability to explain complex mathematical concepts or manage diverse learning needs. For students, it evaluated the variability in motivation levels, whether intrinsic or extrinsic, to understand the spread of

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attitudes toward mathematics learning. This measure of dispersion was crucial in determining whether self-efficacy and motivation levels were homogeneously distributed or if there were significant differences across participants, which further illuminated their potential impact on mathematics achievement.

- *Pearson's Correlation Coefficient (Pearson r).*

Pearson's r was used to examine the linear relationships between Teacher Self-Efficacy and Mathematics Achievement, as well as between Learner Motivation and Mathematics Achievement. This correlation analysis determined both the strength and direction (positive or negative) of these associations. For example, the researcher analyzed whether higher levels of teacher self-efficacy correlate with improved student performance in mathematics, and similarly, whether increased student motivation correlates with better academic outcomes. Pearson's r provided critical insights into the extent to which teacher efficacy and learner motivation contributed to academic success in mathematics, answering the study's core research questions about the significance of these relationships.

➢ *Ethical Considerations*

In conducting the study on Teacher Self-Efficacy, Learner Motivation, and their relationship with Mathematics Achievement among the students, the researcher adhered to stringent ethical guidelines to ensure the protection of participants' rights, dignity, and privacy. The following ethical considerations guided the research process to ensure the integrity and social value of the study.

- *Address Ethical-Related and Data Privacy Issues*

It was clear in the publication whether the study was approved by an institutional review committee or an appropriate ethics review board. This approval procedure offered an outside confirmation of the study's ethical integrity and guaranteed that the research complied with accepted ethical norms. The research gained credibility when the approval number or a reference to the approving body was included.

Regarding data privacy, the manuscript described the procedures used to gather, store, and safeguard participant data. This included outlining the steps done to anonymize data so that specific responders cannot be identified. Pseudonyms, coding schemes, and aggregated data, for instance, were mentioned. The text also included the secure storage methods used for both physical and electronic data, such as encryption, password protection, or limiting access to only authorized persons. By doing this, the study assured stakeholders that sensitive data was protected and conformed to data protection laws.

How participants were made aware of their rights with relation to their data was also covered in the manuscript. This included the guarantee that their information was only used for the objectives specifically specified in the research, as well as the right to access, modify, or request the deletion of their data. The research's transparency and ethical accountability were further improved by including information about the length of time data will be kept and the plans for its disposal after the study. The study complied with the best standards in data protection and research ethics by fortifying the ethical concerns section in several ways.

- *Social Value.*

The researcher ensured that the study's design, methodology, and data collection processes aligned with its core objectives, which were to explore the interrelationships between teacher efficacy, student motivation, and mathematics achievement. The social value of this research lied in its potential to inform educational practices, enhanced teacher professional development, and improved mathematics teaching strategies. The findings will be shared with educational stakeholders, including school administrators and teacher training programs, to provide insights into how fostering teacher confidence and motivating learners can significantly enhance student achievement in mathematics. The study aimed to contribute to the broader understanding of educational practices that promote student success.

- *Informed Consent*

Participation in this study was entirely voluntary, with participants providing informed consent before taking part. The researcher ensured that all participants, including teachers and students (with parental consent), were fully informed about the study's purpose, scope, procedures, and potential implications. Teachers were briefed on how the study assesses their self-efficacy in teaching mathematics, while students understood the evaluation of their motivation levels. Additionally, participants were informed that they can withdraw from the study at any point, without any repercussions, ensuring that their participation was free from coercion.

- *Risks, Benefits, and Safety*

The researcher took the necessary precautions to ensure that no harm comes to the participants during the study. Data collection took place in a controlled, safe environment, such as the school premises, where students and teachers feel comfortable. Any potential risks associated with sharing personal beliefs or performance perceptions were minimized through strict confidentiality protocols. The potential benefits of the research, particularly its capacity to enhance teaching efficacy and improve student motivation and achievement in mathematics, were clearly communicated to all participants. This helped participants recognized the practical implications of their contributions to the study.

- *Privacy and Confidentiality of Information.*

Confidentiality and privacy were paramount throughout the research process. All personal information and survey responses were securely stored and accessible only to the researcher. No identifying details of participants were disclosed, and all data were anonymized before analysis. The findings were presented in aggregate form, ensuring that individual responses cannot be traced back to specific participants. Moreover, participants had the opportunity to review the preliminary findings to ensure that their responses

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are accurately represented. The use of confidentiality measures encouraged honest and unbiased responses.

- *Justice*

The principle of justice guided the selection of participants and the data collection procedures. The benefits of the study, such as insights into improved educational practices, were made available equally to all participants. This approach ensured that the study's outcomes were relevant across a diverse educational context, thereby contributing to a broader understanding of how teacher efficacy and learner motivation impacted student achievement.

IV. RESULTS

➢ *Level of Teacher Self-Efficacy*

This section presents the results related to the first research question which examines the level teacher self-efficacy in terms of efficacy in student engagement, efficacy in instructional strategies and efficacy in classroom management.

➢ *Efficacy in Student Engagement*

Table 2 shows the level of Efficacy in Student Engagement results.

Table 2 Efficacy in Student Engagement

Efficacy in Student Engagement…	Mean	Descriptive Equivalent
1. get through to the most difficult students	3.4	Quite Relevant
2. help students think critically	3.8	Highly Relevant
3. motivate students who show low interest in school work	3.8	Highly Relevant
4. get students to believe they can do well in school work	3.9	Highly Relevant
5. help my students value learning	3.9	Highly Relevant
6. help foster student creativity	3.9	Highly Relevant
7. help to improve the understanding of a student who is failing	3.8	Highly Relevant
8. assist families in helping their children do well in school	3.4	Quite Relevant
Weighted Mean	**3.7**	**Highly Relevant**

As shown in table 2, the mean scores given by the teachers to learners from items no. 1 to 8 received a weighted mean of 3.7, which is referred to as "Highly Relevant". It means that the teachers showed a high level of self-efficacy in student engagement. Of the eight indicators, the three categories that received the highest ratings— “get students to believe they can do well in school work”, “help my students value learning”, and “help foster student creativity”—all had means of 3.9. These areas demonstrate teachers' high belief in their capacity to foster students' self-belief, love of learning, and creative expression—all of which are essential for raising student motivation and academic achievement, especially in mathematics. However, “get through to the most difficult students” and “assist families in helping their children do well in school” were the two lowest-rated categories, each with a mean score of 3.4. While still receiving a "Quite Relevant" rating, these findings point to areas in which educators might feel a little less secure, suggesting possible avenues for focused assistance and professional growth to enhance their influence on student involvement.

➢ *Efficacy in Instructional Strategies*

Table 3 shows the level of Efficacy in Instructional Strategies.

Table 3 Efficacy in Instructional Strategies

Efficacy in Instructional Strategies…	Mean	Descriptive Equivalent
1. respond to difficult questions from my students	4.0	Highly Effective
2. gauge student comprehension of what I have taught	3.9	Highly Effective
3.craft HOTS questions for my students	3.9	Highly Effective
4. adjust lessons to the proper level for individual students	3.8	Highly Effective
5. use a variety of assessment strategies	3.8	Highly Effective
6. provide an alternative explanation or example when students are confused	3.9	Highly Effective
7. implement alternative strategies in my classroom	3.8	Highly Effective
8. provide appropriate challenges for very capable students	3.4	Quite Effective
Weighted Mean	**3.8**	**Highly Effective**

As provided in Table 3 for the level of Efficacy in Instructional Strategies, the mean scores given by the teachers to learners from items no. 1 to 8 received a weighted mean of 3.8, which indicates that they are "Highly Effective." “Respond to difficult questions from my students” (mean = 4.0), “gauge student comprehension of what I have taught” (mean=3.9), “craft HOTS questions for my student” (mean = 3.9), and “provide an alternative explanation or example when students are confused” (mean = 3.9) were the four highest-rated elements. According to these findings, teachers are competent at managing challenging assignments that foster critical thinking and enhance students' comprehension—skills crucial for raising arithmetic proficiency.

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On the other hand, the four things with the lowest ratings were: “adjust lessons to the proper level for individual students” (mean = 3.8), “use a variety of assessment strategies” (mean = 3.8), “implement alternative strategies in my classroom” (mean = 3.8), and “provide appropriate challenges for very capable students” (mean = 3.4). Although still given a "Highly Effective" rating, these areas show comparatively lower confidence and emphasize the need for more work in differentiated instruction and assessment to effectively meet the needs of various learners, particularly in the context of teaching mathematics.

➢ *Efficacy in Classroom Management*

Table 4 shows the level of Efficacy in Classroom Management.

Table 4 Efficacy in Classroom Management

Efficacy in Classroom Management …	Mean	Descriptive Equivalent
1. can control disruptive behavior in the classroom	3.8	Highly Effective
2. make expectations clear about student behavior	3.9	Highly Effective
3. establish routines to keep activities running smoothly	3.9	Highly Effective
4. get students to follow classroom rules	3.8	Highly Effective
5. can calm a student who is disruptive or noisy	3.8	Highly Effective
6. establish a classroom management system with each group of students	3.9	Highly Effective
7. can keep a few problem students from ruining an entire lesson	3.7	Highly Effective
8. can respond to defiant students	3.8	Highly Effective
Weighted Mean	**3.8**	**Highly Effective**

Based on Table 4, which shows the level of Efficacy in Classroom Management, the mean scores given by the teachers to learners from items no. 1 to 8 received an overall weighted mean of 3.8, which indicates that they are "Highly Effective." It signifies that teacher showed a high degree of self-efficacy in classroom management. “Make expectations clear about student behavior”, “establish routines to keep activities running smoothly”, and “establish a classroom management system with each group of students” were the three categories that received the highest ratings, each with a mean score of 3.9. According to these findings, teachers are most comfortable establishing rules and upholding discipline in their classes. However, “can keep a few problem students from ruining an entire lesson” (mean = 3.7), “can control disruptive behavior in the classroom”, “get students to follow classroom rules”, “can calm a student who is disruptive or noisy”, and “can respond to defiant students” (each with a mean of 3.8) were the five categories that received the lowest ratings. These somewhat lower results, while still classified as "Highly Effective," point to areas where teachers may have greater difficulties and might profit from specialized assistance or professional growth. Considering all the data presented, it suggests that effective classroom management techniques help to preserve a favorable learning environment for math proficiency.

➢ *Summary Table of Level of Teacher Self-Efficacy.*

Table 5 shows the evaluation Level of Teacher Self-Efficacy

Table 5 Summary Table of Level of Teachers Self-Efficacy

Indicators	Mean	Descriptive Equivalent
Efficacy in Student Engagement	3.7	Highly Effective
Efficacy in Instructional Strategies	3.8	Highly Effective
Efficacy in Classroom Management	3.8	Highly Effective
Weighted Mean	**3.8**	**Highly Effective**

The level of teacher self-efficacy as assessed by three major indicators—effectiveness in classroom management, instructional strategies, and student engagement—is summarized in Table 5. With an overall weighted mean of 3.8, the overall degree of teacher self-efficacy was graded as "Highly Effective" based on the results in Table 5. Teachers feel most confident in their ability to deliver lessons successfully and keep the classroom in order, as evidenced by the highest mean scores of 3.8 for the three major indicators—Efficacy in Instructional Strategies and Efficacy in Classroom Management. Although it was still within the "Highly Effective" descriptive category, Efficacy in Student Engagement had the lowest mean score, at 3.7. This implies that although teachers are typically comfortable interacting with students, there is a little more space for improvement in terms of tactics that encourage and maintain student interest and participation. The findings suggest that improving student engagement strategies may increase the overall effect of teacher effectiveness on students' mathematical proficiency.

➢ *Level of Learner Motivation.*

This section presents the results addressing the second research questions which identifies the level of learner motivation in terms of Intrinsic Motivation, Extrinsic Motivation, and Procrastination.

➢ *Intrinsic Motivation*

Table 6 shows the level of Intrinsic Motivation.

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Table 6 Intrinsic Motivation

Intrinsic Motivation …	Mean	Descriptive Equivalent
1. find that at times studying gives me a feeling of deep personal satisfaction.	3.2	Quite Motivated
2. find that studying academic topics can at times be as exciting as a good novel or movie.	3.0	Quite Motivated
3. work hard at my studies because I find the material interesting.	3.4	Quite Motivated
4. find new topics interesting and often spend extra time trying to obtain more information about them.	3.2	Quite Motivated
5. generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra.	3.0	Quite Motivated
6. learn some things by rote, going over and over them until I know them by heart even if I do not understand them.	3.3	Quite Motivated
7. do not find my Math VI subject very interesting, so I keep my work to a minimum.	2.6	Quite Motivated
8. find that I can get by in most assessments by memorizing key sections rather than trying to understand them.	2.9	Quite Motivated
9. only study seriously what is given out in class or in the course outlines.	2.9	Quite Motivated
10. find it not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics.	2.5	Quite Motivated
Weighted Mean	**3.0**	**Quite Motivated**

A weighted mean of 3.0 with a general descriptive equivalent of "Quite Motivated" was obtained based on the result presented in table 6 which was the amount of intrinsic drive among students. For example, "I find that at times studying gives me a feeling of deep personal satisfaction" and "I find new topics interesting and often spend extra time trying to obtain more information about them" (both with M = 3.2), "I work hard at my studies because I find the material interesting" (M = 3.4), and "I learn some things by rote, going over and over until I know them by heart even if I do not understand them" (M = 3.3).

However, the three indicators that received the lowest ratings were: "I find that I can get by in most assessments by memorizing key sections rather than trying to understand them" (M = 2.5); "I find that studying topics in depth is not helpful. It confuses and wastes time, when all you need is a passing acquaintance with topics" (M = 2.6); and "I only study seriously what is given out in class or in the course outlines" (M = 2.9).

These findings imply that whereas some students are naturally driven to learn because they are interested and satisfied, others use superficial study techniques and demonstrate little interest in in-depth research, especially in mathematics.

- *Extrinsic Motivation*

Table 7 shows the level of Extrinsic Motivation.

Table 7 Extrinsic Motivation

Extrinsic Motivation …	Mean	Descriptive Equivalent
1. want to do well in my classes because it is important to show my ability to my family, friends, employer, or others.	3.5	Highly Motivated
2. always want to be considered among the best students in each class.	3.2	Quite Motivated
3. always compensate the efforts of my parents/guardian through hard work in school activities.	3.5	Highly Motivated
4. received words of encouragement from my parents, friends, when I present my academic result.	3.4	Quite Motivated
5. feel overjoyed when considered among the best students in our class.	3.5	Highly Motivated
6. Obtaining a good grade average point is always my priority.	3.4	Quite Motivated
7. feel motivated to study when I received bigger allowance.	2.6	Quite Motivated
8. The most important thing I want during my first lecture on a given course is having the course outline.	3.1	Quite Motivated
9. feel sad and disturbed when I have a low grade in a test or examination.	2.8	Quite Motivated
10. am motivated to study when it is my favorite teacher.	3.2	Quite Motivated
Weighted Mean	**3.0**	**Quite Motivated**

As illustrated in Table 7, the overall level of extrinsic motivation among students had a weighted mean of 3.0, interpreted as "Quite Motivated" based on the mean scores given by the teachers to learners. "I want to do well in my classes because it is important to show my ability to my family, friends, employer, or others" (M = 3.5), "I always compensate the efforts of my parents/guardian through hard work in school activities" (M = 3.5), and "I feel overjoyed when considered among the best students in our class" (M = 3.5) were the three most highly rated indicators, all of which had a descriptive equivalent of "Highly Motivated." Material rewards and specific classroom logistics appear to have less of an impact on students' motivation, as evidenced by the three lowest-rated items: "I feel motivated to study when I

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jul455

receive bigger allowance" (M = 2.6), "I feel sad and disturbed when I have a low grade in a test or examination" (M = 2.8), and "The most important thing I want during my first lecture on a given course is having the course outline" (M = 3.1). These results demonstrate that emotional and relational rewards have a greater influence on students than situational or material incentives.

➢ *Summary Table of Level of Learners Motivation*

Table 8 shows the evaluation of Level of Learners Motivation

Table 8 Summary Table of Level of Learners Motivation

Indicators	Mean Equivalent	Descriptive
Intrinsic	3.0	Quite Relevant
Extrinsic	3.0	Quite Relevant
Weighted Mean	3.0	Quite Relevant

Based on three indicators—intrinsic motivation, extrinsic motivation, and procrastination—Table 8 summarizes the degree of motivation across students. According to the findings, students showed a "Quite Relevant" level of motivation across the board, with mean ratings of 3.0 for both intrinsic and extrinsic motivation. The descriptive equivalent for "Quite Relevant" is 3.0, the overall weighted mean. In order to further support their academic performance, this shows that although students show a moderate level of motivation to learn mathematics—driven by both internal interest and external rewards—there may still be opportunity for improvement, especially in terms of fostering deeper engagement and lowering procrastination tendencies.

Level of Mathematics achievement of the learners in terms of test scores. This section presents the results related to the third research question which examines the level of Mathematics achievement of the learners in terms of test scores. Table 9 shows the level of test scores.

Table 9 Level of Mathematics Achievement of the Learners

Mean	MPS
29.66	74.15

According to test results, the students' level of mathematical proficiency was demonstrated in Table 9 with a mean score of 29.66 and a matching Mean Percentage Score (MPS) of 74.15. These findings imply that student performance varies, with some attaining close to mastery and others falling well short of expectations. The general performance is at an approaching competence level, as indicated by the overall average MPS of 74.15, which suggests that low-performing students require specific interventions and ongoing instructional support.

➢ *Relationship between Teacher Self-Efficacy and Mathematics Achievement*

This section presents the results of the fourth statement of the problem that identifies the relationship between teacher self-efficacy and Mathematics achievement. Table 10 shows the relationship between teacher self-efficacy and Mathematics achievement.

Table 10 Teacher Self-Efficacy and Mathematics Achievement

Indicators	Pearson r value	p-value	Interpretation
Teacher Self-efficacy and Mathematics Achievement	0.010	0.972	Retain the null hypothesis

A correlation value of 0.010 was obtained based on the result which indicates a very weak positive linear relationship between teacher self-efficacy and Mathematics achievement. The p-value of 0.972 is greater than the study's alpha level of 0.05. It suggests that the researcher failed to reject the null hypothesis. It implies that there is no significant relationship between teacher self-efficacy and Mathematics Achievement.

➢ *Relationship Between Learner's Motivation and Mathematics Achievement*

This section presents the results of the fifth statement of the problem that identifies the relationship between learner's motivation and Mathematics achievement. Table 11 shows the relationship between learner's motivation in terms of intrinsic motivation and Mathematics achievement.

Table 11 Learner's Motivation in Terms of Intrinsic Motivation and Mathematics Achievement

Indicators	Test	p-value	Interpretation
Learner's Motivation in terms of Intrinsic Motivation and Mathematics Achievement	One-Sample Chi-Square Test	0.005	Reject the null hypothesis

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jul455

As presented in Table 11, the null hypothesis was rejected since the p-value obtained was 0.005 which was less than 0.05. It means that there was a significant relationship between learner's motivation in terms of intrinsic motivation and Mathematics achievement.

Table 12 shows the relationship between learner's motivation in terms of Extrinsic motivation and Mathematics achievement

Table 12 Learner's Motivation in terms of Extrinsic Motivation and Mathematics Achievement

Indicators	Test	p-value	Interpretation
Learner's Motivation in terms of Extrinsic Motivation and Mathematics Achievement	One-Sample Chi-Square Test	0.000	Reject the null hypothesis

Based on table 14, the indicator Learner's Motivation in terms of Extrinsic Motivation and Mathematics Achievement obtained a p-value of 0.000 which allowed the researcher to reject the null hypothesis. In other words, there was a significant relationship between Learner's Motivation in terms of Extrinsic Motivation and Mathematics Achievement.

V. DISCUSSIONS

- *Level of Teacher Self-Efficacy in terms of Efficacy in Student engagement.*

The result of the study revealed that among the eight indicators, the highest-rated categories were helping students value learning, encouraging student creativity, and helping students believe they can perform well. Table 2's results showed that teachers demonstrated a high level of self-efficacy in promoting student engagement, which was interpreted as "Highly Relevant."

According to these findings, teachers have a strong belief in their capacity to establish encouraging and supportive learning environments in the classroom, which is essential for boosting students' confidence and enthusiasm, especially in topics like mathematics. While still classified as "Highly Relevant," the lowest-rated areas were assisting families in supporting their children's academic progress and reaching the most difficult students. This suggests a relative decline in teacher confidence in meeting the needs of students who are at risk and in encouraging collaboration between the family and the school, pointing to areas that could benefit from focused assistance and training.

According to Reeve (2006), teachers who have a strong sense of their own abilities are more likely to employ tactics that encourage independence, curiosity, and perseverance. According to Hattie (2009), this kind of interaction is particularly beneficial for fostering students' perseverance and problem-solving abilities in mathematics education.

The implication of the study on teacher self-efficacy can have a direct impact on increasing student motivation and mathematical achievement.

- *Efficacy in Instructional Strategies.*

Based on the result, teachers showed a high degree of self-efficacy in putting instructional strategies into practice, which was interpreted as "Highly Effective." The indicators that were most highly rated were "respond to difficult questions from my students", "gauge student comprehension of what I have taught", "craft HOTS questions for my student", and "provide an alternative explanation or example when students are confused." These results imply that educators feel comfortable implementing teaching strategies that improve students' understanding and critical thinking, two skills necessary for success in mathematics.

Nonetheless, the categories with the lowest ratings were "adjust lessons to the proper level for individual students", "use a variety of assessment strategies", "implement alternative strategies in my classroom", and "provide appropriate challenges for very capable students". These findings indicate chances for professional growth centered on diversified instruction and assessment methodologies, which are essential in meeting the various academic requirements of children, even though the program is still classified as "Highly Effective."

Considering these results in the context of previous studies, it is clear that instructional tactics have a big impact on students' academic performance and sense of self-efficacy. According to Chen et al. (2020), differentiated instruction increases students' self-confidence by assisting them in achieving academic achievement. In a similar vein, Johnson and Johnson (2021) emphasized how cooperative learning boosts peer validation and support, which in turn leads to higher self-efficacy.

Karpicke and Blunt (2019) highlighted the significance of self-regulated learning practices in fostering learner confidence, whereas Andrade and Cizek (2021) explain that formative evaluation helps students comprehend their progress and maintains a growth mentality. Technology also presents chances to improve instruction; Wang et al. (2023) discovered that because technology-enhanced learning settings are individualized and interactive, they promote higher levels of self-efficacy.

These ramifications imply that providing teachers with focused training on formative evaluation, individualized instruction, and efficient use of educational technology could further improve instructional efficacy and, consequently, raise students' motivation and mathematical achievement. To optimize instructional impact, school administrators are advised to offer opportunities for collaborative learning and

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jul455

ongoing professional development that concentrate on these areas.

➢ *Efficacy in Classroom Management.*

The result of the study showed that “Make expectations clear about student behavior”, “establish routines to keep activities running smoothly”, and “establish a classroom management system with each group of students” are the highest-rated indicators, indicating that teachers feel confident in their ability to structure and organize their classrooms to support effective teaching and learning. The results in Table 4 show that teachers have a high level of self-efficacy in classroom management, which was interpreted as "Highly Effective." These techniques are essential in mathematics education since students' capacity to understand difficult ideas is directly impacted by their consistency, focus, and time management.

However, even though they are still in the "Highly Effective" range, the comparatively lower-rated elements—such as managing disruptive behavior, calming noisy students, and stopping a few misbehaving students from disrupting the class indicate areas where teachers may face greater difficulties. These findings point to the necessity of more assistance in handling behavioral diversity, which is critical to maintaining a positive learning environment, especially in math where undivided focus is crucial.

The interpretation of these findings is consistent with earlier studies that highlight how crucial classroom management is to academic achievement. Effective teachers use proactive techniques to maintain discipline and control student conduct, which frees up more time for teaching and learning (Emmer and Evertson, 2013). According to Simonsen et al. (2008), structured management strategies greatly enhance student conduct and performance, with the results being particularly noticeable in disciplines with a lot of information, such as mathematics. One of the best indicators of student success, according to Marzano (2003), is classroom management.

It is advised that educational institutions offer frequent, focused professional development on handling student conduct and putting in place responsive classroom methods in light of these ramifications. All students, regardless of behavioral difficulties, will have the chance to thrive in mathematics if teachers are armed with a toolkit of research-proven tactics, including restorative practices, peer-mediated approaches, and positive behavior interventions. Putting money into this area not only boosts teacher’s confidence but also creates a productive, organized atmosphere that encourages and supports student enthusiasm and achievement.

➢ *Level of Intrinsic Motivation.*

Based on the findings, the learners' intrinsic motivation was judged as "Quite Motivated." The lowest-rated indicators, such as "I find that I can get by in most assessments by memorizing key sections rather than trying to understand them" and "Studying topics in depth is not helpful," reflect more passive or surface-level approaches to learning, while some students expressed enjoyment and personal satisfaction in studying, such as those who agreed with statements like "I work hard at my studies because I find the material interesting" and "I find new topics interesting and often spend extra time trying to obtain more information".

These contradictory findings show that whereas some children are naturally motivated to learn or investigate mathematical ideas, a sizable percentage do not. This implies that learners' mediocre proficiency in mathematics may be influenced by the fact that intrinsic motivation is not yet fully developed among the student body.

From an interpretive perspective, success in mathematics depends on intrinsic motivation, which Ryan and Deci (2020) define as learning for personal fulfillment. Intrinsically driven students are more likely to persevere through challenging challenges, independently investigate mathematical concepts, and gain long-term mastery. However, the current research suggests that a large number of students continue to rely on external cues or rote memorization, which restricts their depth of comprehension. This necessitates focused interventions.

To motivate pupils on an internal level, teachers should use teaching tactics that encourage independence, curiosity, and practical applications of arithmetic. Additionally, schools might think about implementing inquiry-driven teaching, project-based learning, and classroom activities that foster imaginative investigation of mathematical ideas. Additionally, motivation-centered pedagogies must be emphasized in teacher professional development.

Teachers may greatly improve students' academic performance and give them the tools they need for lifetime learning by fostering intrinsic motivation in their pupils, particularly in mathematics.

➢ *Level of Extrinsic Motivation.*

The result of the study revealed that students exhibited a moderate level of extrinsic motivation. The highest-rated indicators, including "I want to do well in my classes because it is important to show my ability to my family, friends, employer, or others", "I always compensate the efforts of my parents/guardian through hard work in school activities", and "I feel overjoyed when considered among the best students in our class", indicate that students are greatly influenced by relational and emotional rewards. According to these results, kids are driven to succeed academically in order to win the respect, admiration, and emotional validation of significant others in their lives.

On the other hand, the lowest-rated items—such as “I feel motivated to study when I receive a bigger allowance” and “I feel sad and disturbed when I have a low grade in a test or examination” indicate that material incentives and negative academic experiences hold less sway over their motivation. These results suggest that extrinsic motivation among students is more rooted in social affirmation than in tangible rewards.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jul455

These findings' ramifications emphasize how crucial it is to use social and emotional motivators to raise academic motivation, especially in mathematics. Praise and recognition are examples of extrinsic motivators that might boost engagement, but depending only on them could not result in deep learning or long-term mastery. In order to reinforce positive behaviors and increase academic confidence, teachers are being encouraged to carefully employ extrinsic motivators, such as acknowledging accomplishments, setting realistic targets, and praising student effort.

By creating interesting, pertinent, and learner-centered training, they must also promote intrinsic motivation. To help teachers create a classroom climate where children are motivated by both their own curiosity and suitable external rewards, schools should offer professional development focusing on balanced motivating tactics.

In conclusion, initiatives that foster deeper, internalized motivations for studying mathematics should be combined with extrinsic motivation, which is a useful tool for improving student performance, particularly when linked to meaningful social interactions.

- *Level of Mathematics Achievement of the Learners in terms of Test Scores*

The results show that the students' average mathematical achievement is within the "approaching proficiency" range. The large difference between the top performers and lowest performers indicates that although some students are closer to mastery, a sizable portion still fall short of the expected level. This discrepancy demonstrates how pupils' mathematics comprehension varies and emphasizes the necessity of focused interventions and varied education.

Research emphasizes that students' cognitive capacities are not the only elements that affect their achievement in mathematics; external factors like the caliber of instruction and motivation levels also play a role. Comparatively low overall performance indicates that more tailored and data-driven teaching tactics are needed to support difficult students and raise the achievement level overall, even while general instructional strategies may be sufficient.

These findings have significant ramifications for learner motivation and teacher self-efficacy. Teachers are more likely to use instructional strategies that cater to the various needs of their students when they are confident in their capacity to conduct their classrooms and provide effective instruction, especially in challenging subjects like mathematics. Furthermore, because they connect with the content more thoroughly, pupils who are more motivated—especially intrinsically—perform better.

The test results' mediocre performance emphasizes how critical it is to improve in both areas. It is advised that educational institutions offer continuous professional development centered on student engagement techniques and mathematics pedagogy. Priority should be given to initiatives that improve teacher self-efficacy, such as collaborative lesson preparation, reflective teaching methods, and peer mentoring.

At the same time, classroom practice has to incorporate tactics for active learning, goal-setting, and positive reinforcement to increase student motivation. In summary, closing performance disparities and advancing more kids toward mathematical proficiency require addressing both the instructional and motivational aspects.

- *Relationship between teacher self-efficacy and Mathematics achievement*

The results indicate that student achievement in mathematics and teacher self-efficacy are positively correlated. However, this relationship is not strong, which suggests that there are several factors that need to be considered in identifying students' Mathematics achievement such as learning environment as supported by the study of Dellomos et al. (2013).

Strong self-efficacy teachers are more likely to design organized and productive learning environments that enhance student learning, particularly in the areas of instructional delivery and classroom management. Nonetheless, the observed disparity in student accomplishment might be a result of the somewhat reduced effectiveness of student participation. Therefore, improving teachers' self-assurance and methods for interacting with students may help improve math academic results even more.

These results lead to the conclusion that one of the key elements in promoting students' performance in mathematics is teacher self-efficacy. Therefore, it is advised that training in student engagement strategies be given top priority in professional development programs, in addition to enhancing instructional and classroom management skills. These programs will support all children in achieving mathematical proficiency and help guarantee more equal learning results.

- *Relationship between Learner's Motivation and Mathematics Achievement.*

The findings revealed that there was a significant relationship between learner's motivation and Mathematics achievement. It suggests that motivated students are likely to perform better in Mathematics. This agrees with the study of Zimmerman (2000), Wigfield & Eccles (2000) and Deci & Ryan (2000). While some students found mathematical concepts fascinating and liked exploring them, a sizable portion of students continued to rely on superficial tactics like memorization, according to intrinsic motivation markers. This trend implies that students' inner drive is still developing, which may be preventing them from comprehending mathematics at a deeper level. In a similar vein, social factors—such as the desire to win praise from peers or make family proud—had a greater impact on extrinsic motivation than did pecuniary incentives.

These results suggest that although students are motivated to some extent, their drive is not primarily derived from a sincere interest in mathematics. Based on these findings, learner motivation and mathematical achievement

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jul455

are significantly correlated. According to Ryan and Deci (2020), students who are more intrinsically motivated are more likely to participate in worthwhile learning activities, stick with challenging assignments, and succeed academically. In contrast, people who depend on external motivation linked to social or emotional approval could put out effort, but they frequently lack the more profound conceptual knowledge necessary for long-term mastery.

The ramifications are obvious: both forms of motivation need to be deliberately addressed to increase total accomplishment. The results, taken together, provide credence to the idea that raising students' levels of intrinsic and extrinsic drive is crucial to raising their mathematical proficiency. Therefore, it is advised that educators use motivational techniques that incorporate emotional reinforcement, active participation, and personal significance. Schools should provide professional development courses that teach teachers how to encourage both kinds of motivation through inquiry-based learning, learner-centered education, and acknowledging students' efforts and advancements. Finally, fostering an environment in the classroom that encourages students' interest and sense of achievement will go a long way toward reducing performance gaps and helping kids become more proficient in mathematics.

VI. CONCLUSION

Based on the results, it can be concluded that student achievement in mathematics and teacher self-efficacy are positively correlated, but this relationship is relatively weak. This suggests that while teacher efficacy contributes to student performance, it is not the only factor of achievement. Other factors, such as the quality of the learning environment and student intrinsic and extrinsic motivation, may also significantly influence mathematical outcomes. These findings highlight the need for a more holistic approach in addressing students' academic performance. Enhancing learner-centered environments and promoting meaningful, inquiry-based mathematics learning experiences are essential in fostering better mathematics achievement.

RECOMMENDATIONS

➢ *Based on the Findings of the Study, the Following Recommendations are Proposed:*

- Teachers are encouraged to receive targeted training on engaging hard-to-reach students and building strong school-family partnerships. This will enhance their already strong self-efficacy and improve overall student engagement in mathematics.
- Professional development may focus on differentiated instruction, diverse assessment strategies, and educational technology integration. These areas will strengthen teachers' instructional practices and support varied learner needs in math.
- To encourage intrinsic motivation, educators might use inquiry-based and student-centered learning strategies. Deeper comprehension and engagement will result from fostering curiosity and purposeful mathematical research.
- Teachers may use techniques that increase internal motivation in addition to praise and recognition. In addition to positive social reinforcement, professional development must incorporate strategies for fostering self-driven learning.
- To help difficult students, remediation and specialized teaching may be offered. To increase math achievement, schools must make investments in data-driven instruction and incentive techniques.
- To close the achievement gaps in mathematics, teacher training may emphasize student engagement strategies to supplement strengths in management and instruction. Developing both intrinsic interest and positive external reinforcement should be the focus of motivational strategies. Creating a meaningful and supportive classroom environment will improve students' math performance and lessen disparities.

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