

Teaching Styles: Its Influence on Pupils' Motivation in Mathematics

Nova Luna O. Maagad¹, Rebecca M. Alcuizar²

¹Southern de Oro Philippines College, Cagayan de Oro City, Philippines

²Mindanao State University Iligan Institute of Technology, Iligan City, Philippines

ABSTRACT: Teaching styles play a crucial role in shaping pupils' motivation in Mathematics. This study explored the teaching styles of Mathematics teachers and determined how these influence pupils' motivation. Specifically, it primarily focused on the three teaching styles: Expert, Personal Model, and Facilitator. The study also assessed the pupils' motivation levels and examined whether the teaching styles used have relationship to the pupils' motivation to learn Mathematics. The study was conducted to 142 Grade 6 pupils as the respondents of the study. The pupils were selected through stratified sampling. The study utilized the correlational and causal research designs. Adapted research questionnaire and a researcher made questionnaire were used. After data collection, the gathered data were analyzed and interpreted using various descriptive and inferential statistical methods, including the Mean, Standard Deviation, Pearson Product Moment Correlation Coefficient, and Multiple Linear Regression Analysis. Results showed that Mathematics teachers used an advanced teaching method and their pupils are highly motivated in learning the subject. Also, there is a significant moderate positive relationship found between each teaching style and pupils' motivation, with the Facilitator style demonstrating the strongest link and impact. Teachers allow pupils the opportunity to learn the Mathematics at their own pace. It is recommended that Mathematics teachers focus on strengthening student-centered, facilitative approaches to help learners stay engaged and motivated to learn.

KEYWORDS: expert, facilitator, personal model, pupils' motivation, teaching styles

I. INTRODUCTION

Teaching styles can vary widely, from traditional teacher-led instruction to more interactive, student-centered approaches. Some teachers rely heavily on lectures and step-by-step demonstrations, while others prefer hands-on activities, group work, or inquiry-based learning that encourages pupils to explore concepts on their own. These approaches do not just shape how lessons are delivered, they also have a significant impact on how pupils experience learning, especially in subject like Mathematics. The way teacher presents Math can make a real difference in how motivated pupils feel. When teaching feels rigid or disconnected from real life, pupils may lose interest or confidence. On the other hand, a more engaging, supportive style can boost pupils' curiosity and self-belief. A teacher's enthusiasm and willingness to adapt their methods can help turn Math from a source of anxiety into subject pupils genuinely want to explore.

From a scholarly standpoint, pupils often have anxiety in mathematics, and they think it is a difficult subject (Capinding, 2022). Many pupils have strong feelings about mathematics. Either they love it or hate it. Some pupils might not enjoy Math because of the complexity of formulas. This can lead to negative feelings about the subject, especially for those who do not find figures fascinating, or who are more interested in other learning areas. Thus, when learning mathematical formula and principles, pupils often acquire negative attitudes and care for the subject, with which many of them struggle at some point.

In today's evolving world, education plays a crucial role in equipping pupils with the knowledge and skills necessary to thrive in an increasingly complex society (Wangda et al., 2024). As global challenges and technological advancements reshape the nature of work, communication, and problem-solving, pupils must develop not only academic knowledge but also critical thinking, adaptability, and lifelong learning skills. Based on their study, educational systems must evolve to meet these demands by adopting teaching approaches that are responsive, relevant, and skills oriented. This perspective underscores the growing responsibility of teachers to prepare pupils for real-world challenges by fostering both intellectual and personal development. Thus, teachers have a significant role in the four corners of the classroom. Teachers should truly understand what the curriculum

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aims to achieve, while also bringing passion, teaching skills, and a deep respect for their role. It takes dedication and care to help shape pupils' lives and guide them toward a future that is stimulating and satisfying.

As Adedigba and Sulaiman (2020) stated, that the teacher in the educational process, plans, organizes and controls the students' activity and consequently appears in the position of a leader. The way the teacher structures his daily schedule, sets up his classroom, plans daily lessons and sets expectations for pupils' behavior will determine the success of teaching and learning.

According to Cardino and Ortega-Dela Cruz, (2020) teachers should choose teaching methods that best suit the goals and skills they want students to learn. This helps make sure that pupils understand the material and makes learning smoother and more effective. In addition, the personality traits of teachers can affect their way of teaching. It encompasses their educational background, abilities, positivity, sense of justice, cooperative spirit, career aspirations, and the way in which they interact with pupils. Similarly, it is said that several characteristics of teachers, including their personalities and areas of expertise, are thought to positively affect pupils' motivation to learn. Motivation is a key component in Mathematics learning since it pushes pupils to work harder and stay focused on reaching their academic goals. These could have both positive and negative effects on the pupils. It might be difficult for teachers to inspire their pupils to learn. To elicit pupils' interest, different teaching styles or methods must be used. While some pupils appear to be very excited about their studies, the majority require their teachers to motivate or inspire them. It is a fact that different values, needs, wants, and desires drive different pupils in different ways.

Thus, this study was conducted because how teachers teach can truly shape how pupils feel about learning especially in Mathematics, which many pupils find challenging. Understanding the connection between different teaching styles and pupils' motivation helps us uncover what really encourages pupils to stay interested, work harder, and believe in their own abilities. By exploring this, the study hopes to offer insights that can help teachers create a more positive and inspiring classroom experience where every pupil feels motivated to learn and succeed.

This study was anchored on the Self-Determination Theory (SDT) developed by psychologists Edward Deci and Richard Ryan. Self-determination theory is a broad and widely applied theory of motivation, personality development, and wellness (Ryan & Deci 2019). This theory began with a limited emphasis on intrinsic motivation but has broadened its scope to include both intrinsic and extrinsic motivations. It provides a framework for understanding the motivational foundations of personality and social behavior, as well as the connection between basic psychological needs and well-being, psychological flourishing, and a high quality of life.

In addition, Bayraktari et al. (2023) stated that this theory is a psychological framework that emphasizes the importance of human motivation and the factors that promote intrinsic motivation and active involvement. When applied in educational contexts, the application of SDT offers valuable insights on how to improve pupils' engagement by catering to their psychological requirements for autonomy, competence, and connection.

As a holistic motivation theory, Self Determination Theory respects and acknowledges differences among learners who have various socioeconomic backgrounds, temperaments, interests, religious values, sexual identities, and neurological processing styles (Ryan & Deci, 2020). It is an approach that recognizes that individuals are uniquely motivated based on a wide variety of factors. SDT emphasizes that for learners to thrive, their core psychological needs autonomy, competence, and relatedness which must be met in ways that respect these individual differences. By acknowledging and valuing the diverse experiences and needs of learners, SDT helps create motivational environments that foster personal growth, self-improvement, and self-actualization for everyone. This emphasizes that people have an inherent drive toward self-actualization, the desire to grow, learn, and realize their full potential. SDT proposes that individuals thrive when they are able to pursue activities that align with their true interests and values, grow their skills, and connect with others in a supportive environment.

Also, the study is based on Sim and Matore (2022) in their research on the relationship between teaching styles and the teaching experience of Mathematics teachers in National-Type Chinese Primary Schools. Their study highlighted Five (5) distinct teaching styles: Expert, Formal Authority, Personal Model, Facilitator, and Delegator. Each style reflects different teacher behaviors and beliefs about instruction, ranging from teacher-focused to student-focused strategies. Based on their study, a teacher's choice or dominance is influenced by their motivation, personality, attitudes, and beliefs, which collectively determine the strategies they use to engage pupils and manage learning. It includes the deeper psychological and motivational factors that shape how teachers approach their work, highlighting how personal qualities and beliefs influence teaching styles, and how these styles can evolve as teachers' motivations or professional experiences change.

As reported by Parker et al. (2024) at the heart of a teacher's role are teaching strategies and learning activities that contribute to pupils' effective attainment of their learning goals. In parallel, teachers also take an interest in other outcomes, such as enjoyment of classes and of school, an interest in the subject matter, and the creation of a cooperative and prosocial class atmosphere. It emphasized that teachers' teaching styles and strategies are currently being used to encourage a conducive

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learning climate. When pupils are given freedom to make their own choices in the classroom, they are more likely to engage fully, physically, emotionally and mentally, in the learning process, thus can bring up creative and productive activities. Teachers modify their educational materials and delivery methods to better serve their pupils when they become aware of how much their teaching styles drive their pupils. When pupils are motivated, learning happens naturally.

This study explored on how specific teaching styles: Expert, Personal Model, and Facilitator, influence pupils' motivation. It used an instrument adapted from Sim and Matore's (2022) study, which examined the relationship of Grasha–Riechmann teaching styles and teaching experiences of Mathematics teachers in Chinese national type primary schools. In this study, this was used for identifying teachers' teaching styles, focusing on the three of the teaching styles: Expert, Personal model and Facilitator.

While a researcher-made questionnaire was developed in measuring how motivated pupils are toward learning Mathematics. The schema of this study illustrates the connection between teaching styles and pupils' motivation. Within this framework, the independent variable were the teaching styles: Expert, Personal Model, and Facilitator. The dependent variable was the pupils' motivation. Thus, the study aimed to determine which approaches are most effective in encouraging pupils to engage actively and confidently in Mathematics.

II. METHODOLOGY

This study employed correlational and causal research methodologies to explore how the variables are connected. As stated by Siedlecki (2020), a correlational design enables the researcher to study the relationships between variables without manipulating them. This could involve describing factors like people's attitudes, behaviors, experiences, or specific patterns in a population. The researcher utilized correlational method of research with the aid of a questionnaire checklist. The correlational approach helped explore how teaching styles (the independent variable) relate to pupil's motivation (the dependent variable). Because of this, using this method was deemed appropriate for studying the connection between the way teachers teach and how it influences their pupils' motivation.

In addition, the study employed causal research methods. Quilon and Kurniawan (2023) posited that causal research explores the basic causal relationships between two or more variables. Typically, researchers looked at how changes in one variable affected change in related variables. Causal research is usually employed to either test a hypothesis, determine the level of the relationship between causal variables and effect to be predicted or to understand which variables are the cause (independent variable) and which variables are the effect (dependent variables).

All the data gathered were consolidated, evaluated and interpreted appropriately. They were also subjected to statistical treatment to help the researcher in answering the problems reflected on the study. The following statistical techniques and procedures were used to answer specific problems: Problems 1 and 2, descriptive statistics, including the weighted mean were used to identify the teaching styles of Mathematics teachers and to evaluate pupils' motivation. Problem 3, Pearson Product Moment Correlation Coefficient was applied to examine whether a significant relationship exists between the teachers' teaching styles and pupils' motivation in Mathematics. And problem 4, the Multiple Linear Regression Analysis was utilized to determine which of the independent variables predict singly or in combination the pupils' motivation in Mathematics.

III. RESULTS AND DISCUSSION

Problem 1. What is the level of teaching styles of Mathematics teachers as:

- 1.1. Expert;
- 1.2. Personal Model; and
- 1.3. Facilitator?

Table 1. Overall Teachers' Teaching Style

Variable	Mean	SD	Qualitative Description
Expert	4.22	0.54	Outstanding
Personal Model	4.23	0.54	Outstanding
Facilitator	4.24	0.53	Outstanding
Overall	4.23	0.54	Outstanding
Note: 4.21 -5.00 Outstanding 3.41 -4.20 Very Satisfactory 2.61 -3.40 Satisfactory 1.81 -2.60 Fairly Satisfactory 1.00 -1.80 Needs Improvement			

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Table 1 displays the overall Teachers' teaching style. It has an overall Mean of 4.23, with SD=0.54, qualitatively as an Outstanding. The data imply that across all three teaching styles; Expert, Personal Model, and Facilitator, Mathematics teachers in Malitbog I District employ a balance and adaptable set of teaching practices. This reflects their ability to deliver content knowledge, serve as instructional role models, and promote pupils' autonomy. The integration of these styles is important in addressing diverse learning needs. When teachers combine clear, structured instruction where pupils have the chance to actively participate, ask questions, and work together, it creates a balance approach. This will help the pupils understand more their lessons while also giving them the freedom to take charge of their own learning. Bardy et al. (2021) concluded that a varied instructional approach, which adjusts to pupils' preferences and learning profiles, contributes positively to their academic motivation and engagement.

Within the same table, the variable, *Facilitator*, is rated the highest with the Mean of 4.29, with SD=0.53, qualitatively described as Strongly Agree and is interpreted as Outstanding. This suggests that teachers often take on the role of a guide in the classroom. Rather than just disseminating information, they support pupils in exploring ideas, asking questions, and learning through real-life experiences. Teachers value student-centered learning and are actively creating environments where learners are encouraged to think independently and take part in their own learning process, leading to better retention and understanding of Mathematical concepts. According to Suneetha (2020), facilitative approach places more emphasis on pupils' participation, exploration, and acceptance that pupils have an active role in shaping their own knowledge. Hence, increase pupils' motivation, participation, and achievement.

Meanwhile, the variable, *Expert* is rated the lowest with the Mean of 4.22, with SD=0.54, qualitatively described as Strongly Agree and is interpreted as Outstanding. This shows that teachers demonstrate the qualities of an expert in their teaching style. Teachers are viewed as a subject matter authority, who have expertise to guide learning. Pupils look up to these teachers as knowledgeable guides who explain things clearly and provide accurate information. Being an expert teacher means really knowing the subject very well and feeling confident when sharing that knowledge to the pupils. As Moulidiah et al. (2024) point out, expert teachers have a deep and wide understanding of the topics they teach. Thus, teachers as an expert has the authority in teaching, and have high self-confidence.

Problem 2. What is the level of pupils' motivation in Mathematics?

Table 2. Pupils' Motivation

Indicators	Mean	SD	Qualitative Description
1. I love to attend my Mathematics class.	4.18	0.52	Highly Motivated
2. I think Mathematics improves my intelligence.	4.27	0.53	Very Highly Motivated
3. I am eager to learn Mathematics challenges so I can learn new things.	4.24	0.52	Very Highly Motivated
4. I like to learn Mathematics even it doesn't guarantee me good grades.	4.25	0.54	Very Highly Motivated
5. I like Mathematics even it is difficult for me, because it arouses my curiosity.	4.21	0.53	Very Highly Motivated
6. I want to learn Mathematics because it is important for my everyday life.	4.17	0.55	Highly Motivated
7. In my Mathematics class, I would like to have more projects and homework so I can learn more.	4.23	0.52	Very Highly Motivated
8. I work hard to do well in Mathematics to have rewards from my parents.	4.22	0.56	Very Highly Motivated
9. I am motivated to do well in class because my parents expect me to.	4.18	0.53	Highly Motivated
10. I am more likely to study harder in Mathematics to have a big score in the test.	4.26	0.54	Very Highly Motivated
Overall Mean	4.22	0.53	Very Highly Motivated
Note: 4.21 -5.00 Very Highly Motivated 3.41 -4.20 Highly Motivated			
2.61 -3.40 Moderately Motivated 1.81 -2.60 Less Motivated			
1.00 -1.80 Least Motivated			

Table 2 presents the level of pupils' motivation in Mathematics. It has an overall Mean of 4.22 with SD=0.53, qualitatively described as Very Highly Motivated. The data imply that pupils have very high motivation when it comes to learning Mathematics.

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This is shown in their positive attitude and eagerness to engage in the subject. Pupils not only enjoy attending their math class but also recognize the value of Mathematics in everyday life and improving their intelligence. Also, the desire to take on more projects and homework further shows enthusiasm to have more understanding on Mathematics concepts. Despite the challenges and difficult concepts of Mathematics, pupils are motivated not only through extrinsic motivation including grades or rewards from parents but also they have strong intrinsic motivation, such as curiosity and genuine interest in understanding the subject. Moeller et al. (2020) supports the idea of motivation is multidimensional and that a combination of intrinsic and extrinsic factors can significantly boost learning persistence.

From the same table, indicator 2, *I think Mathematics improves my intelligence* was rated the highest, with the Mean score of 4.27, with SD=0.53, qualitatively described as Very Highly Motivated level. It indicates that it is the greatest motivator among the pupils. They see Mathematics a valuable subject that develops their thinking skills, logic, and problem-solving abilities, and that makes them to become smarter or more capable. Also, when pupils see the subject improves their intelligence, this enhances their motivation, making them more eager to engage in the class even when encountering challenging topic. According to Yarin (2022) pupils are motivated by both intrinsic motivation such as enjoyment and personal interest, and extrinsic factors, such as recognition or external rewards. These factors play a significant role in explaining academic success in Mathematics.

On the other hand, indicator 6, *I want to learn Mathematics because it is important for my everyday life*, and was rated the lowest, with the Mean score of 4.17, with SD=0.55, qualitatively described as Highly Motivated. The data implies that pupils still value Mathematics, they feel motivated because they are engaged, curious, and willing to work hard. However, the connection to everyday life does not have much enthusiasm. It suggests that although they enjoy or value Mathematics, pupils might not clearly see its relevance to real-life situations or the direct practical applications in daily life, or they might feel that its applications are too abstract or distant from their current experiences. Teachers must find strategies to make Math's real-world applications more engaging and relatable so that pupils will further boost their motivation. Chaves and Lapinid (2019), stated that incorporating real-life contexts into Math lessons significantly improved pupils' motivation, engagement, and performance.

Problem 3. Is there a significant relationship between the teachers' teaching style and pupils' motivation in Mathematics?

Table 3. Test of Correlation Between Teachers' Teaching Style and Pupils' Motivation

Variables	r-value	p-value	Level of Correlation	Decision	Interpretation
Expert	0.247	0.036	Low Positive Correlation	Reject Ho	Significant
Personal Model	0.278	0.044	Low Positive Correlation	Reject Ho	Significant
Facilitator	0.552	0.001	Moderate Positive Correlation	Reject Ho	Significant
Note: 0.91 - 1.00 Very High Positive Correlation 0.71 – 0.90 High Positive Correlation					
0.51 – 0.70 Moderate Positive Correlation 0.31 – 0.50 Low Positive Correlation					
0.00 – 0.30 Negligible Positive Correlation Significant when computed p-value <0.05					

Table 3 shows the *Test for Correlation Between Teachers' Teaching Style and Pupils' Motivation*. The independent variable is on teaching styles as to Expert, Personal Model, and Facilitator while the dependent variable is on the pupil's motivation. The result reveals that Expert has a computed r-value of 0.247 with a computed p-value of 0.036. Of which the computed p-value is less than the p-critical value at 0.05 level of significance. This indicates that a significant but low positive correlation was found between the Expert teaching style and pupils' motivation. Therefore, the null hypothesis is rejected. Expert teaching style, where teachers serve as knowledgeable authorities and focus on delivering accurate content, and who confidently demonstrate their expertise can positively influence their pupil's motivation, encouraging them to engage more in learning activities. Aktas et al. (2023) emphasized that teaching styles extend beyond lesson delivery methods and include techniques for reinforcing learning and maintaining pupil engagement.

Personal Model has a computed r-value of 0.278 with a computed p-value of 0.044. The computed p-value is less than the p-critical value at 0.05 level of significance. This indicates that there is a significant yet low positive correlation between the Personal Model teaching style and pupils' motivation. Thus, the null hypothesis is rejected. The result suggests that Personal Model Teaching style meaningfully increases in pupils' motivation to learn Mathematics. When teachers act as role models-demonstrating behaviors, skills and attitudes, and when they can imitate their teachers' example, pupils tend to be motivated. As stated by Grassinger et al. (2024), teachers behaviors aligned with autonomy-supportive practices are strongly associated with increased pupil's engagement and motivation.

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Facilitator registered a computed r-value of 0.552 with a computed p-value of 0.001. The computed p-value is less than the p-critical value at 0.05 level of significance. This indicates that a significant moderate positive correlation was found between the Facilitator teaching style and pupils' motivation. Thus, the null hypothesis is rejected. Facilitative approach in teaching has the strongest link to pupil motivation. When pupils feel they are guided and supported in learning, given opportunities to work with their peers, and make their own learning choices, their motivation in Mathematics increases. Student-centered in the classroom plays a crucial role in sustaining and enhancing pupils' motivation. Keerthigha and Singh (2023) found that student-centered teaching approaches particularly those emphasize collaboration, learner autonomy, and strong teacher-student relationship can significantly enhance academic motivation.

Problem 4. Which of the dimension of independent variables predict singly or in combination the pupils' motivation in Mathematics?

Table 4. Regression Analysis Between Teachers' Teaching Style and Pupils' Motivation

Variables	UC		SC	t-value	Sig. (P-value)	Decision
	B	SE	β			
Constant	4.6567	0.87467	0.8845	6.583	0.001	
Expert	0.6783	0.7681	0.5541	1.021	0.085	Accept Ho
Personal Model	0.5479	0.4732	0.4579	1.028	0.081	Accept Ho
Facilitator	0.7989	0.8982	0.7896	6.773	0.001	Reject Ho
Model	R	R ²	Adjusted R ²	f-value	Sig. (P-value)	Decision
	0.334	0.341	0.370	7.476	0.001	Reject Ho

Note: UC = Unstandardized Coefficients

SC = Standardized Coefficient

Dependent Variable = Pupils' Motivation

Significant when computed p-value <0.05.

Table 4 reveals the *Regression Analysis Between Teachers' Teaching Style and Pupils' Motivation*. Data shows that the Facilitator style ($\beta=0.7989$, t-value=6.773, p-value=<0.001) has strong positive relationship on pupils' motivation in Mathematics. This finding suggests that when teachers act as Facilitator, of which they don't just stand at the front and lecture, instead they act more like guide, they encourage pupils to ask questions, explore ideas, and solve problems on their own or together with classmates, pupils tend to feel like they're in control of their own learning. They become active participants rather than just passive listeners. As such they tend to engage, and excited on what they're learning. In this manner, it sparks their motivation to do better and enjoy learning Mathematics. Schweder and Raufelder (2022) found that facilitative teaching that fosters positive teacher-student relationships significantly improves pupils' motivation, particularly by nurturing emotional support and learner autonomy.

In contrast, Expert ($\beta=0.5541$, t-value= 1.021, p-value= 0.085) and Personal Model ($\beta=0.4579$, t-value=1.028, p-value= 0.081) do not significantly predict motivation. It indicates that these styles may support learning but are not the key drivers of pupils' motivation in Mathematics. This means that pupils do respond positively when teachers demonstrate deep knowledge of the subject and when they lead by example through actions and behavior. Similarly, pupils tend to feel motivated, and they respect and trust a knowledgeable teacher and a teacher who led by example, they feel encouraged by seeing their teachers' actions in practice. However, the influence of both styles on motivation is not strong compared to more interactive approaches, suggesting that while expertise and modeling help, they may not be enough on its own to fully energize or engage learners. Thus, Muharram et al. (2019) suggests that effective teaching styles encourage learner autonomy, creativity, and engagement, critical components for motivating pupils and fostering deeper learning experiences.

IV. CONCLUSIONS

From the findings of the study, the following conclusions were made.

1. Mathematics teachers are skilled at using different teaching styles.
2. Teachers are able to inspire and motivate pupils to appreciate Mathematics.
3. Teachers' teaching styles have a positive relationship with pupils' motivation.
4. Teachers allow pupils the opportunity to learn the activities on their own pace.

V. RECOMMENDATIONS

In light of the findings and conclusions of this study, the following recommendations are proposed.

1. Mathematics teachers may continue and adopt the teaching styles they already possess.
2. Teachers may maintain their skills in motivating pupils so that they may maintain their high level of motivation; thus, continue enhancing their performance in school.
3. Mathematics teachers may employ all three teaching styles so pupils may enjoy learning, stay motivated, and will achieve a better performance.
4. Teachers may improve their personal model teaching style as this got the lowest rated predictor of pupils' motivation in Mathematics.

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