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Passion and pressure in teaching: Exploring the motivation, challenges, and resilience of mathematics teachers in Iloilo Province

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ABSTRACT

This study examined the levels of motivation, challenges, and resilience among 159 elementary and secondary mathematics teachers in a municipality in the Fifth District of Iloilo, Philippines. The study used an explanatory sequential mixed-methods design. First, quantitative data were collected through a researcher-developed questionnaire and analyzed using descriptive statistics and Spearman's rho correlation. This phase was followed by a qualitative stage that included semi-structured interviews analyzed through thematic analysis. The results showed that teachers were generally motivated (M = 4.32), mainly due to their intrinsic commitment to student success. Although teaching mathematics was perceived as challenging (M = 3.80), teachers demonstrated high levels of resilience (M = 3.85). The correlation analysis revealed a strong positive relationship between challenges and resilience ($r = 0.832$, $p < .05$), indicating that dealing with professional challenges can strengthen teachers' adaptive capacity. The qualitative analysis identified six major themes related to the challenges teachers face: balancing multiple grade levels and diverse learning needs, limited preparation time and resources, weak foundational numeracy skills among students, learner attitudes and engagement, parental involvement and support, and external workloads and administrative tasks. Based on these findings, the MathRISE (Mathematics Resource, Innovation, and Support for Educators) extension program was developed. The program includes two main initiatives: Project MENTOR, which focuses on professional development and peer coaching, and Project PACE, which aims to improve parental involvement and classroom efficiency. The study concludes that establishing structured support programs is essential for maintaining teacher well-being and improving the quality of mathematics instruction.

1. Introduction

Teaching mathematics is a complex and demanding profession that requires not only mastery of content but also a strong motivation to remain committed to handling classroom challenges with resilience. A motivated teacher focuses on goals, handles daily challenges with resilience in order to continue teaching effectively, and supports improving mathematics education that helps students develop the ability to solve problems, think logically, and lifelong learning skills. In the Philippine context, the consistently low performance of students in large-scale assessments, such as the Program for International Student Assessment (PISA) (OECD, 2019), highlights an urgent need for targeted interventions and policy improvements. Addressing this concern directly aligns with Sustainable Development Goal 4 (Xerri, 2017), which emphasizes inclusive and equitable quality education, and the Department of Education's MATATAG Agenda, which prioritizes learning recovery, teacher support, and holistic development. Within these frameworks, teachers' motivation, ability to manage challenges, and capacity for resilience emerge as critical areas that demand close attention.

Research has long emphasized that teachers are central to shaping academic success, as their professional commitment significantly influences learning outcomes (Ekmekci and Serrano, 2022; Franklin and Chang, 2025). However, recent studies

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indicate a decline in teacher motivation, raising concerns about its impact on classroom effectiveness and overall educational progress (Dickhäuser et al., 2021). Understanding the factors that sustain or hinder this motivation is essential for addressing issues that may negatively affect instructional quality (Tambunan et al., 2021).

A heavy workload is a primary factor affecting this drive. While motivation is essential for effective mathematics instruction, excessive demands can diminish intrinsic motivation by limiting autonomy and competence. While supportive school environments and recognition from supervisors can bolster a teacher's resolve (Suriagiri et al., 2022), they must still contend with limited lesson time, curriculum mismatches, and inadequate resources (Karali, 2022). These competing demands often lead to stress and burnout, further constraining the ability to deliver effective instruction (Kim et al., 2019). While global studies highlight these important factors, scholars emphasize that context-specific research is necessary due to cultural and institutional differences (Acharya et al., 2021; Payadnya et al., 2024). Mathematics instruction is uniquely challenging, as it requires developing abstract reasoning in students with diverse abilities and attitudes (Mršnik et al., 2023). In the Philippines, few studies have specifically examined these localized pressures. While challenges can weaken effectiveness (Escasinas, 2025), they can also foster resilience—the dynamic capacity to adapt and thrive despite adversity (Gu and Day, 2013). As explained by the Teacher Resilience Model (Squires et al., 2023), teachers must balance adversity with supportive resources to maintain professional commitment.

Recent findings by Hettinger et al. (2023) and Wang et al. (2024) demonstrated that supportive school climates and emotional self-efficacy reduce burnout. Similarly, Balatero and Bauyot (2024) found that school leadership plays a vital role in fostering trust and resilience. Despite these contributions, there remains a lack of localized research on the interplay between motivation, challenges, and resilience among Mathematics teachers in the Philippines, particularly in rural or district-specific settings. Specifically, it focuses on mathematics teachers in one of the municipalities in the Fifth District of Iloilo and aims to:(a) determine the levels of motivation, challenges, and resilience when taken as a whole and when classified according to age, educational attainment, length of service, position, school level, and sex; (b) examine the relationships among motivation, challenges, and resilience; (c) identify the most prominent sources of motivation among mathematics teachers; (d) determine the common and complex challenges they encounter in teaching mathematics; and (e) propose an extension program based on empirical findings of the study. These variables and their hypothesized relationships are illustrated in Fig. 1, which presents the conceptual framework of the study.

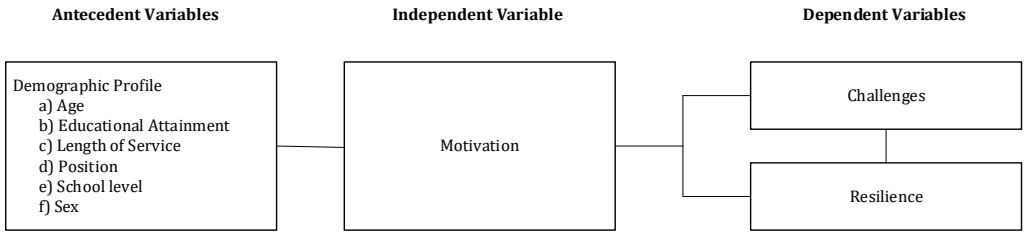

Fig. 1: Conceptual framework of the study

2. Methods

This study employed an explanatory sequential design, a mixed-methods approach as described by Creswell and Creswell (2022). In this design, quantitative data are collected and analyzed first to identify patterns, relationships, or differences**,** followed by a qualitative phase to help interpret and elaborate on those results. In this study, quantitative data on Mathematics teachers' motivation, challenges, and resilience were first gathered and analyzed. Guided by these findings, qualitative data were collected through semi-structured interviews and analyzed using thematic analysis. This sequential approach linked numerical trends with participants' experience, generating actionable insights for a proposed extension program.

The study involved both elementary and secondary Mathematics teachers in a municipality within the Fifth District of Iloilo. For the quantitative phase, all 159 Mathematics teachers were included via complete enumeration (census), ensuring comprehensive data collection and minimizing sampling errors. For the qualitative phase, purposive sampling was employed to select 12 participants. These individuals were chosen based on their willingness to participate and to ensure diversity in age, educational attainment, length of service, position, school level, and sex. This approach aligns with Ahmad and Wilkins (2025), who emphasize that purposive sampling effectively selects participants capable of providing rich, relevant information.

This study utilized a researcher-made survey questionnaire structured into five parts. Part I gathered demographic and professional information. Part II consisted of a 20-item survey on teacher motivation, focusing on engagement, job satisfaction, and professional growth. Part III featured 15 items regarding professional challenges, such as classroom management and workload. Part IV comprised a 15-item resilience scale, measuring teachers' ability to

persist and adapt despite difficulties. These sections utilized a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Part V included a 10-item checklist where respondents ranked their primary motivators and most significant challenges. Open-ended questions complemented the quantitative items by allowing teachers to describe unique difficulties in their practice.

To establish validity, the instrument underwent face and content validation by three expert evaluators. A pilot test was then conducted with 30 Mathematics teachers from the Fourth District of Iloilo. Based on feedback, ambiguous items were reworded, and the sequence was reorganized for better logical flow. The reliability of the instrument was assessed using Cronbach's alpha, which yielded a coefficient of 0.826. Tavakol and Dennick (2011) indicated that alpha values above 0.70 are generally considered acceptable, while values between 0.80 and 0.90 reflect good reliability. Therefore, the obtained alpha demonstrates that the questionnaire items were well correlated and consistently measured the intended constructs, confirming the instrument's coherence, reliability, and suitability for data collection in this study.

Formal permission to conduct the study was obtained from the Iloilo Schools Division Superintendent, followed by clearance from school principals and Mathematics coordinators. The researcher coordinated with the subject coordinators in each school to schedule the distribution and retrieval of questionnaires on dates approved by the Iloilo Schools Division Superintendent. The researcher personally administered the surveys over a ten-day period, ensuring each participant provided informed consent. A total of 159 respondents completed the survey, and the collected data were systematically coded for analysis.

For the qualitative phase, semi-structured interviews were conducted with 12 selected teachers. An interview protocol guided the discussions, which lasted approximately 10–15 minutes each. These sessions were audio-recorded with participants' consent, and supplemented with field notes to capture non-verbal cues, providing a descriptive context to complement the quantitative findings.

This study utilized a mixed-methods approach to provide a comprehensive understanding of Mathematics teachers' motivation, challenges, and resilience.

Quantitative phase: Data were organized, coded, and entered into International Business Machines (IBM) Statistical Package for the Social Sciences (SPSS), version 20. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were computed to summarize participants' demographic characteristics and variable levels. To examine the relationships among motivation, challenges, and resilience, Spearman's rho correlation was employed, as the data were derived from ordinal Likert scales. The significance level was set at alpha = 0.05 to guide hypothesis testing.

Qualitative phase: Data from semi-structured interviews and open-ended questions were analyzed using Thematic Analysis following the six-step framework by Braun and Clarke (2006): (1) familiarization with data, (2) initial coding, (3) searching for themes, (4) reviewing potential themes, (5) defining and naming themes, and (6) producing the report. To ensure rigor and trustworthiness, the study adhered to the criteria outlined by Nowell et al. (2017), maintaining an audit trail of analytic decisions and ensuring alignment between participant statements and the final thematic categories. By integrating these statistical and thematic approaches, the study ensured a nuanced interpretation of the educators' experiences, where qualitative insights help explain the patterns identified in the quantitative data.

3. Results and discussion

3.1. Level of motivation, challenges, and resilience among mathematics teachers

As indicated in Table 1, the overall results show that mathematics teachers were motivated (M = 4.32, SD = 0.60), suggesting that they generally maintain a positive outlook toward their professional responsibilities. When grouped by age, all cohorts remained motivated; however, teachers over 50 years old (M = 4.33, SD = 0.91) were slightly more motivated than those below 31 years old (M = 4.23, SD = 0.66). This variance may stem from the challenges faced by early-career teachers as they adjust to classroom demands and heavy workloads. In contrast, veteran teachers may have developed established routines and coping mechanisms that allow them to manage difficulties more effectively. This aligns with the findings of Procter-Legg et al. (2025), who reported that early-career professionals often experience lower motivation levels than their more experienced colleagues as they build professional confidence. In terms of educational attainment, teachers with a Doctorate degree were "highly motivated" (M = 4.65, SD = 0.40), while those with Bachelor's (M = 4.33, SD = 0.82) and Master's degrees (M = 4.27, SD = 0.96) were "motivated" but to a lesser degree. This suggests that higher educational attainment may enhance teachers' motivation, possibly because advanced degrees provide deeper content knowledge, professional confidence, and stronger career advancement opportunities, supporting Kowalczuk-Walędziak et al. (2017), who argued that advanced graduate studies can strengthen teachers' motivation when supported by institutional encouragement and professional development policies. For length of service, teachers with 0–10 years of experience (M = 4.35, SD = 0.74) reported the highest motivation, while those with 31 years or more (M = 4.19, SD = 1.02) reported the lowest, though still within the

"motivated" range. This suggests that while early-career teachers enter the profession with high enthusiasm and optimism, those nearing retirement may experience routine fatigue or reduced engagement in career advancement activities. Analysis by professional position showed that both Teacher I–III (M = 4.31, SD = 0.86) and Master Teacher I–II (M = 4.39, SD = 0.87) cohorts are motivated. The slightly higher mean among Master Teachers may be linked to the recognition, leadership roles, and opportunities for mentoring inherent in their position. When categorized by school level, secondary teachers (M = 4.44, SD = 0.67) were slightly more motivated than elementary teachers (M = 4.28, SD = 0.90). This difference may be due to the teaching contexts; secondary teachers often focus on specialized subjects, which allows them to apply their expertise and feel more confident in their roles, whereas elementary teachers manage multiple subjects and diverse learners, leading to a heavier workload and greater pressure. Finally, in terms of sex, both female (M = 4.38, SD = 0.82) and male (M = 4.31, SD = 0.86) teachers showed high motivation, with females slightly more motivated. This stability aligns with Johnson (2017), who emphasized the role of intrinsic and extrinsic motivators in sustaining effective teaching.

Table 1: Level of motivation among mathematics teachers

Category	Subcategory	SD	Mean	Interpretation
Overall	Entire group	0.60	4.32	Motivated
Age	Below 31 years	0.66	4.23	Motivated
	31–40 years	0.91	4.32	Motivated
	41–50 years	0.81	4.26	Motivated
	Above 50 years	0.91	4.33	Motivated
Educational attainment	Bachelor's degree	0.82	4.33	Motivated
	Master's degree	0.96	4.27	Motivated
	Doctorate degree	0.40	4.65	Highly motivated
Length of service	0–10 years	0.74	4.35	Motivated
	11–20 years	0.98	4.28	Motivated
	21–30 years	0.85	4.34	Motivated
	31+ years	1.02	4.19	Motivated
Position	Teacher I–III	0.86	4.31	Motivated
	Master teacher I–II	0.87	4.39	Motivated
School level	Elementary	0.90	4.28	Motivated
	Secondary	0.67	4.44	Motivated
Sex	Female	0.82	4.38	Motivated
	Male	0.86	4.31	Motivated

5.00–4.51: Highly motivated; 4.50-3.51: Motivated; 3.50-2.51: Slightly motivated; 2.50-1.51: Slightly not motivated; 1.50-1.00: Not at all motivated

Table 2 shows that mathematics teachers generally perceived their work as challenging (M = 3.80, SD = 0.75). However, variations across demographic profiles provide deeper insight into the specific realities of teaching Mathematics in this district. In terms of age, teachers above 50 years old (M = 3.87, SD = 0.63) reported slightly more challenges than those aged 31–40 years old (M = 3.62, SD = 0.86). This disparity may be attributed to the fact that veteran teachers often carry additional institutional responsibilities, such as mentoring, curriculum planning, and administrative duties, which increase their perceived workload. In contrast, mid-career teachers often possess a balance of experience and physical energy, allowing them to manage daily classroom demands with slightly less perceived difficulty. Similarly, regarding length of service, those with 11–20 years and those with over 30 years of experience reported higher challenge levels (M = 3.79, SD = 0.80) than their colleagues. While early-career teachers are still developing management skills, late-career educators must often navigate shifting curriculum standards and the integration of new technologies, which can intensify professional pressure. In terms of educational attainment, teachers with a Doctorate degree (M = 3.49, SD = 0.90) reported the fewest challenges, whereas those with Bachelor's (M = 3.78, SD = 1.25) and Master's degrees (M = 3.68, SD = 1.03) perceived teaching as more demanding. This suggests that advanced academic training equips educators with a broader repertoire of pedagogical strategies and greater professional confidence. This trend is mirrored in professional positions; Master Teachers (M = 3.42, SD = 1.54) reported fewer challenges than Teacher I–III (M = 3.77, SD = 0.76), likely due to their extensive experience in lesson differentiation and classroom management. When grouped by school level, elementary teachers (M = 3.80, SD = 0.77) encountered more challenges than secondary teachers (M = 3.56, SD = 0.66). This may stem from the fact that elementary educators must manage multiple subjects and a high degree of learner diversity, whereas secondary teachers focus on specialized Mathematics content. Finally, male teachers (M = 3.76, SD = 0.80) reported slightly higher challenge levels than female teachers (M = 3.68, SD = 0.80). This marginal difference may be due to variations in classroom roles or institutional workload distribution rather than instructional ability. These findings align with Karali (2022), who identified systemic issues such as inadequate resources, poor student readiness, and curriculum-exam mismatches as significant hurdles. As noted by Kim et al. (2019), these sustained demands can lead to stress and burnout, which may ultimately diminish instructional efficacy and professional motivation.

Table 3 indicates that mathematics teachers across all demographic and professional groups exhibit resilience (M = 3.85, SD = 0.56). This suggests that teachers generally possess the ability to adapt to

challenges, manage stress effectively, and sustain quality instruction despite the daily pressures of the profession. When grouped by age, all categories demonstrated resilience.

Table 2: Level of challenges among mathematics teachers

Category	Subcategory	SD	Mean	Interpretation
Overall	Entire group	0.75	3.80	Challenging
Age	Below 31 years	0.62	3.80	Challenging
	31–40 years	0.86	3.62	Challenging
	41–50 years	0.60	3.85	Challenging
	Above 50 years	0.63	3.87	Challenging
Educational attainment	Bachelor's degree	1.25	3.78	Challenging
	Master's degree	1.03	3.68	Challenging
	Doctorate degree	0.90	3.49	Slightly challenging
Length of service	0–10 years	0.70	3.71	Challenging
	11–20 years	0.80	3.79	Challenging
	21–30 years	0.70	3.71	Challenging
	31+ years	0.80	3.79	Challenging
Position	Teacher I–III	0.76	3.77	Challenging
	Master teacher I–II	1.54	3.42	Challenging
School level	Elementary	0.77	3.80	Challenging
	Secondary	0.66	3.56	Challenging
Sex	Female	0.80	3.68	Challenging
	Male	0.80	3.76	Challenging

5.00–4.51: Highly challenging; 4.50-3.51: Challenging; 3.50-2.51: Slightly challenging; 2.50-1.51: Slightly not challenging; 1.50-1.00: Not at all challenging

Teachers over 50 years old showed the highest level (M = 3.97, SD = 0.57), which may be attributed to their extensive teaching experience and well-developed coping strategies gained through years of handling diverse classroom situations. Similarly, teachers below 31 years old also displayed high resilience (M = 3.96, SD = 0.47), possibly due to their enthusiasm, adaptability, and openness to innovative teaching approaches and technologies as they begin their careers. In contrast, those aged 31–40 years reported slightly lower resilience (M = 3.72, SD = 0.57), which may be linked to the demands of balancing professional growth, family responsibilities, and classroom management. In terms of educational attainment, teachers with Bachelor's (M = 3.87, SD = 0.55) and Master's degrees (M = 3.81, SD = 0.61) exhibited higher resilience compared to those with Doctorate degrees (M = 3.67, SD = 0.58). This may be because resilience is shaped more by everyday classroom experience than by higher degrees. Teachers with advanced degrees often have extra tasks, such as research, leadership, or administrative work, which can make their workload heavier. When grouped by length of service, teachers with 11–20 years (M = 3.90, SD = 0.61) and those with 31 years and above (M = 3.89, SD = 0.33) demonstrated slightly higher resilience than those with 0–10 years (M = 3.82, SD = 0.55) and 21–30 years (M = 3.81, SD = 0.60). This trend indicates that resilience tends to strengthen as teachers gain experience and become more proficient in managing classroom challenges, workload, and student behavior. Early-career teachers are still in the process of developing these competencies, which may explain their comparatively lower resilience levels. In terms of position, Teacher I–III (M = 3.87, SD = 0.57) showed higher resilience than Master Teachers I–II (M=3.60, SD = 0.52). While Master Teachers possess greater experience and expertise, they often shoulder added responsibilities such as mentoring, supervision, and administrative tasks, which may heighten stress and slightly reduce perceived resilience. Regarding school level, elementary teachers (M = 3.90, SD = 0.55) exhibited higher resilience than secondary teachers (M = 3.68, SD = 0.59). This may be because elementary teachers work with young learners and students with varying abilities, which helps them develop strong coping skills. Secondary teachers, however, deal with more complex subjects and higher academic expectations, presenting different challenges. Finally, when grouped by sex, male teachers (M = 3.87, SD = 0.56) showed slightly higher resilience than female teachers (M = 3.74, SD = 0.62), though both were resilient. This may be because males and females cope with stress differently, with males focusing on tasks and problem-solving, while females often balance teaching with other responsibilities. These findings support Alon et al. (2025), showing that teachers' flexibility, coping skills, and support for students help them maintain teaching quality and guide students during challenging times.

3.2. Relationships between variables

Table 4 shows that mathematics teachers' motivation has a weak positive relationship with both the challenges they face ($r = 0.222$, $p < 0.05$) and their resilience ($r = 0.176$, $p < 0.05$). In everyday teaching contexts, many teachers continue working not because challenges inspire them, but because of responsibility and commitment to their students. While overcoming problems can briefly boost morale, heavy workloads, time pressure, and limited resources often make teaching stressful rather than motivating. In contrast, the strong relationship between challenges and resilience ($r = 0.832$, $p < 0.05$) reflects what teachers commonly experience in schools. As teachers repeatedly deal with crowded classrooms, struggling learners, time pressure, heavy paperwork, and frequent curriculum changes, they gradually learn how to adjust and cope with difficult days. However, being resilient does not always increase motivation, as teachers can manage stress yet still feel tired or underappreciated. This suggests

that challenges build resilience, but sustained motivation depends more on support, recognition, and a positive work environment (Salvo-Garrido et al., 2025; Xenofontos and Mouroutsou, 2023).

Table 3: Level of resilience among mathematics teachers

Category	Subcategory	SD	Mean	Interpretation
Overall	Entire group	0.56	3.85	Resilience
Age	Below 31 years	0.47	3.96	Resilience
	31–40 years	0.57	3.72	Resilience
	41–50 years	0.58	3.92	Resilience
	Above 50 years	0.57	3.97	Resilience
Educational attainment	Bachelor's degree	0.55	3.87	Resilience
	Master's degree	0.61	3.81	Resilience
	Doctorate degree	0.58	3.67	Resilience
Length of service	0–10 years	0.55	3.82	Resilience
	11–20 years	0.61	3.90	Resilience
	21–30 years	0.60	3.81	Resilience
	31+ years	0.33	3.89	Resilience
Position	Teacher I–III	0.57	3.87	Resilience
	Master teacher I–II	0.52	3.60	Resilience
School level	Elementary	0.55	3.90	Resilience
	Secondary	0.59	3.68	Resilience
Sex	Female	0.62	3.74	Resilience
	Male	0.56	3.87	Resilience

5.00–4.51: High resilience; 4.50-3.51: Resilience; 3.50-2.51: Moderate resilience; 2.50-1.51: Low resilience; 1.50-1.00: Very low resilience

The weak correlation between motivation and both challenges and resilience may be because some teachers see challenges as part of their duty and work harder to overcome them. However, overly demanding or stressful tasks can cause fatigue and burnout, which limits the effect on motivation (Escasinas, 2025).

3.3. Prominent sources of motivation

Table 5 reveals that the strongest source of motivation among mathematics teachers is their desire to help young individuals in learning mathematics (f = 114, 71.70%), highlighting their intrinsic commitment to student success. Other notable motivations include job security and tenure (f = 26, 16.40%) and a healthy working environment (f = 13, 8.20%), which emphasize the importance of stability and supportive contexts. Fewer teachers cited organizational support and policies (f = 4, 2.50%) and a sense of pride and love of mathematics (f = 2, 1.30%). The results of the study indicate that social and personal factors both influence mathematics teachers' motivation. This mirrors the work of Täht et al. (2024), who found that while poor conditions can demotivate teachers, the student-teacher connection and a stable environment serve as powerful motivators. Similarly, Zakariya and Wardat (2024) noted that "social utility motivation"—the desire to be useful to society—is a much stronger predictor of job satisfaction than personal utility.

3.4. Common and complex challenges encountered by mathematics teachers in teaching the subject

Table 6 highlights that the most common challenges faced by mathematics teachers are students' attitude (f = 67, 42.10%). This is a reflection of problems that make teaching mathematics more challenging, including absenteeism, indiscipline, low self-esteem, a negative attitude toward mathematics, lack of focus, and a lack of consistent practice (Mangwende and Maharaj, 2019). This is followed by school workload (f = 44, 27.70%), which adds significant pressure to teachers. Other concerns include lesson preparations and teaching strategies (f = 26, 16.40%), policies and leadership (f = 13, 8.20%), which is supported by Balatero and Bauyot's (2024) study, which revealed that school leaders improved teacher motivation and resilience by establishing trust and professional development opportunities. Lastly, there is work-life balance (f = 9, 5.70%), all of which contribute to stress and burnout in the profession (Escasinas, 2025).

Table 4: Strength of association among motivation, challenges, and resilience

Variables	Motivation	Challenges	Resilience
Motivation	1.000	0.222*	0.176*
Challenges	0.222*	1.000	0.832*
Resilience	0.176*	0.832*	1.000

*: $p < 0.05$ (2-tailed)

Table 5: Prominent sources of motivation among mathematics teachers in teaching the subject (N = 159)

Motivations	Frequency	Percentage	Rank
Job security and tenure	26	16.40	2
Organizational support and engaging policies	4	2.50	4
Sense of pride and love of mathematics	2	1.30	5
Healthy working environment	13	8.20	3
Desire helping young individuals in learning mathematics	114	71.70	1

3.5. Qualitative findings: Thematic analysis of teaching challenges

The qualitative phase sought to elaborate on the survey results by exploring the specific nuances of teacher challenges. Thematic analysis yielded six major themes that illustrate the multifaceted pressures on Mathematics educators (Table 7).

To gain deeper insight, a single open-ended question was asked: "What other situations do you consider as challenges in teaching mathematics?" The responses were analyzed using thematic

analysis guided by the six-phase framework of Braun and Clarke (2006).

The responses were read several times to develop a comprehensive understanding of the challenges faced by mathematics teachers. Key statements describing these challenges were identified and systematically coded. The codes were then examined and organized into broader categories, forming coherent themes. These themes were reviewed and refined against the original data to ensure they accurately represented participants' perspectives and maintained clear distinctions. Each theme was clearly defined to capture its essence, and the findings were synthesized into a coherent narrative highlighting the recurring challenges and shared patterns among the mathematics teachers.

This systematic analytical procedure resulted in the identification of six major themes, as presented in Table 7, which collectively reflect the complex and multifaceted nature of mathematics instruction.

Table 6: Challenges commonly encountered by mathematics teachers in teaching the subject (N = 159)

Challenges	Frequency	Percentage	Rank
Lesson preparations and teaching strategies	26	16.40	3
Work-life balance	9	5.70	5
School workload	44	27.70	2
Policies and leadership	13	8.20	4
Students' attitude	67	42.10	1

Table 7: Emerging themes on the challenges in teaching mathematics

No.	Theme
1	Balancing multiple grades and diverse learning needs
2	Limited preparation time and resources
3	Weak foundational skills and numeracy
4	Learner attitudes and engagement
5	Parental involvement and support
6	External workloads and administrative tasks

The qualitative findings show that mathematics teachers face challenges beyond teaching methods. These challenges include learner readiness, limited instructional resources, weak support at home, and administrative workload. Teachers reported difficulty in managing multiple grade levels and diverse learning needs. For example, one teacher stated that handling Grade 3 and Grade 4 learners in the same classroom is challenging, especially when trying to manage time for discussion. Another teacher highlighted the extra effort required to support lower-performing students, explaining that helping marginalized learners reach an average level is demanding.

Limited preparation time and lack of resources also affect teaching quality. One teacher explained that lesson planning is often rushed due to time constraints and the absence of materials such as manipulatives, teaching aids, and digital tools. In addition, many students have weak foundational skills in mathematics. Teachers noted that some learners cannot perform basic operations, which requires extra time to review previous lessons.

Low motivation and negative attitudes toward mathematics further reduce student engagement. Teachers observed that many learners believe they are not good at mathematics, which discourages them from participating or asking questions. Parental involvement is also limited, making it difficult to support learning at home. Teachers reported that some parents are not actively involved in their children's education.

Finally, administrative responsibilities increase teachers' workload. Tasks such as preparing reports and attending school activities reduce the time available for lesson planning and individual student support. Overall, these findings show that the challenges of teaching mathematics are interconnected and highlight the need for better resources, professional development, improved student motivation, stronger parental involvement, and reduced administrative burden.

3.6. Proposed extension program based on the findings

The thematic analysis revealed that teachers face complex realities beyond those identified in the initial survey. The most pressing concern was balancing multiple grades and diverse learning needs, particularly in multi-grade settings where teachers must adapt to varied learning styles and low numeracy proficiency. Teachers also cited limited preparation time and resources, noting that heavy administrative responsibilities often compromise the quality of lesson planning. Furthermore, weak foundational skills and negative student attitudes act as barriers to introducing new concepts, while a lack of parental involvement limits learning reinforcement outside the school.

In response to these findings, the MathRISE (Mathematics Resource, Innovation, and Support for Educators) extension program was developed. MathRISE incorporates two primary initiatives—Project MENTOR and Project PACE—designed to provide a structured and sustainable approach to improving teacher resilience and instructional effectiveness. The program is guided by six specific objectives:

1. Conduct training workshops to enhance pedagogical strategies and techniques.
2. Develop collaborative teaching modules to ensure consistent and effective lesson delivery.
3. Integrate technology into lesson planning and classroom instruction.
4. Mitigate major instructional challenges such as diverse student needs and resource scarcity.
5. Encourage parental involvement through streamlined communication and support systems via Project PACE.
6. Promote teacher motivation by fostering a culture of continuous learning and professional growth through Project MENTOR.

By addressing the root causes of workload pressure and student disengagement, MathRISE

directly supports the resilience and long-term professional well-being of Mathematics teachers.

4. Conclusion

The findings of this study reveal that mathematics teachers are generally motivated, perceive teaching as challenging, and demonstrate resilience in coping with these challenges. Motivation was primarily driven by the desire to help students succeed, while challenges were most strongly linked to students' attitudes, workload, and lesson preparation. Resilience was evident across all demographic and professional groups, highlighting teachers' capacity to adapt, persevere, and maintain instructional quality despite difficulties. Correlational analyses further showed that motivation positively influences teachers' ability to manage challenges, and facing challenges strongly enhances resilience. These findings underscore the interconnected nature of motivation, challenges, and resilience in sustaining effective mathematics teaching. The results emphasize the need for targeted institutional support to address workload, resource gaps, student engagement, and parental involvement programs such as MathRISE, including Project MENTOR and Project PACE.

5. Implications and recommendations

The findings imply that motivation and resilience are vital resources that enable teachers to sustain effective teaching despite difficulties. When teachers are motivated, they can better handle classroom challenges, while resilience allows them to adapt and persevere. This suggests that schools and educational institutions must prioritize teacher well-being, professional development, and the reduction of unnecessary workload in order to maintain instructional quality. The strong interplay among motivation, challenges, and resilience further shows that teacher performance and student learning outcomes are significantly shaped by how well teachers are supported in these areas.

To address these implications, the study recommends the implementation of the MathRISE Program (Mathematics Resource, Innovation, and Support for Educators) as an extension initiative designed to empower mathematics teachers. To ensure sustainability, the program should be institutionalized through policies, partnerships with the Department of Education, local government units, and parent-teacher associations. A "train-the-trainer" model will also help build teacher capacity by enabling trained educators to pass on knowledge and skills to colleagues. Continuous monitoring and evaluation will ensure that MathRISE remains responsive to teachers' needs and contributes to long-term improvements in teaching and learning outcomes.

Overall, the implications highlight that teacher motivation, resilience, and the ability to handle challenges are interconnected and central to effective mathematics teaching. The recommendations, particularly the objectives and strategies of MathRISE, provide a concrete framework for empowering mathematics teachers, enhancing classroom practices, and ultimately improving student engagement and achievement.

List of abbreviations

IBM	International Business Machines
M	Mean
MathRISE	Mathematics Resource, Innovation, and Support for Educators
MENTOR	Mathematics Educators' Network for Targeted Outreach and Resources
N	Number of respondents (sample size)
PACE	Parental Assistance and Classroom Efficiency
p	Probability value (significance level)
PISA	Programme for International Student Assessment
r	Correlation coefficient (Spearman's rho)
SD	Standard deviation
SPSS	Statistical Package for the Social Sciences

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Compliance with ethical standards

Ethical considerations

An informed consent form was attached at the beginning of the researcher-made survey questionnaire, clearly outlining the study's purpose, objectives, methodology, potential benefits, participants' right to withdraw, and instructions for completing the survey. Throughout the data collection and analysis, the researcher strictly maintained confidentiality and anonymity, ensuring voluntary participation and safeguarding respondents' rights and privacy. The study adhered to established ethical standards and posed no risk to the participants' well-being at any stage of the research.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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