PANTAO
(International Journal of the Humanities and Social Sciences)
Volume 5, Issue 3
ISSN 3028-0877 | DOI 10.69651/2022PIJHSS

Teachers' beliefs, mindset, philosophy, and mathematics teaching anxiety: Input to instruction management in mathematics

Jessa I. Gallano*
Capiz State University - Main Campus, Roxas City, Capiz, Philippines

ABSTRACT

Mathematics education remains a global concern, particularly in addressing low achievement and negative attitudes toward the subject. One of the key issues identified in recent studies is mathematics anxiety, which affects both learners and teachers. This study examined teachers' beliefs, mindsets, teaching philosophy, and mathematics teaching anxiety, and explored how these variables may serve as input to instructional management in mathematics. The research aimed to determine the levels of these professional dispositions and to analyze the relationships among them. A descriptive-correlational research design was employed, involving 112 elementary mathematics teachers in grades 4, 5, and 6. Data were collected using a researcher-made questionnaire assessing teachers' beliefs about mathematics, growth, and fixed mindset orientations, teaching philosophy, and mathematics teaching anxiety. The mean and Spearman rho correlation coefficient, set at a 0.05 alpha level, were used to determine the relationship between teachers' beliefs, mindset, teaching philosophy, and mathematics teaching anxiety. Findings revealed that teachers held very positive beliefs and a teaching philosophy toward mathematics instruction. Teachers also exhibited a strong growth mindset. Despite these positive professional orientations, results indicated a moderate level of mathematics teaching anxiety. Significant relationships were found among teachers' beliefs, mindset, and teaching philosophy, while mathematics teaching anxiety showed limited but meaningful associations with selected variables. The study concludes that although teachers demonstrate strong pedagogical beliefs and growth-oriented perspectives, moderate levels of teaching anxiety still persist, particularly in challenging instructional situations. These findings highlight the need for targeted professional development programs that enhance instructional confidence, strengthen pedagogical content knowledge, and promote supportive collaborative practices to improve instructional management in mathematics.

Keywords: Teachers' beliefs, mindset, philosophy, mathematics teaching anxiety, instructional management.

Date Submitted: June 24, 2026
Date Accepted: June 30, 2026
Date Published: July 5, 2026

*Corresponding author / Email: jessa.inosantos@deped.gov.ph
DOI: http://doi.org/10.69651/PIJHSS05031288

Recommended citation:
Gallano, J. I. (2026). Teachers' beliefs, mindset, philosophy, and mathematics teaching anxiety: Input to instruction management in mathematics. Pantao (International Journal of the Humanities and Social Sciences) 5 (3), 572-595. http://doi.org/10.69651/PIJHSS05031288

INTRODUCTION

Mathematics education is still a global issue, especially when it comes to low achievement and bad attitudes toward the subject. Mathematics anxiety is one of the most important problems that recent studies have found. It affects both students and teachers. Studies indicate that educators' beliefs, attitudes, and emotional states regarding mathematics profoundly affect their teaching methodologies and, subsequently, student learning outcomes (Ramirez, et al.; Luttenberger et al., 2018). Teachers who feel anxious or have limiting beliefs may unintentionally pass these feelings on to their students, which can change how they feel and how well they do in school.

Teachers' attitudes and beliefs about teaching are also very important to how well students learn. A growth mindset fosters perseverance and resilience, whereas a fixed mindset may exacerbate the fear of failure (Claro, S., Paunesku, D., and Dweck, C. S. 2016). Teaching philosophies also affect whether lessons are more student-centered or traditional, which in turn affects how engaged and understanding students are in the classroom (Ernest, 2018).

Mathematics performance continues to be a priority, particularly in view of outcomes from international evaluations like the Programme for International Student Assessment and the Trends in International Mathematics and Science Study. Local studies confirm that educators' beliefs and emotional factors substantially influence teaching efficacy. Dio and Danganan (2020) discovered that educators' beliefs influence instructional methodologies, whereas Baloran (2020) observed that teachers' anxiety impacts their confidence and classroom efficacy. Ulep (2019) found that teachers have math anxiety, and Bernardo (2019) stressed how important the mindset is for motivating and helping students succeed.

Agencies such as the Department of Education and Commission on Higher Education have limited studies that have examined the combined influence of teachers' beliefs, mindset, philosophy, and mathematics teaching anxiety.

Teachers' beliefs, mindset, philosophy, and anxiety about teaching math are important factors in how they teach, especially since math is a subject that makes many people anxious. The researcher, who taught math to students in grades 4, 5, and 6, felt nervous about how to explain difficult ideas or answer unexpected questions from her students. These events made her think about how her own beliefs and mindset affected not only my teaching choices but also my emotional reactions while teaching. Teachers' beliefs about math, their views on students' abilities, and their teaching philosophies have a big effect on how they teach, how they interact with students, and how well students learn (European Journal of Psychology of Education, 2024).

Teachers' beliefs about mathematics, whether they view it as a set of rigid rules to be memorized or as a dynamic process of problem-solving and reasoning, directly affect their instructional choices and their students' learning experiences (Justicia-Galiano and Pelegrina, 2024; Boyacı and Gürcü Erdamar, 2023). Beliefs about the nature of mathematics influence whether teachers approach lessons as opportunities for exploration or merely as exercises in rote memorization. Research has shown that teachers who view mathematics as a dynamic and problem-solving discipline are more likely to encourage critical thinking, creativity, and collaborative learning among students (Justicia-Galiano and Pelegrina, 2024). Teachers who hold fixed beliefs about mathematics may unconsciously convey limitations to their students, potentially reinforcing mathematics anxiety and reducing learner engagement. Moreover, teachers' beliefs regarding their competence and ability to teach mathematics are closely associated with their levels of teaching anxiety.

Another critical factor influenced by mathematics teaching anxiety is mindset. Teachers with heightened anxiety are more prone to communicate fixed beliefs, such as the notion that only some students can succeed in mathematics. Ramirez, Hooper, Kersting, Ferguson, and

Yeager (2018) reported that anxious teachers are more likely to project fixed messages that students internalize, which in turn lowers student achievement. Conversely, teachers with lower levels of anxiety tend to cultivate a growth mindset, emphasizing persistence, effort, and the potential for all learners to improve in mathematics.

Carol Dweck (2017) conceptualized that a growth mindset allows educators to view challenges as opportunities for learning and development, whereas a fixed mindset constrains instructional innovation and limits teachers' responses to students' difficulties. Studies have found that teachers with higher mathematics teaching anxiety are more likely to demonstrate a fixed mindset, which affects their instructional strategies and may contribute to students' negative attitudes toward mathematics. This mindset orientation also shapes the overall classroom environment and influences how teachers respond to students' errors and learning difficulties. As teachers promote positive beliefs about learning and exhibit confidence in teaching mathematics, students are more likely to develop motivation, resilience, and a stronger sense of competence in the subject.

Teaching philosophy, which encompasses teachers' guiding principles and educational values, is another critical factor influencing classroom practice. A teacher's philosophy informs decisions about lesson planning, assessment, and classroom interactions. When aligned with beliefs and mindset, it promotes consistency and confidence in teaching practices. A teacher's philosophy conflicts with personal anxieties or limiting beliefs; this misalignment can exacerbate stress and reduce instructional effectiveness (BMC Psychology, 2025).

Mathematics teaching anxiety is a multidimensional construct that reflects teachers' emotional responses to teaching mathematical content. It not only affects teachers' confidence but also their pedagogical decision-making. Evidence suggests that high levels of math anxiety among teachers may result in over-reliance on procedural teaching methods, avoidance of complex problem-solving tasks, and diminished willingness to encourage student inquiry (Ganley, Schoen, LaVenia, and Tazaz, 2019).

Teachers experiencing higher levels of mathematics teaching anxiety often rely on teacher-centered approaches, rigid classroom control, and repetitive drills, which may limit student engagement and conceptual understanding (Ramirez et al., 2019; Uysal and Yenilmez, 2023). Teachers who actively address their teaching anxiety demonstrate stronger self-efficacy, adopt growth-oriented mindsets, and embrace reflective student-centered philosophies (Liu, Chen, and Zhang, 2025).

Even though people are starting to understand how important teachers' beliefs, mindsets, and philosophies are, there isn't much research that looks at these things together when it comes to math teaching anxiety, especially in schools in the area. Most studies examine either teachers' beliefs or math anxiety in isolation, resulting in a deficiency in comprehending how these factors interact and affect instructional management. Through the observation of personal experiences and those of colleagues, the researcher discerned that teachers' beliefs, mindset, philosophy, and mathematics teaching anxiety collectively influence the delivery of lessons, the management of classroom dynamics, and student engagement with mathematics.

By exploring these interconnected dimensions among mathematics teachers, this study hopes to contribute to a more holistic understanding of what teachers internally carry with them into the classroom, whether these internal factors strengthen them or hold them back. It also aims to produce insights that the College of Education can use to refine training, mentoring, and instructional support systems in alignment with Capiz State University's commitment to Sustainable Development Goals and to the development of nurturing, competent, and emotionally resilient educators.

The study on teachers' beliefs, mindset, philosophy, and mathematics teaching anxiety aligns primarily with N – Nurturing Sustainable and Resilient Institutions and E – Engagement for Well-being, Entrepreneurship, and Globalization under the MANAGE Research Agenda. It supports institutional resilience by addressing factors that influence teachers' instructional effectiveness, such as anxiety, beliefs, and mindset. By identifying these internal challenges, the study can inform professional development programs that enhance teaching quality.

The study contributes to teacher well-being by examining mathematics teaching anxiety and its impact on performance, thereby promoting a healthier and more supportive teaching environment. It also indirectly supports equity and inclusion, as improved teaching practices benefit diverse learners. The study is also aligned with United Nations Sustainable Development Goal 4, particularly in improving learning outcomes and strengthening teacher quality, and Sustainable Development Goal 3 by addressing teachers' emotional and psychological conditions, such as anxiety, which affect their professional performance. By examining the relationship between mathematics teaching anxiety and mindset, the study may contribute to the development of supportive interventions and professional development programs that promote teacher well-being and instructional effectiveness. In turn, enhancing teachers' confidence and emotional readiness in mathematics instruction may help create more positive learning environments and improve students' academic experiences and outcomes.

The researcher is highly motivated to conduct this study because of her own experiences as a mathematics teacher. Throughout her teaching career, she has encountered moments of both confidence and anxiety while teaching mathematics. These experiences prompted her to reflect on how her beliefs, mindset, and teaching philosophy influence her instructional practices and interactions with students. Such reflections led the researcher to explore whether other teachers have experienced similar challenges and how these factors shape their approaches to mathematics instruction.

By examining these experiences, the researcher hopes to contribute to a deeper understanding of the relationship between mathematics teaching anxiety, mindset, and classroom practices among teachers.

Statement of the problem

This study sought to investigate whether teachers' beliefs, mindsets, and teaching philosophies affect mathematics teaching anxiety with the goal of providing input for improving instructional management in mathematics.

Specifically, it sought to answer the following questions:

1. What is the level of beliefs of teachers in mathematics in general and in terms of the nature of mathematics, the role of the teacher, the role of the learner, instructional practices, and assessment practices?
2. What is the level of mindset of teachers in mathematics in general, and in terms of growth mindset and fixed mindset?
3. What is the level of teaching philosophies of teachers in mathematics in general, and in terms of core beliefs about teaching, instructional approaches, goals of teaching, and the role of teacher and learner?
4. What is the level of teachers' mathematics teaching anxiety in general and in terms of anxiety in problem-solving and anxiety in teaching/instruction?
5. Are there significant relationships among teachers' beliefs, mindset, and teaching
6. philosophy, and mathematics teaching anxiety?
7. What output can be proposed to address mathematics teaching anxiety?

PANTAO
(International Journal of the Humanities and Social Sciences)
Volume 5, Issue 3
ISSN 3028-0877 | DOI 10.69651/2022PIJHSS

METHODOLOGY

This chapter presents a detailed description of the research design and methodology employed to achieve the research objectives. It includes a discussion of the locale and respondents of the study, the research instrument used to gather the necessary data, and the procedures for data collection and analysis.

The study employed a descriptive-correlational research design to examine the relationships among teachers' beliefs, mindset, teaching philosophy, and mathematics teaching anxiety. This design allows researchers to describe current conditions and determine the extent to which variables are related to one another (Creswell & Creswell, 2018). The researcher used this design to determine how teachers' beliefs, mindsets, and teaching philosophies influence mathematics teaching anxiety and how the findings may serve as input for instruction management in mathematics. Specifically, the study sought to provide a comprehensive picture of how teachers' orientations toward teaching and learning shape classroom dynamics and contribute to either reducing or intensifying mathematics teaching anxiety. Furthermore, this design allowed the researcher to explore how teachers' personal and professional dispositions influence their ability to manage classroom instruction effectively and create supportive and continuous learning environments for learners in mathematics.

The study was conducted in 14 schools in the District of Ivisan, 19 schools in the District of Sigma, 19 schools in the District of Dao, 16 schools in the District of Sapian, and 20 schools in the District of Cuartero within the Division of Capiz during the School Year 2025–2026. These schools served as the research locale because they provided a suitable setting for examining teachers' beliefs, mindset, and teaching philosophy in relation to mathematics teaching anxiety. The selected districts were considered appropriate as they reflect diverse teaching practices and instructional contexts that offer meaningful insights into how teachers' dispositions influence instruction management in mathematics.

The respondents of the study were 112 out of 151 public elementary mathematics teachers in the Districts of Ivisan, Sigma, Sapian, Dao, and Cuartero for School Year 2025–2026. These teachers were selected because they are directly engaged in teaching mathematics and can provide relevant insights regarding their beliefs, mindset, and teaching philosophy in relation to mathematics teaching anxiety. The Raosoft sample size calculator was used to determine the appropriate sample size to ensure the validity and reliability of the results. The proportional allocation formula was applied to identify the number of teachers to be included from each district. To ensure unbiased representation, stratified random sampling through the lottery technique was employed in the selection of respondents.

With regard to the stratification of respondents by school, in the Ivisan District, Agustin P. Navarra Elementary School, Balaring Elementary School, Basaio Elementary School, Cabugao Elementary School, Cudian Elementary School, Panfilo Mendoza Elementary School, Purification A. Alagban ES, Victor A. Umiten Memorial School, and Tigis Primary School each had a population of 1 and a sample size of 1; Don Catalino Andrada Memorial School and Juan S. Jarencio Elementary School each had a population of 3 and a sample size of 2; Ivisan Elementary School had a population of 5 and a sample size of 4; and Mahayag Elementary School and Malocloc Elementary School each had a population of 2 and a sample size of 1. In the Sigma District, Acbo Elementary School, Amaga Elementary School, Atty. Santiago Abella Vito ES, Cogon Elementary School, Dayhagon Elementary School, Doña Fructuosa Alba de Romero ES, Juan Aldea Elementary School, Loreto A. Balgos Elementary School, Matinabus Elementary School, Simeon Bidiones Elementary School, Sinandigan Elementary School, and Eleodoro J. Ponsaran Integrated School each had a population of 1 and

a sample size of 1; Maestro Juan Reyes Elementary School had a population of 2 and a sample size of 1; Mangoso Elementary School and Margarita Soriano Elementary School each had a population of 3 and a sample size of 2; Jose Reyes Jarencio Elementary School had a population of 3 and a sample size of 2; Pascual Gregore Elementary School had a population of 2 and a sample size of 1; Sigma Elementary School had a population of 5 and a sample size of 4; and Pagbunitan Elementary School had a population of 2 and a sample size of 1. In the Dao District, Agtampi Primary School, Agtanguay Elementary School, Andres Quintia Elementary School, Alfonso E. Espiritu Memorial School, Bita Primary School, Centro Primary School, Daplas Primary School, Manhoy Elementary School, Mapulang Bato Elementary School, Matagnop Elementary School, and Quinayuya Elementary School each had a population of 1 and a sample size of 1; Antonio Abad Elementary School had a population of 2 and a sample size of 1; Dao Central School had a population of 5 and a sample size of 4; Doroteo Eslaban, Sr. Elementary School had a population of 2 and a sample size of 1; Ilas Norte Elementary School had a population of 3 and a sample size of 2; Lacaron Elementary School and Malonoy Elementary School each had a population of 2 and a sample size of 1; and Nicanor Escutin Elementary School and Tabuc Elementary School each had a population of 3 and a sample size of 2. In the Sapian District, Agsilab Elementary School, Agkaningay Elementary School, Agtatacay Norte Elementary School, Agtatacay Sur Elementary School, Angkin Elementary School, Benlit Elementary School, Culasi Elementary School, Damayan Elementary School, Camansi Primary School, Dapdapan Elementary School, Majanlud Elementary School, Maninang Elementary School, and Telesforo Aperocho Elementary School each had a population of 1 and a sample size of 1; Bangkal Elementary School had a population of 2 and a sample size of 1; Bilao Integrated School had a population of 3 and a sample size of 2; Lonoy Elementary School had a population of 2 and a sample size of 1; Sapian Elementary School had a population of 3 and a sample size of 2; and Wenceslao Elementary School had a population of 2 and a sample size of 1. In the Cuartero District, Agcabugao Elementary School, Agdahon Elementary School, Agnaga Elementary School, Angub Elementary School, Bitoon Elementary School, Mahunodhunod Elementary School, Mainit Elementary School, Malagab-I Elementary School, and Nagba Elementary School each had a population of 1 and a sample size of 1; Balingasag Elementary School had a population of 2 and a sample size of 1; Bun-od Elementary School, Carataya Elementary School, Lunayan Elementary School, Mahabang Sapa Elementary School, and Maindang Elementary School each had a population of 2 and a sample size of 1; Cuartero Central School had a population of 5 and a sample size of 4; and Putian Elementary School, San Antonio Elementary School, Sinabsaban Elementary School, and Vicente F. Fabuna Elementary School each had a population of 2 and a sample size of 1. In total, the population across all five districts was 151, yielding an overall sample size of 112.

The profile of the respondents in terms of age, sex, highest educational attainment, years in the teaching profession, grade level taught, teaching load, number of learners per class, and Mathematics-related trainings or seminars attended reveals several important features of the teaching workforce. In terms of age, the largest group of respondents, comprising 40 out of 112 or 36%, falls within the 36–45 age range, followed by those aged 46–55, comprising 32 respondents or 29%, and those aged 20–35, comprising 28 respondents or 25%. Only 12 respondents, or 11%, are 56 years old and above. This distribution indicates that most of the teachers are in their mid-career stage, suggesting a balance between relatively younger and more experienced educators. With respect to sex, the teaching workforce in this study is predominantly male, comprising 76 respondents or 68%, while females account for 36 respondents or 32%. This reflects a noticeable male dominance among Mathematics teachers in the selected districts. Regarding highest educational attainment, most respondents have pursued graduate studies. Fifty respondents, or 45%, have earned master's units, 36 respondents, or 32%, are master's degree holders, 10 respondents, or 9%, have doctoral units,

and 12 respondents, or 11%, are doctoral degree holders, while only 4 respondents, or 4%, have a bachelor's degree as their highest qualification. This indicates a strong commitment to professional growth and academic advancement among the teachers.

In terms of teaching experience, 40 respondents, or 36%, have been in the profession for 11–20 years, 36 respondents, or 32%, for 21–30 years, 28 respondents, or 25%, for 0–10 years, and only 8 respondents, or 7%, for 31 years and above. These findings suggest that the workforce is largely composed of experienced educators, with most having more than a decade of teaching service. As to grade level taught, more than half of the respondents, specifically 58 respondents or 52%, handle Grades 4, 5, and 6 simultaneously. Smaller proportions teach specific grade levels or combinations, such as Grade 4 only, comprising 14 respondents or 13%, Grade 5 only, comprising 8 respondents or 7%, Grade 6 only, comprising 4 respondents or 4%, Grade 4 and 5, comprising 10 respondents or 9%, Grade 4 and 6, comprising 6 respondents or 5%, and Grade 5 and 6, comprising 12 respondents or 11%. This implies that most teachers manage multiple grade assignments, reflecting the complexity of their instructional responsibilities. In terms of teaching load, the majority, comprising 64 respondents or 57%, handle 3–4 Mathematics classes, 28 respondents, or 25%, manage 1–2 classes, and 20 respondents, or 18%, handle five or more classes. This indicates that most teachers carry a moderate to relatively heavy teaching load. Regarding class size, 68 respondents, or 61%, handle classes with 1–25 students, while 44 respondents, or 39%, teach classes with 26–50 students. Although smaller classes are more common, a considerable proportion of teachers still manage relatively large class sizes. As to participation in Mathematics-related trainings and seminars, 42 respondents, or 37%, have attended seven or more trainings, 40 respondents, or 36%, attended 1–3 trainings, 28 respondents, or 25%, attended 4–6 trainings, and only 2 respondents, or 2%, reported no training at all. This suggests that most teachers are actively engaged in professional development activities related to Mathematics instruction.

Overall, the data reveal that Mathematics teachers in the selected districts are generally experienced, academically prepared, and professionally active. Most are in their mid career stage, possess graduate level qualifications, and have substantial teaching experience. They handle multiple grade levels and carry moderate to heavy teaching loads, often with varying class sizes. Their active participation in professional development activities reflects a strong commitment to continuous improvement. These characteristics suggest that the respondents are well equipped to support effective Mathematics instruction and contribute positively to student learning outcomes.

A researcher made questionnaire was used to gather the data needed for the study. It was composed of five (5) parts. Part I gathered data on the demographic profile of the respondents. Part II was the Teachers' Beliefs Questionnaire. Part III was the Teachers' Mindset Questionnaire. Part IV was the Teaching Philosophy Questionnaire, and Part V was the Mathematics Teaching Anxiety Questionnaire. Part I gathered background information about the respondents in terms of age, sex, highest educational attainment, years in the teaching profession, grade level taught, teaching load, number of learners per class, and number of Mathematics related trainings or seminars attended.

Part II was the 25 item Teachers' Beliefs Questionnaire. The items were categorized into the following: Nature of Mathematics (items 1–5), Role of the Teacher (items 6–10), Role of the Learner (items 11–15), Instructional Practices (items 16–20), and Assessment Practices (items 21–25). Respondents rated each statement using a 5-point Likert scale: 5 for Strongly Agree, 4 for Agree, 3 for Neutral, 2 for Disagree, and 1 for Strongly Disagree. To determine the level and description of the beliefs of teachers in Mathematics, the researcher arbitrarily assigned the following scale and descriptions: a scale of means of 4.21 – 5.00 was given the

verbal description Very Positive, a scale of means of 3.41 – 4.20 was given the verbal description Positive, a scale of means of 2.61 – 3.40 was given the verbal description Neutral, a scale of means of 1.81 – 2.60 was given the verbal description Negative, and a scale of means of 1.00 – 1.81 was given the verbal description Very Negative.

Part III was the 20 item Teachers' Mindset Scale. Items 1–10 measured Growth Mindset, while items 11–20 measured Fixed Mindset. Respondents also rated each statement using a 5-point Likert scale: 5 for Strongly Agree, 4 for Agree, 3 for Neutral, 2 for Disagree, and 1 for Strongly Disagree. To describe the level of mindset of teachers in Mathematics, the researcher arbitrarily assigned the following scale and descriptions: a scale of means of 4.21 – 5.00 was given the verbal description Very Strong Growth Mindset, a scale of means of 3.41 – 4.20 was given the verbal description Growth Oriented, a scale of means of 2.61 – 3.40 was given the verbal description Neutral, a scale of means of 1.81 – 2.60 was given the verbal description Fixed Oriented, and a scale of means of 1.00 – 1.81 was given the verbal description Strong Fixed Mindset.

Part IV of the questionnaire was the 20 item Teaching Philosophy Questionnaire. It covered Core Beliefs about Teaching (items 1–5), Instructional Approaches (items 6–10), Goals of Teaching (items 11–15), and the Role of the Teacher and Learner (items 16–20). Respondents rated each statement using a 5-point Likert scale: 5 for Strongly Agree, 4 for Agree, 3 for Neutral, 2 for Disagree, and 1 for Strongly Disagree. To describe the level of teaching philosophies of teachers in Mathematics, the researcher arbitrarily assigned the following scale and descriptions: a scale of means of 4.21 – 5.00 was given the verbal description Very Positive, a scale of means of 3.41 – 4.20 was given the verbal description Positive, a scale of means of 2.61 – 3.40 was given the verbal description Neutral, a scale of means of 1.81 – 2.60 was given the verbal description Negative, and a scale of means of 1.00 – 1.81 was given the verbal description Very Negative.

Part V, the last part of the questionnaire, was the 20 item Mathematics Teaching Anxiety Questionnaire. This instrument was specifically designed for teachers experiencing Mathematics teaching anxiety and measured two key dimensions: Anxiety in Problem Solving (items 1–10), which reflected teachers' anxiety when performing mathematical tasks, and Anxiety in Teaching or Instructional Contexts (items 11–20), which captured anxiety related to explaining, demonstrating, and teaching Mathematics. Respondents rated each statement using a 5-point Likert scale: 5 for Strongly Agree, 4 for Agree, 3 for Neutral, 2 for Disagree, and 1 for Strongly Disagree. To determine the level of teachers' Mathematics teaching anxiety, the researcher arbitrarily assigned the following scale and descriptions: a scale of means of 4.21 – 5.00 was given the verbal description Very High, a scale of means of 3.41 – 4.20 was given the verbal description High, a scale of means of 2.61 – 3.40 was given the verbal description Moderate, a scale of means of 1.81 – 2.60 was given the verbal description Low, and a scale of means of 1.00 – 1.81 was given the verbal description Very Low.

Prior to data collection, the research instrument underwent face and content validation by a panel of experts. Revisions were made based on their recommendations to ensure clarity, validity, and appropriateness of the items. The validated instrument was then pilot tested among thirty (30) Grade 4, 5, and 6 Mathematics teachers in the District of Panitan to further determine its clarity, relevance, and reliability. The pilot test data were analyzed using the Statistical Package for the Social Sciences (SPSS) to establish reliability. Internal consistency was assessed using Cronbach's alpha, with a minimum acceptable threshold of 0.70, as recommended by Nunnally and Bernstein (1994). The analysis yielded a Cronbach's alpha coefficient of 0.948, indicating excellent reliability and confirming the instrument's suitability for use in the quantitative analysis of the study.

The data gathering process started with the researcher asking for permission from the Dean of the College of Education, the Office of the Schools Division Superintendent of Capiz,

and the School District Supervisors of Ivisan, Sigma, Dao, Sapian, and Cuartero to conduct the study. Upon approval, she then distributed the research questionnaire to the respondents through Google Forms linked to the researcher's official email address. The respondents were asked to access the link, read and respond to the ethical considerations' statements, and complete the questionnaire online. Their responses were automatically recorded and stored in the Google Forms database. After all responses were gathered, the researcher downloaded the data file and submitted it to the statistician for analysis. The collected data were processed and interpreted using the Statistical Package for the Social Sciences (SPSS) employing frequency count, percentage, mean, and Spearman rho at a 0.05 level of significance.

The statistical tools used for the analysis of data were frequency count, percentage, mean, and Spearman rho, set at a 0.05 level of significance. Frequency count and percentage were used to describe the demographic profile of the respondents, including age, sex, highest educational attainment, years in the teaching profession, grade level taught, teaching load, and number of Mathematics related trainings or seminars attended. The mean was used to describe the levels of teachers' beliefs, mindset, teaching philosophy, and Mathematics teaching anxiety. The Spearman rho correlation coefficient was used to determine the relationships among teachers' beliefs, mindset, teaching philosophy, and Mathematics teaching anxiety.

RESULTS AND DISCUSSION

This chapter presents the data gathered from 112 Grade 4, 5, and 6 public elementary mathematics teachers across the Districts of Ivisan, Sigma, Dao, Sapian, and Cuartero within the Division of Capiz, selected through stratified random sampling using the lottery technique from a total population of 151 teachers, following a descriptive-correlational research design. Data were gathered using a researcher-made questionnaire composed of five parts covering the demographic profile of the respondents, teachers' beliefs, teachers' mindset, teaching philosophy, and mathematics teaching anxiety, and were analyzed using frequency count, percentage, mean, and the Spearman rho correlation coefficient at a 0.05 level of significance. The discussion that follows is grounded entirely in the data gathered and is interpreted in direct relation to the objectives of the study, namely to describe the levels of teachers' beliefs, mindset, teaching philosophy, and mathematics teaching anxiety, to determine the relationships among these variables, and to develop an instructional support material responsive to the findings.

Teachers' beliefs in mathematics refer to their perceptions and attitudes regarding the nature of mathematics, the roles of teachers and learners, instructional strategies, and assessment practices, and these beliefs significantly influence how teachers deliver instruction, engage students, and evaluate learning outcomes. The results revealed that Grade 4, 5, and 6 mathematics teachers possess highly positive pedagogical beliefs, evidenced by a general mean of 4.66, reflecting a robust and consistent alignment with constructive, learner-centered frameworks in mathematics instruction. A closer examination of the domains shows that teachers obtained Very Positive ratings across all indicators: nature of mathematics (M = 4.61), role of the teacher (M = 4.66), role of the learner (M = 4.65), instructional practices (M = 4.66), and assessment practices (M = 4.70), which obtained the highest mean. These findings suggest that teachers maintain highly favorable perceptions across all key dimensions of mathematics education, viewing mathematics as a subject that should be engaging, conceptually rich, and supportive of critical thinking, while recognizing the shared responsibility of teachers and learners in the teaching-learning process and emphasizing the importance of student-centered instruction, active engagement, and meaningful assessment practices. Moreover, the findings indicate that teachers value instructional approaches that promote exploration, real-life

application, and deep conceptual understanding rather than rote memorization, perceiving their role as facilitators of learning who guide students in developing critical thinking skills, confidence, and independence, while supporting instructional strategies that actively engage learners, address diverse learning needs, and utilize assessment as a tool for improving learning rather than merely measuring performance. These findings are supported by existing literature: Reedy et al. (2021) emphasized that formative assessment and meaningful feedback significantly enhance student learning outcomes, Smith et al. (2021) found that positive teacher beliefs strengthen instructional quality and teacher efficacy, and Chan et al. (2020) highlighted that constructivist and active-learning approaches promote higher-order thinking and real-world application of mathematical concepts. Overall, the results suggest that teachers' beliefs are closely linked to their instructional planning and classroom practices, as teachers with strong learner-centered beliefs are more likely to design learning activities that promote critical thinking, multiple problem-solving strategies, and student responsibility for learning, and to integrate real-life applications, hands-on activities, and visual representations to make abstract mathematical concepts more meaningful and accessible. These findings highlight that teachers' beliefs play a crucial role in shaping a supportive and effective learning environment, influencing how lessons are designed to promote understanding, engagement, and differentiated learning experiences, with teachers who hold positive and constructivist beliefs better able to create classrooms that foster student confidence, motivation, and problem-solving skills. Therefore, strengthening and sustaining these positive beliefs among teachers is essential in improving the quality of mathematics instruction, as doing so can enhance classroom management, deepen conceptual understanding, and ultimately support the development of learners' critical thinking and problem-solving abilities.

Teachers' mindset in mathematics refers to their beliefs about whether mathematical ability can be developed through effort, effective strategies, and guidance, described as a growth mindset, or viewed as fixed and unchangeable, described as a fixed mindset. The results revealed that mathematics teachers in Grades 4, 5, and 6 demonstrated a Very Strong Growth Mindset in mathematics, with a general mean of 4.60, indicating that teachers strongly believe mathematical ability can be developed through effort, persistence, effective teaching strategies, and continuous encouragement. In particular, the growth mindset indicators obtained a mean of 4.69, interpreted as Very Strong Growth Mindset, reflecting teachers' strong agreement that learners can improve their mathematical skills through practice, guidance, and constructive feedback, suggesting that teachers consistently uphold the belief that effort and strategy are key drivers of mathematical success. Interestingly, the fixed mindset indicators obtained a mean of 4.52, which is also interpreted as Very Strong Growth Mindset based on the scale's verbal description, indicating that even responses associated with fixed mindset statements were interpreted in a way that still reflects strong growth-oriented thinking among the respondents, suggesting that teachers generally disagreed with fixed beliefs about mathematical ability and maintained a consistent orientation that supports the idea that learners can improve over time. Overall, these findings signify that teachers demonstrate a strong commitment to promoting perseverance, resilience, and learner confidence in mathematics, as the high ratings across both indicators suggest that teachers value effort over innate ability, view mistakes as opportunities for learning, and recognize the importance of instructional strategies in shaping student achievement. Although some responses may reflect occasional perceptions of difficulty in certain mathematical topics, the overall pattern still indicates a dominant growth mindset orientation among the respondents, implying that teachers view learning mathematics as a gradual and developmental process that improves through effort, persistence, and support rather than as a fixed ability, tending to perceive challenges as opportunities for growth and mistakes as a natural part of learning, and recognizing that the quality of instruction, encouragement, and feedback plays a significant role in shaping students' confidence and

success in mathematics. These findings are consistent with previous studies emphasizing the benefits of a growth mindset in education: Lin-Smith and Fránquiz (2019) found that teachers with strong growth mindsets are more likely to create learning environments that promote perseverance, resilience, and continuous improvement; Bayraktar (2020) reported that teachers who believe in the malleability of ability tend to implement supportive instructional strategies, provide constructive feedback, and emphasize effort-based praise, all of which enhance student motivation and academic resilience; and Claro et al. (2016) found that growth mindset beliefs among educators are positively associated with higher student engagement, adaptive learning behaviors, and improved academic performance, particularly in challenging subjects such as mathematics, noting that when teachers emphasize learning as a process, students are more likely to develop persistence and effective learning strategies that support long-term success. The results further suggest that teachers' mindset influences classroom climate and instructional decisions, as teachers who believe that intelligence can be developed are more likely to differentiate instruction, scaffold learning experiences, and maintain high expectations for all learners, whereas fixed-oriented beliefs may limit instructional flexibility and reduce opportunities for student growth (Yeager & Dweck, 2020). Overall, these results show that teachers' mindset in mathematics plays a vital role in shaping instructional practices and the quality of student learning experiences, with the predominance of a Very Strong Growth Mindset among the respondents reflecting a professional orientation that values effort, perseverance, and continuous improvement, fostering supportive classroom environments where learners are encouraged to take intellectual risks, engage with challenging tasks, and persist despite difficulties. Teachers with growth-oriented beliefs are also more likely to provide constructive feedback, model resilience, and strengthen students' confidence and positive attitudes toward mathematics, and sustaining this mindset among teachers is essential for improving instructional effectiveness, classroom management, and continuous learning in mathematics, and for promoting students' long-term mathematical competence and lifelong learning.

Teachers' philosophy in mathematics refers to their beliefs and attitudes regarding teaching approaches, learner engagement, the development of problem-solving and critical thinking skills, and the role of teachers as facilitators of learning, and these beliefs influence how teachers plan lessons, deliver instruction, and create classroom environments that support student growth. The results revealed that Grade 4, 5, and 6 mathematics teachers demonstrated a Very Positive philosophy in mathematics, with a general mean of 4.64, indicating that teachers strongly value learner-centered instruction, conceptual understanding, problem-solving, critical thinking, and active student participation. A closer examination of the indicators shows that all domains obtained Very Positive ratings: core beliefs about teaching (M = 4.61), instructional approaches (M = 4.66), goals of teaching (M = 4.65), and the role of teacher and learner (M = 4.64), reflecting teachers' strong commitment to delivering effective and meaningful mathematics instruction while prioritizing student engagement and the facilitation of learning. The results further suggest that teachers view mathematics learning as an active and dynamic process in which learners construct understanding through exploration, application, and meaningful engagement rather than rote memorization, perceiving themselves primarily as facilitators who guide learners in developing independent thinking, confidence, and persistence, and valuing instructional strategies that address diverse learner needs, integrate multiple approaches, and allow students to demonstrate understanding in various ways. These findings are consistent with previous studies highlighting the importance of teaching philosophy in improving student outcomes: Bayraktar (2020) noted that teachers with student-centered and constructivist-oriented philosophies are more likely to implement strategies that

actively engage learners and strengthen problem-solving skills; Claro et al. (2016) emphasized that educators who foster growth-oriented learning environments contribute to higher student motivation, persistence, and academic resilience; and Darling-Hammond et al. (2020) found that reflective and adaptive instructional practices create conditions that promote learner autonomy, critical thinking, and meaningful understanding. The results imply that teachers' philosophy directly influences lesson organization and classroom interactions, as teachers who strongly endorse learner-centered practices are more likely to design learning tasks that encourage multiple problem-solving strategies, collaboration, critical thinking, and real-life application of mathematical concepts, and to incorporate hands-on activities, visual representations, and varied instructional strategies to make abstract concepts more accessible and engaging. Overall, the findings support the idea that teachers' philosophy in mathematics plays a significant role in shaping instructional practices and students' learning experiences, with a positive and learner-centered philosophy serving as a guiding framework for lesson planning, classroom management, and the attainment of learning goals. Teachers who uphold such beliefs are more likely to promote conceptual understanding, active participation, differentiated instruction, and learner autonomy, and these classroom environments consequently encourage students to take responsibility for their learning, approach mathematical tasks with confidence, and develop higher-order thinking skills, making the sustaining of a positive and constructivist teaching philosophy essential in fostering students' long-term mathematical competence, critical thinking abilities, and readiness for lifelong learning.

Mathematics teaching anxiety refers to teachers' feelings of nervousness, worry, tension, or stress when teaching, solving, and explaining mathematical concepts, reflecting the level of confidence teachers have in delivering lessons, responding to learners' questions, performing mathematical computations, and assessing students' understanding. The results revealed that Grade 4, 5, and 6 mathematics teachers experienced a moderate level of mathematics teaching anxiety, with a general mean of 3.88, indicating that while teachers are generally confident in teaching mathematics, they still experience Moderate levels of anxiety in certain aspects of instruction and problem-solving. An analysis of the specific domains shows that anxiety in problem-solving obtained a mean of 3.86, while anxiety related to teaching and instruction obtained a mean of 3.90, both interpreted as Moderate, suggesting that teachers occasionally experience stress when dealing with complex mathematical tasks, unfamiliar concepts, or challenging instructional situations. The results further imply that teachers are generally comfortable with routine instructional tasks and classroom management; however, moderate anxiety tends to arise in situations that require higher cognitive demand, such as solving multi-step problems, teaching abstract concepts, and preparing lessons on difficult topics, with anxiety appearing slightly lower during direct instructional activities, such as demonstrating procedures or responding to learners' immediate questions, suggesting that classroom interaction and procedural teaching are relatively more manageable for teachers than complex content delivery. These findings suggest that the school environment provides a generally supportive context for mathematics instruction; however, there remains a need for continued professional development focused on strengthening teachers' confidence in handling complex mathematical content, with areas of relatively lower anxiety, such as demonstrating procedures and guiding learners, serving as strengths that can be enhanced through peer mentoring, collaborative planning, and instructional coaching. The findings are consistent with previous studies, as Pahmi et al. (2025) reported that pre-service teachers experience moderate levels of anxiety, particularly when preparing lessons and handling instructional tasks, and McMinn (2019) found moderate mathematics teaching anxiety among pre-service teachers, who reported feeling somewhat anxious when teaching mathematics, aligning with the present study in suggesting that both novice and experienced teachers may encounter manageable but

noticeable anxiety when dealing with complex instructional demands. The results further suggest that anxiety levels may influence teachers' instructional decisions and classroom interactions, as teachers experiencing Moderate anxiety may become more cautious in introducing complex problem-solving strategies and may rely more on familiar examples, structured instruction, and guided teaching approaches, while placing greater emphasis on lesson preparation and organization as coping mechanisms to reduce instructional stress while maintaining learner engagement.

To determine the relationships among teachers' beliefs, mindset, teaching philosophy, and mathematics teaching anxiety, the Spearman rho correlation coefficient was computed at a 0.05 level of significance. The analysis revealed significant positive correlations among teachers' beliefs, mindset, and teaching philosophy, while no significant relationships were found between these professional dispositions and mathematics teaching anxiety. The relationship between teachers' beliefs and mindset was statistically significant ($r = 0.317^{**}$, $p = .001$), indicating that teachers who exhibit stronger positive beliefs about mathematics are more likely to demonstrate a Very Strong Growth Mindset, suggesting that beliefs regarding the value of mathematics, conceptual understanding, and learner-centered instruction are closely associated with teachers' growth-oriented views of learning and ability development, a finding supported by Fives and Buehl (2016), who emphasized that positive professional beliefs reinforce flexible thinking and resilience in teaching practice. Since $p = .001$ is less than the 0.05 alpha level, this result is significant, and the researcher rejected the null hypothesis, implying that teachers with positive beliefs about mathematics are more likely to demonstrate a Very Strong Growth Mindset; based on this finding, the researcher structured the M.A.T.H. Toolkit to include exercises designed to strengthen both positive beliefs and growth-oriented thinking in mathematics instruction. The correlation between teachers' beliefs and teaching philosophy was strong and significant ($r = 0.735^{**}$, $p = .000$), showing that teachers' beliefs are strongly aligned with their instructional orientation, which is interpreted as Very Positive in the study's philosophy results, implying that teachers who value learner-centered and constructivist practices are more likely to adopt a Very Positive teaching philosophy that emphasizes problem-solving, engagement, and reflective instruction, a finding supporting Ernest (2019), who noted that teachers' beliefs significantly shape pedagogical choices and classroom interactions. Since $p = .000$ is less than the 0.05 alpha level, this result is significant, and the researcher rejected the null hypothesis, indicating that teachers who hold strong beliefs about mathematics are more likely to demonstrate a Very Positive teaching philosophy; in response to this finding, the researcher developed the M.A.T.H. Toolkit to include learner-centered lesson guides intended to strengthen instructional practices. The correlation between teachers' beliefs and mathematics teaching anxiety was very weak and not statistically significant ($r = 0.053$, $p = .581$), indicating that positive beliefs, although generally associated with a Very Positive orientation in teaching, do not necessarily reduce mathematics teaching anxiety, suggesting that even teachers with strong positive beliefs may still experience moderate levels of anxiety when dealing with complex problem-solving tasks, unexpected student questions, or unfamiliar content, a finding aligning with previous studies suggesting that beliefs are more closely related to instructional orientation than to emotional regulation (Fives & Buehl, 2016; Hill et al., 2018). Since $p = .581$ is greater than the 0.05 alpha level, this result is not significant, and the researcher accepted the null hypothesis, suggesting that despite holding Very Positive beliefs about mathematics, teachers may still experience mathematics teaching anxiety; based on this finding, the researcher developed the M.A.T.H. Toolkit to include reflective and emotional support activities to help manage teaching-related anxiety. The relationship between teachers' mindset and teaching philosophy was moderate and

significant (r = 0.477**, p = .000), indicating that a Very Strong Growth Mindset is associated with a Very Positive teaching philosophy, and that teachers with growth-oriented beliefs about ability are more likely to adopt facilitative and learner-centered instructional approaches that promote conceptual understanding and active engagement, a result consistent with Dweck et al. (2019), who emphasized the connection between growth mindset and adaptive teaching practices. Since p = .000 is less than the 0.05 alpha level, this result is significant, and the researcher rejected the null hypothesis, indicating that teachers with a Very Strong Growth Mindset are more likely to demonstrate a Very Positive teaching philosophy; based on this result, the researcher developed the M.A.T.H. Toolkit to include activities that promote both growth mindset and learner-centered instruction. The correlation between teachers' mindset and mathematics teaching anxiety was weakly negative and not statistically significant (r = –0.068, p = .474); although a Very Strong Growth Mindset may support resilience and persistence, it does not necessarily eliminate mathematics teaching anxiety, as teachers may still experience tension when teaching difficult concepts or managing complex instructional demands, suggesting that mindset supports adaptability but does not fully address emotional challenges in teaching (Dweck et al., 2019; Bayraktar, 2020). Since p = .474 is greater than the 0.05 alpha level, this result is not significant, and the researcher accepted the null hypothesis, indicating that even with a Very Strong Growth Mindset, teachers may still experience mathematics teaching anxiety; based on this finding, the researcher developed the M.A.T.H. Toolkit to include stress management and reflective activities to help teachers cope with instructional anxiety. The correlation between teachers' teaching philosophy and mathematics teaching anxiety was likewise weak and not significant (r = 0.114, p = .232); although teachers demonstrate a Very Positive teaching philosophy, this does not necessarily reduce mathematics teaching anxiety, as teaching philosophy guides lesson planning and promotes reflective instruction but does not directly eliminate emotional stress caused by diverse learner needs, complex content, and time constraints, a finding consistent with Darling-Hammond et al. (2020), who noted that instructional philosophy supports teaching effectiveness but does not automatically regulate emotional stress. Since p = .232 is greater than the 0.05 alpha level, this result is not significant, and the researcher accepted the null hypothesis, indicating that even teachers with a Very Positive teaching philosophy may still experience mathematics teaching anxiety; based on this finding, the researcher developed the M.A.T.H. Toolkit to include practical teaching support and reflective activities aimed at reducing anxiety.

Overall, the findings suggest that teachers' beliefs, mindset, and teaching philosophy are closely interconnected professional dispositions reflected in Very Strong Growth Mindset and Very Positive orientations, with positive beliefs associated with a growth-oriented mindset, and with both beliefs and mindset significantly influencing teaching philosophy. However, these dispositions alone do not appear sufficient to significantly reduce mathematics teaching anxiety. These results further imply that while professional dispositions play an important role in instructional management, mathematics teaching anxiety may still persist due to contextual and situational demands, as teachers who demonstrate Very Positive beliefs and philosophy, as well as a Very Strong Growth Mindset, are more likely to plan lessons confidently and implement effective strategies, yet still require additional support to address emotional challenges in teaching mathematics. Thus, aside from strengthening teachers' beliefs, mindset, and philosophy, schools should also provide targeted support such as mentoring, content enrichment, stress management training, and collaborative professional learning to help teachers manage anxiety and improve instructional effectiveness. Based on the findings of the study, the hypothesis stating that there are no significant relationships among the variables is accepted with respect to teachers' beliefs and mathematics teaching anxiety, teachers' mindset and mathematics teaching anxiety, and teachers' philosophy and mathematics teaching anxiety, due to the lack of statistically significant relationships. Similarly, the results of the study fail to

reject the null hypothesis, more precisely reject it, for the relationships between teachers' beliefs and mindset, beliefs and philosophy, and mindset and philosophy, as these relationships were found to be statistically significant.

In direct response to these findings, the researcher developed the M.A.T.H. Toolkit, or the Mathematics Anxiety in Teaching for High-Quality Instruction Toolkit, as an instructional support material designed to reduce mathematics teaching anxiety and enhance the quality of classroom instruction. The toolkit provides structured lesson guides, learner-centered activities, reflective exercises, and emotional support strategies that teachers may use before, during, and after the teaching process, emphasizing the integration of cognitive, pedagogical, and affective dimensions of teaching in recognition that effective mathematics instruction depends not only on content mastery and instructional strategies but also on the emotional readiness, confidence, and mindset of the teacher, so that the toolkit supports both the professional competence and emotional well-being of mathematics teachers. The development of the toolkit was primarily anchored on the findings of the study, which revealed that teachers possess highly positive beliefs about mathematics and demonstrate a strong growth-oriented mindset, indicating their openness to learning, improvement, and instructional innovation, and that teachers employ learner-centered teaching philosophies aligned with contemporary educational standards that promote active learning and student engagement. However, the study also identified a moderate level of mathematics teaching anxiety among teachers, suggesting that while teachers are generally well-prepared in terms of content knowledge and pedagogical orientation, an affective barrier still exists that may influence confidence, instructional delivery, and classroom interaction. In response to this gap, the researcher found it necessary to develop an intervention that addresses mathematics teaching anxiety while reinforcing effective instructional practices, and the M.A.T.H. Toolkit was thus conceptualized as a responsive and supportive material intended to bridge the gap between positive professional dispositions and emotional challenges in teaching mathematics.

The production of the M.A.T.H. Toolkit is grounded on an empirical basis derived from the findings of the study, a theoretical basis, and a practical and contextual basis. On the empirical basis, the toolkit directly reflects the key variables examined in the study, namely teachers' beliefs, mindset, teaching philosophy, and mathematics teaching anxiety, and was carefully designed to translate these interconnected variables into practical and usable instructional support materials that address both the cognitive and affective dimensions of teaching, aiming to support teachers in managing and reducing teaching anxiety through reflective exercises and emotional preparedness activities, to strengthen positive beliefs about mathematics and promote a growth-oriented mindset through confidence-building tasks and guided reflections, and to enhance learner-centered teaching practices through structured lesson guides, interactive classroom tasks, and varied instructional strategies, thereby serving as a bridge between theory and practice and ensuring that research-based insights are translated into concrete instructional strategies applicable in real classroom settings. On the theoretical basis, the toolkit is informed by established educational theories explaining how teachers think, teach, and respond emotionally in mathematics instruction, specifically the Belief Systems Theory (Fives and Buehl, 2022), which explains that teachers' beliefs about mathematics significantly influence instructional planning and classroom decision-making; the Mindset Theory (Dweck, 2017), which emphasizes that abilities can be developed through effort, persistence, and continuous learning; the Constructivist Teaching Philosophy (Fosnot, 2020), which asserts that learners construct knowledge more effectively through active participation, exploration, and meaningful engagement rather than passive listening; and the Mathematics Teaching Anxiety Theory (Peker and Ertekin, 2019), which highlights that teachers may experience anxiety in

teaching mathematics that can affect their confidence, instructional delivery, and overall effectiveness, with these perspectives collectively guiding the design of the toolkit to address both the cognitive and emotional dimensions of teaching mathematics. On the practical and contextual basis, the development of the toolkit was guided by the actual needs and realities of teachers in classroom settings, recognizing that many teachers require instructional materials that are accessible, practical, and ready to use, particularly those that can help them manage both instructional demands and emotional challenges at the same time, and ensuring that the toolkit would be relevant, realistic, and responsive to the everyday experiences of mathematics teachers; as such, the toolkit was intentionally designed to be simple and user-friendly, flexible and adaptable to different classroom contexts, and grounded in real teaching scenarios reflecting common instructional challenges faced by teachers in actual classroom practice, comprising pre-teaching reflection activities to help teachers prepare mentally and emotionally before instruction, in-class learner-centered strategies to enhance engagement and conceptual understanding during teaching, and post-teaching evaluation tools to support reflection and continuous improvement, thereby promoting ongoing professional growth while also supporting emotional regulation and instructional effectiveness in mathematics teaching.

Taken together, the findings of this study demonstrate that the 112 Grade 4, 5, and 6 mathematics teachers of the Division of Capiz possess Very Positive beliefs about mathematics (general mean of 4.66), a Very Strong Growth Mindset (general mean of 4.60), and a Very Positive teaching philosophy (general mean of 4.64), while simultaneously experiencing a Moderate level of mathematics teaching anxiety (general mean of 3.88). Statistical testing using Spearman rho revealed significant positive relationships among teachers' beliefs, mindset, and teaching philosophy, specifically between beliefs and mindset ($r = 0.317^{**}$, $p = .001$), between beliefs and philosophy ($r = 0.735^{**}$, $p = .000$), and between mindset and philosophy ($r = 0.477^{**}$, $p = .000$), leading to rejection of the corresponding null hypotheses, while no significant relationships were found between these dispositions and mathematics teaching anxiety, specifically between beliefs and anxiety ($r = 0.053$, $p = .581$), between mindset and anxiety ($r = –0.068$, $p = .474$), and between philosophy and anxiety ($r = 0.114$, $p = .232$), leading to acceptance of the corresponding null hypotheses. These results directly address the objectives of the study by establishing that teachers' cognitive and pedagogical dispositions, namely their beliefs, mindset, and philosophy, are strongly interrelated and collectively supportive of learner-centered mathematics instruction, while also revealing that these positive dispositions alone are insufficient to significantly alleviate the moderate anxiety teachers experience in teaching mathematics, an emotional dimension that appears to operate somewhat independently of cognitive and philosophical orientation. The findings contribute to the field by clarifying the distinct yet interconnected roles of cognitive beliefs, mindset, instructional philosophy, and emotional experience in mathematics teaching, and by demonstrating the practical necessity of interventions, such as the researcher-developed M.A.T.H. Toolkit, that address the affective dimension of teaching alongside the cognitive and pedagogical dimensions already well supported among the respondents. These results, grounded firmly in the data gathered from the 112 respondents and the statistical procedures applied, provide the empirical foundation for the summary of findings, conclusions, and recommendations to be presented in the succeeding chapter.

CONCLUSION

The findings of this study demonstrate that public elementary Mathematics teachers from the districts of Ivisan, Sigma, Sapian, Dao, and Cuartero possess highly positive

professional dispositions that support effective Mathematics instruction. Teachers consistently exhibited strong pedagogical beliefs regarding the nature of Mathematics, the roles of teachers and learners, instructional practices, and assessment practices. They recognized Mathematics as an essential discipline that contributes not only to academic achievement but also to learners' cognitive development, analytical thinking, and problem-solving abilities. Likewise, they believed that all learners are capable of understanding mathematical concepts when provided with appropriate guidance, meaningful support, and well-designed learning experiences. These findings indicate that the participating teachers possess a solid professional foundation that promotes quality Mathematics instruction and learner success.

The study further established that the respondents demonstrated a very strong growth mindset, reflecting their belief that mathematical competence can be continuously developed through sustained effort, reflective practice, and continuous professional learning. This growth-oriented perspective complements their highly positive teaching philosophy, which is characterized by a learner centered orientation that emphasizes conceptual understanding, active student participation, meaningful engagement, authentic learning experiences, and problem solving. Collectively, these professional dispositions suggest that teachers value continuous improvement, embrace instructional innovation, and recognize the importance of facilitating meaningful learning experiences that respond to the diverse needs of learners.

Despite these highly positive beliefs, mindset, and teaching philosophy, the findings also revealed that teachers experience a moderate level of Mathematics teaching anxiety, particularly in situations involving problem solving and instructional delivery. This indicates that even experienced and competent teachers may encounter emotional challenges when teaching complex mathematical concepts or responding to unexpected classroom situations. Nevertheless, the statistical analysis demonstrated significant relationships among teachers' beliefs, mindset, and teaching philosophy, indicating that these professional dispositions are closely interconnected and mutually reinforcing. In contrast, the relationships between these variables and Mathematics teaching anxiety were not found to be statistically significant, suggesting that although positive professional dispositions contribute to teachers' instructional perspectives, they do not necessarily eliminate experiences of teaching anxiety. Even so, teachers who maintain strong learner centered beliefs, a growth-oriented mindset, and a constructivist teaching philosophy appear better prepared to respond to classroom demands, adapt to diverse learner needs, and sustain effective instructional practices despite experiencing moderate levels of anxiety.

These findings further highlight the importance of providing structured support that strengthens teachers' emotional readiness while reinforcing their existing professional competencies. In response to this need, the M.A.T.H. (Mathematics Anxiety in Teaching for High Quality Instruction) Toolkit was developed to provide structured lesson guides, reflective activities, learner centered instructional strategies, and practical emotional regulation techniques designed to help teachers manage Mathematics teaching anxiety. The toolkit reinforces positive beliefs about Mathematics, strengthens teachers' growth-oriented mindset, supports the consistent application of learner centered and constructivist teaching practices, enhances professional confidence, reduces the effects of instructional anxiety, and promotes more responsive, meaningful, and effective Mathematics instruction.

In light of these findings, teachers are encouraged to cultivate positive, supportive, and inclusive classroom environments while continuously reflecting on how their beliefs, mindset, and teaching philosophy influence their instructional practices and experiences of Mathematics teaching anxiety. Active participation in professional development programs, peer mentoring, collaborative lesson planning, and reflective teaching practices should be sustained to

strengthen instructional competence, improve confidence, and enhance overall teaching effectiveness. School administrators should likewise provide continuous institutional support through structured mentorship programs, targeted professional development initiatives, collaborative planning opportunities, regular feedback mechanisms, and open communication that foster a culture of trust, collaboration, and reflective practice. Policymakers are likewise encouraged to consider these findings in developing educational policies that promote teacher well-being, continuous professional development, learner centered pedagogy, and reflective instructional practices to further improve instructional quality and student learning outcomes. Finally, future researchers are encouraged to investigate additional factors that may influence Mathematics teaching anxiety, including classroom environment, curriculum demands, student behavior, and socioemotional classroom dynamics, while also examining the long-term effectiveness of the M.A.T.H. (Mathematics Anxiety in Teaching for High Quality Instruction) Toolkit and similar intervention programs. Such investigations may contribute to a deeper understanding of teacher psychology and generate stronger evidence-based strategies that further strengthen Mathematics teaching, instructional management, and student learning.

REFERENCES

Aguilar-Valdés, A., et al. (2024). Teacher beliefs and instructional practices: Personal and contextual influences. Educational Studies in Mathematics, 115(2), 233–250. https://doi.org/10.1007/s10649-024-10345-6

Aksu, M., & Kul, U. (2019). Pedagogical content knowledge and mathematics teaching anxiety: The mediating role of teaching efficacy. Journal of Education and Training Studies, 7(3), 45–56.

Alkhateeb, F. M. (2019). Teachers' beliefs and instructional practices in mathematics education. International Journal of Instruction, 12(1), 23–38.

Baloran, E. T. (2020). Teachers' anxiety and classroom performance during emergency remote teaching. International Journal of Educational Research and Innovation, 14, 1–12.

Bernardo, A. B. I. (2019). Mathematics achievement and motivation in the Philippine context. Asia-Pacific Education Researcher, 28(4), 389–400. https://doi.org/10.1007/s40299-019-00456-7

Black, P., & Wiliam, D. (2018). Classroom assessment and pedagogy. Assessment in Education: Principles, Policy & Practice, 25(6), 551–575. https://doi.org/10.1080/0969594X.2018.1441807

Boaler, J. (2016). Mathematical mindsets. Jossey-Bass.

Borko, H. (2018). Professional development and teacher learning: Mapping the terrain. Educational Researcher, 47(8), 499–508. https://doi.org/10.3102/0013189X18821148

Bostwick, K. C. P., Collie, R. J., Martin, A. J., & Durksen, T. L. (2020). Teachers' growth mindset and classroom climate. Teaching and Teacher Education, 95, 103129. https://doi.org/10.1016/j.tate.2020.103129

Boyacı, A., & Gürcü Erdamar, B. (2023). Teachers' beliefs about mathematics teaching and learning. Educational Studies in Mathematics, 112(2), 1–18. https://doi.org/10.1007/s10649-023-10234-5

Bravo, M., et al. (2023). Inclusive pedagogies and teacher anxiety in mathematics classrooms. Teaching and Teacher Education, 128, 104145. https://doi.org/10.1016/j.tate.2023.104145

Brookhart, S. M. (2017). Formative assessment and mathematics learning. Educational Measurement: Issues and Practice, 36(3), 1–12.

Bursal, M., & Paznokas, L. (2016). Mathematics anxiety and pre-service teachers' confidence. School Science and Mathematics, 106(4), 173–180. https://doi.org/10.1111/ssm.12172

Çenberci, S. (2019). Mathematics teaching anxiety among pre-service teachers. International Journal of Instruction, 12(3), 345–360.

Claro, S., Paunesku, D., & Dweck, C. S. (2016). Growth mindset tempers the effects of poverty on academic achievement. Proceedings of the National Academy of Sciences, 113(31), 8664–8668. https://doi.org/10.1073/pnas.1608207113

Dio, R., & Danganan, C. (2020). Teachers' beliefs and instructional practices in mathematics education. Journal of Curriculum Studies, 52(3), 1–15.

Dowker, A., Sarkar, A., & Looi, C. Y. (2016). Mathematics anxiety: What have we learned in 60 years? Frontiers in Psychology, 7, 508. https://doi.org/10.3389/fpsyg.2016.00508

Dweck, C. S. (2017). Mindset: The new psychology of success. Random House.

Ernest, P. (2018). The philosophy of mathematics education. Philosophy of Mathematics Education Journal, 33(1), 1–20.

Fauth, B., et al. (2019). The effects of teacher beliefs on instructional quality. Learning and Instruction, 60, 1–13. https://doi.org/10.1016/j.learninstruc.2018.10.005

Ferguson, R., et al. (2018). Teachers' beliefs and student outcomes in mathematics classrooms. Educational Psychologist, 53(2), 123–140.

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2016). School engagement. Review of Educational Research, 74(1), 59–109. https://doi.org/10.3102/00346543074001059

Fullan, M. (2016). The new meaning of educational change. Teachers College Press.

Ganley, C. M., et al. (2019). Mathematics anxiety and teacher practices. Journal of Educational Psychology, 111(4), 1–15.

Gervacio, J. (2022). Instructional practices and mathematics anxiety among teachers. International Journal of Educational Research, 114, 101992. https://doi.org/10.1016/j.ijer.2022.101992

Göçer, V., & Özeren, E. (2025). Curiosity, anxiety, and teaching efficacy beliefs. BMC Psychology, 13(1), 665. https://doi.org/10.1186/s40359-025-02940-5

Gresham, G. (2018). Mathematics anxiety and mathematics teacher efficacy. School Science and Mathematics, 118(3–4), 135–144. https://doi.org/10.1111/ssm.12273

Griful-Freixenet, J., et al. (2020). Teachers' beliefs and inclusive education practices. Teaching and Teacher Education, 92, 103063. https://doi.org/10.1016/j.tate.2020.103063

Haciomeroglu, G. (2017). Mathematics anxiety and teaching practice. International Journal of Science and Mathematics Education, 15(5), 1–18.

Hattie, J. (2017). Visible learning for teachers. Routledge.

Heyder, A., et al. (2020). Teachers' implicit beliefs and student achievement expectations. Learning and Instruction, 66, 101298. https://doi.org/10.1016/j.learninstruc.2019.101298

Hiebert, J., & Grouws, D. A. (2017). Classroom mathematics teaching effects. In Second handbook of research on mathematics teaching and learning (pp. 371–404).

Jabagat, R., et al. (2025). Preservice teachers' beliefs and mathematics confidence. Asia-Pacific Education Researcher, 34(1), 45–60.

Boaler, J. (2016). Mathematical mindsets. Jossey-Bass.

Kim, J., & Cho, M. (2021). Teacher beliefs and mathematics anxiety. Educational Studies in Mathematics, 108(2), 1–20. https://doi.org/10.1007/s10649-021-10050-7

Larkin, K. (2025). Lesson study and reduction of mathematics teaching anxiety. International Journal of Mathematical Education in Science and Technology, 56(2), 201–215.

Larkin, K., & Jorgensen, R. (2016). Mathematics anxiety and teacher mindset. Australian Journal of Education, 60(3), 1–15.

Lestari, N., et al. (2025). Philosophy of education in curriculum implementation. Curriculum Studies in Education, 12(1), 77–92.

Li, Q. (2025). Teacher beliefs and instructional decision-making. Learning and Instruction, 90, 101–118.

Li, S., et al. (2024). Inquiry-based learning and teacher belief systems. Journal of STEM Education, 25(2), 34–48.

Liu, Y., Chen, X., & Zhang, H. (2025). Reflective teaching and mathematics teaching anxiety. Teaching and Teacher Education, 132, 104312. https://doi.org/10.1016/j.tate.2025.104312

Marzano, R. J., et al. (2017). Classroom management that works. ASCD.

Masten, A. S. (2018). Resilience theory and research. Development and Psychopathology, 30(2), 1–18. https://doi.org/10.1017/S095457941800020X

McAfee, O., & Hoffman, J. (2021). Teacher beliefs and instructional decision-making. Journal of Curriculum Studies, 53(4), 1–18.

Müller, J. (2025). Critical pragmatic philosophy in education. Educational Philosophy and Theory, 57(2), 145–160.

Novayani, E. (2025). Educational philosophy and teacher professionalism. International Journal of Educational Development, 95, 102–118.

Ornstein, A. C., & Hunkins, F. P. (2018). Curriculum: Foundations, principles, and issues.

Peker, M., & Ulu, M. (2018). Beliefs and mathematics teaching anxiety. Journal of Education and Training Studies, 6(4), 45–56.

Philipp, R. A., & Raymond, A. M. (2016). Teacher beliefs and mathematical thinking. Mathematics Teacher Education Journal, 8(2), 1–20.

Piyakun, S. (2025). Teaching philosophy and mathematics anxiety. International Journal of Instruction, 18(1), 1–15.

Prasetyo, T., et al. (2023). Mathematics teaching anxiety dimensions. Educational Psychology Review, 35(2), 211–230.

Quiliban, M., & Arriola, J. (2022). Teacher beliefs and mathematics anxiety. International Journal of Instruction, 15(4), 101–116.

Ramirez, G., et al.; Luttenberger, S., et al. (2018). Teachers' math anxiety and student achievement. Psychological Science, 29(11), 1821–1831.; Mathematics anxiety: What we know. Frontiers in Psychology, 9, 506. https://doi.org/10.3389/fpsyg.2018.00506

Ramirez, G., Shaw, S. T., & Maloney, E. A. (2019). Math anxiety and teacher cognition. Contemporary Educational Psychology, 57, 101–113.

Rivera, M., & Osena, J. (2025). Teaching philosophy and classroom autonomy. Educational Management Administration & Leadership, 53(1), 1–16.

Sagarduy, R., et al. (2024). Global perspectives on mathematics anxiety. Educational Research Review, 42, 100–120.

Schoen, R. C. (2019). Teacher beliefs and instructional practice. Journal of Mathematics Teacher Education, 22(3), 201–220.

Schön, D. A. (2017). The reflective practitioner. Routledge.

Shoshani, A. (2021). Growth mindset and teacher well-being. Teaching and Teacher Education, 97, 103218.

Skinner, E. A., & Pitzer, J. R. (2018). Engagement in the classroom. Educational Psychology Handbook, 23–46.

Sun, J. (2024). Reflective practice in mathematics education. ZDM Mathematics Education, 56(2), 155–170.

Sun, K., & Zhang, Y. (2024). Teacher beliefs and curriculum implementation. Curriculum Inquiry, 54(3), 233–250.

Sun, X., & Roeser, R. W. (2021). Mindfulness and mathematics teaching anxiety. Mindfulness, 12(5), 1123–1135.

Taveras, J., et al. (2025). Growth mindset and teacher development. Teaching and Teacher Education, 135, 104–118.

Ungar, M. (2018). Systemic resilience theory. Ecology and Society, 23(4), 34. https://doi.org/10.5751/ES-10385-230434

Ulep, S. (2019). Mathematics anxiety among teachers in the Philippines. Philippine Journal of Education, 93(2), 45–60.

Uysal, E., & Yenilmez, K. (2023). Mathematics teaching anxiety and instruction. International Journal of Mathematical Education in Science and Technology, 54(6), 1–14.

Villarin, J., & Villacruz, A. (2025). Teaching philosophy and learner-centered instruction. International Journal of Curriculum Studies, 15(1), 66–82.

Wijaya, A. (2025). Growth mindset and classroom resilience. Journal of Mathematics Education, 18(1), 55–72.

Wolf, S., & Brown, C. (2023). Teacher beliefs and student mathematics anxiety. Learning and Instruction, 86, 101645. https://doi.org/10.1016/j.learninstruc.2023.101645

Yeager, D. S., & Dweck, C. S. (2018). Mindsets that promote resilience. Educational Psychologist, 53(1), 1–20. https://doi.org/10.1080/00461520.2018.1468595

Yeager, D. S., et al. (2019). Growth mindset interventions and outcomes. Nature, 573, 364–369. https://doi.org/10.1038/s41586-019-1466-y

Zee, M., & Koomen, H. M. Y. (2016). Teacher self-efficacy and classroom management. Review of Educational Research, 86(4), 981–1015. https://doi.org/10.3102/0034654315626801

Zembylas, M. (2019). Emotional practices in teaching. Teaching and Teacher Education, 86, 102877. https://doi.org/10.1016/j.tate.2019.102877

Zhang, L., et al. (2025). Teacher emotions and instructional efficacy. Educational Psychology Review, 37(1), 1–20.

Zhou, Y., Li, X., & Wang, L. (2025). Reflective practice and instructional improvement. Journal of Teacher Education, 76(1), 88–102.