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Exploring Self-Confidence and Problem-Solving Skills : A Grade 7 Case Study in Mathematics

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Abstract: *This study aimed to determine the relationship between self-confidence, perceived problem-solving skills, and academic performance in Mathematics among Grade 7 students at Basak National High School, Mandaue City, for the school year 2024–2025. Employing a descriptive-correlational research design, the study utilized total enumeration, involving all 296 Grade 7 students as respondents. Data were collected through a validated questionnaire adapted from Fennema-Sherman (for self-confidence) and Erdem-Keklik (for problem-solving skills), while academic performance was based on third-quarter Mathematics grades. Statistical tools included frequency, percentage, weighted mean, standard deviation, and Pearson Product-Moment Correlation Coefficient. Results revealed that students had a moderate level of self-confidence (WM = 3.17), moderate perceived problem-solving skills (WM = 3.29), and a satisfactory level of academic performance (mean grade = 83.69). A strong positive correlation was found between self-confidence and problem-solving skills ($r = 0.757$, $p < 0.05$). However, only negligible but significant correlations existed between self-confidence and academic performance ($r = 0.202$), and problem-solving skills and academic performance ($r = 0.245$).*

The study concludes that while self-confidence significantly influences students' perceived problem-solving abilities, its impact on actual academic performance is limited. It recommends that Mathematics instruction include affective support strategies—such as feedback, modeling, and scaffolding—to enhance both confidence and cognitive skills. An action plan was proposed to improve students' mathematical engagement and outcomes.

Key words: *Mathematics Teaching, Self-Confidence, Problem-Solving Skills, Mathematics Performance, Grade 7, Descriptive-Correlational, Mandaue City, Philippines.*

Chapter 1

THE PROBLEM AND ITS SCOPE

INTRODUCTION

Rationale of the study

A growing body of literature identifies affective factors, particularly low self-confidence and math anxiety, as crucial impediments to effective problem-solving (Wahyuni et al., 2024). When students lack confidence in their mathematical abilities, they tend to approach problems with fear and hesitation, resulting in increased errors and avoidance of complex tasks. The emotional and cognitive dimensions of these struggles reinforce each other: students who frequently fail at problem solving

often develop lower self-confidence, while those who believe in their capabilities are more persistent and resilient in facing challenging problems (Muhtadi & Hukom, 2025).

The interrelation between self-confidence and problem-solving skills has also become a key topic of inquiry. Multiple studies from 2020-2025 suggest a moderate to strong, positive correlation between students' confidence and their mathematical problem-solving performance (Ijtihadi Kamilia & Vidákovich, 2023). Learners with high self-confidence tend to understand problems more deeply, devise better strategies, and persist longer through mental blocks, while low self-confidence undermines these processes. This suggests that interventions designed to boost self-confidence may also have a direct impact on students' mathematical proficiency.

Within the local context of Basak National High School in Mandaue City, anecdotal observations and preliminary survey results indicate that students often hesitate to participate in classroom problem solving or are quick to give up when they encounter unfamiliar mathematical challenges. Teachers have noted that a significant proportion of Grade 7 students express anxiety or self-doubt when faced with more abstract or multi-step problems, frequently preferring to memorize algorithms instead of truly understanding the underlying concepts. These tendencies are evidenced by incomplete test solutions, reliance on guessing, and frequent requests for procedural cues during class activities.

Instances abound at Basak National High School where students, when assigned complex worded problems, either submit blank responses or display visible frustration and reluctance to attempt the questions. Such behaviors—hesitance to volunteer answers, withdrawal from collaborative problem-solving activities, and avoidance of advanced exercises—are indicative of deep-seated self-confidence issues intertwined with underdeveloped problem-solving skills. These observations align with findings from neighboring institutions and broader Philippine educational assessments, confirming that the concerns at Basak National High School reflect a pervasive reality.

It is necessary to assess and investigate the self-confidence of students alongside their problem-solving skills to enable educators and policymakers to design targeted interventions. By identifying patterns of self-doubt and related difficulties in mathematical reasoning, teachers can implement more nuanced approaches—such as differentiated instruction, scaffolding, and the integration of affective support within cognitive tasks—to address not only the technical skills but also the psychological barriers to mathematical success.

The relevance of investigating these variables together lies in their reciprocal influence. Improvement in one typically precipitates gains in the other: as students experience small successes and receive positive feedback, their belief in their mathematical ability grows, which in turn motivates further engagement and perseverance in problem solving (Wahyuni et al., 2024). Conversely, unresolved issues in either domain may contribute to a negative feedback loop that perpetuates poor performance and low confidence. Examining both self-confidence and problem-solving skills is thus essential for holistic educational development.

Moreover, there is robust evidence that problem-solving skills remain a prominent issue for Filipino students and internationally. Numerous studies conducted from 2020 to 2025 highlight persistent shortcomings in this area, often attributing them to insufficient instructional scaffolding, reliance on rote learning, and a lack of exposure to creative and open-ended problem contexts (IJSAT, 2025). These issues are often compounded by students' struggles with self-confidence, especially among early adolescents transitioning to higher-order mathematical reasoning tasks.

The necessity of investigating and addressing both self-confidence and problem-solving skills extends to local policy and curriculum development. By understanding the unique profile of Basak National High School students—where resources, teacher expertise, and socioeconomic factors may play additional roles—administrators and educators can lay the groundwork for sustainable improvements in both cognitive and affective domains. Such insights also serve as vital input for ongoing curriculum reforms, teacher training initiatives, and school-based intervention programs aimed at producing not just proficient mathematicians, but also confident, resilient learners.

In summary, the compelling need to investigate the relationship between self-confidence and problem-solving skills in mathematics among Grade 7 students stems from persistent, well-documented issues at both the national and school levels. This study therefore seeks to provide actionable data and context-specific recommendations for Basak National High School, ultimately contributing to the broader goal of enhancing mathematics education and student outcomes in Mandaue City and the Philippines.

Theoretical Background

Mathematics plays a crucial role in developing problem-solving skills, logical thinking, and self-confidence in students. However, many students struggle to solve math problems because they lack confidence in their abilities. This low confidence can make them less interested and less willing to keep trying, which may lead to lower grades in mathematics (Pajares et al., 1999; Zeldin et al., 2000). Understanding the connection between self-confidence and problem-solving is crucial for understanding how these factors impact students' performance in math.

This study draws upon Bandura's Social Cognitive Theory, Dweck's Mindset Theory, and Vygotsky's Social Constructivist Theory, which collectively explain how students' beliefs, thinking, and social interactions affect their motivation, behavior, and perceptions of their mathematical competence. These theories help explain how confidence and skills interact to influence students' performance in math. In addition, the study is guided by relevant legal and policy frameworks in Philippine education, especially those under the Enhanced K-12 Curriculum, which emphasize learner-centered instruction and the development of higher-order thinking skills. To determine this connection in more detail, this study draws on several key theoretical frameworks (Figure 1).

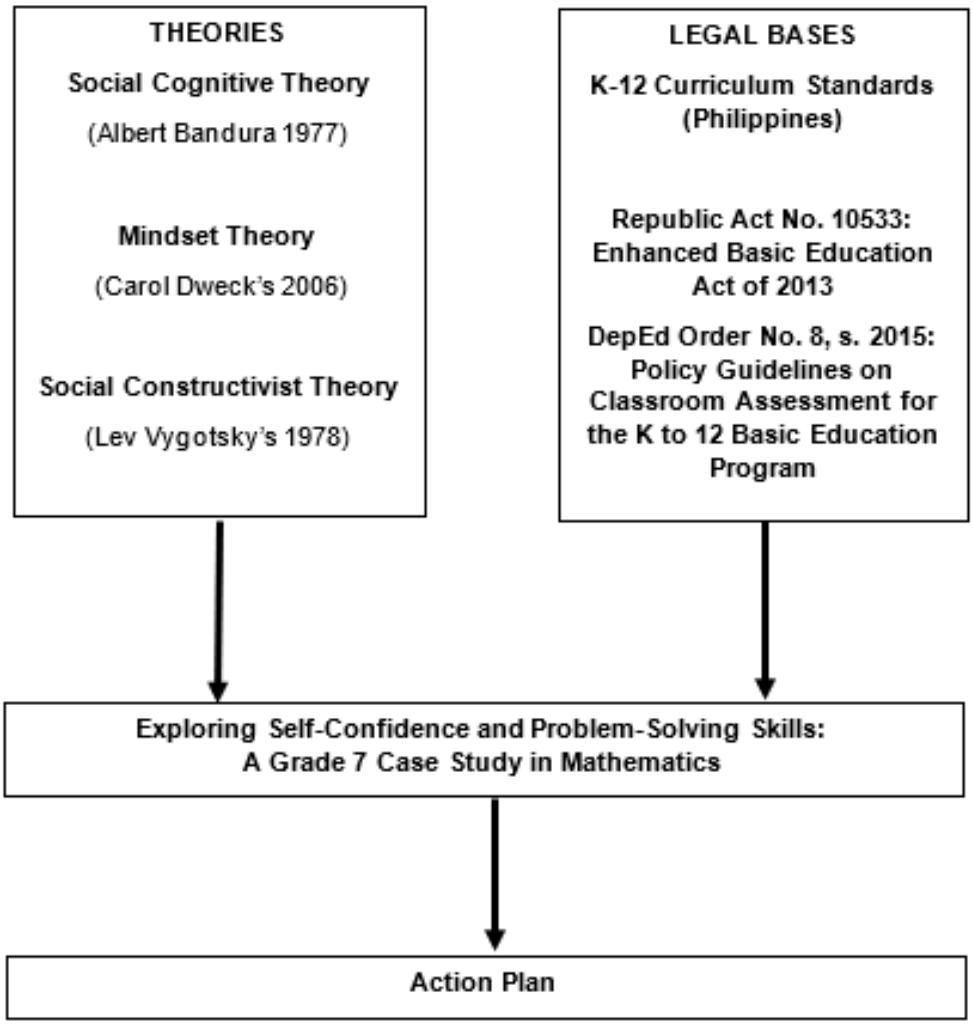

Figure 1. Theoretical Framework of the Study

Social Cognitive Theory

Bandura's Social Cognitive Theory (1997) explains how people learn and develop behaviors by interacting with their environment. It focuses on three key aspects: personal (our thoughts and beliefs), behavioral (our actions and what we do), and environmental influences (friends, teachers, and direct experiences), all of which interact with one another to shape our learning. Bandura suggested that learning is not just about watching or being told things but about how these different factors work together to help us learn new things, especially when it comes to problem-solving. In an educational setting, a student's thoughts, prior experiences, and the surrounding learning environment shape their self-confidence and approach to problem-solving.

At the heart of Social Cognitive Theory, as relevant to this study, is observational learning (or modeling), where individuals learn by observing others. In a classroom context, students learn math problem-solving strategies by watching their teachers or peers perform tasks. This observational learning enables students to internalize the strategy they observe and apply it to their problem-solving processes, thereby enhancing their ability to solve complex problems. This indirect experience can boost a student's self-confidence in their ability to perform similar actions, even without prior direct attempts. Seeing someone similar to themselves succeed provides a powerful affirmation that they, too, can achieve that success. This process of observation helps students adopt effective strategies and build a general sense of confidence that they can apply to their mathematical problem-solving.

Furthermore, within Bandura's framework, self-regulation is a crucial concept. Self-regulation involves a student's ability to monitor their learning, set goals, and adjust their strategies when they face difficulties. A student's overall self-confidence has a profound influence on this ability. Students with higher self-confidence are more likely to employ effective self-regulation strategies, persist through challenging problems, and actively seek opportunities for improvement. Hattie (2009) emphasized the importance of feedback in developing students' self-confidence. When students receive explicit feedback on their efforts, they can improve their strategies and gain confidence in their abilities. Feedback serves as an essential tool in helping students understand their strengths and areas for improvement.

Schunk (2003) extended Bandura's work by highlighting the role of peer interaction and teacher modeling in promoting self-regulation and self-confidence. According to Schunk, students who observe their peers' solving problems or receive guidance from their teachers are more likely to develop self-confidence. Peer collaboration enables students to learn from one another's problem-solving strategies, while teacher modeling provides clear examples of effective methods. This social aspect of learning is central to Bandura's framework, as it highlights the role of the environment in shaping students' perceptions of their capabilities. Recent research by Lim and Cha (2020) further suggests that social support from peers and teachers, consistent with Social Cognitive Theory, has a significant impact on students' overall engagement and achievement in mathematics, thereby contributing to their generalized self-confidence.

In summary, Bandura's Social Cognitive Theory (1997) offers valuable insights into how students' confidence and their ability to solve problems influence their cognitive processes, observed experiences, and social environment. By emphasizing observational learning and the development of self-regulation, this theory provides a robust framework for understanding how students develop a belief in their capabilities and cultivate effective problem-solving strategies, ultimately contributing to improved academic performance in mathematics.

Mindset Theory

Dweck's Mindset Theory (2006) plays a crucial role in understanding the academic resilience of students, particularly in subjects such as mathematics. Dweck divides mindset into two distinct categories: fixed and growth.

Students with a fixed mindset believe that intelligence, including their math ability, is something they are born with and cannot change. As a result, they tend to avoid challenges because they feel that

failure means they are not smart enough. They see mistakes as proof that they cannot succeed. On the other hand, students with a growth mindset believe that they can develop intelligence through hard work, practice, and learning.

These students are more likely to embrace challenges and view mistakes as opportunities for learning and improvement. They believe that effort and persistence lead to success, which is especially important when dealing with difficult and complex problems in subjects like mathematics.

In junior high school, where math problems become more challenging, students with a growth mindset are more likely to persist through difficulties. They approach challenging problems with the conviction that they can improve their ability to solve them by persisting. This mindset helps them to continue working even when they make mistakes, rather than giving up or avoiding the problems. On the other hand, students with a fixed mindset might give up easily or avoid complex tasks because they believe they cannot succeed.

Additional research by Haimovitz and Dweck (2017) found that students with a growth mindset develop better self-control, allowing them to push through difficulties without giving up. This ability to persist when things get tough is essential in subjects like math, where problems become more difficult as students progress. In addition, a study by Aronson et al. (2002) showed that teaching students about the growth mindset can help close the achievement gap. For example, when students from historically underperforming groups, such as African American students, were taught about growth mindset, they performed better in math, demonstrating the power of mindset in improving academic outcomes.

A further study by Else-Quest et al. (2010) looked at gender differences in math confidence. They found that females often report lower confidence in their math abilities compared to males, which societal expectations may influence. These beliefs can contribute to a fixed mindset, especially among girls, leading them to feel less capable in math. Teaching girls the growth mindset can help boost their confidence and encourage them to believe that they can improve their math skills through effort and practice, just like their male peers.

In conclusion, Dweck's Mindset Theory (2006) offers valuable insights into how students' beliefs about intelligence influence their approach to learning, particularly in mathematics. By fostering a growth mindset, educators can help students become more resilient, motivated, and confident problem solvers. Studies have shown that promoting this mindset can lead to improved academic performance, especially for students who face challenges or come from backgrounds where they may feel less confident. This approach is crucial for helping all students succeed in mathematics, regardless of gender or background.

Social Constructivist Theory

Lev Vygotsky's Social Constructivist Theory (1978) explains that learning occurs most effectively when students engage with others. According to Vygotsky, learning is not just an individual process; it is a social one. He introduced the concept of the Zone of Proximal Development (ZPD), which represents the range of tasks a learner cannot accomplish independently but can perform with assistance from a teacher, peer, or more knowledgeable individual. In the ZPD, teachers or more capable peers support students in reaching a higher level of understanding that they could not achieve on their own. This support, scaffolding, helps students move from tasks they can already do to tasks that challenge them but are still achievable with assistance.

In the classroom, this idea is beneficial in subjects like math. Students often face challenges when learning new concepts or solving complex problems. With the proper guidance, they can build confidence and improve their skills. Vygotsky believed that social interaction is essential for learning complex subjects, such as math, by working with classmates or receiving help from a teacher.

Studies support Vygotsky's theory by demonstrating that when students collaborate with others, they tend to perform better. A study by Yuristia et al. (2020) found that when students worked together in groups to solve math problems, they developed stronger problem-solving skills. The collaborative

environment enabled students to share strategies and support one another, which helped them overcome the challenges they faced. Similarly, Meutia et al. (2020) highlighted that students who received guidance from teachers and peers were more likely to solve complex math problems successfully. They noted that this type of support helped students build both their understanding and their confidence in math.

Lev Vygotsky's Social Constructivist Theory (1978) contributes to the understanding of confidence and learning by highlighting the role of social interaction and scaffolding within the Zone of Proximal Development (ZPD). According to this theory, learners can perform complex tasks beyond their independent capabilities with proper guidance from more knowledgeable others. This approach underscores the importance of collaborative learning in mathematics classrooms. Students become confident when they co-construct knowledge through discussions and receive timely support from teachers. Yuristia and Musdi (2020) emphasized that collaborative environments not only enhance understanding but also develop persistence and problem-solving efficacy among learners. Similarly, Meutia et al. (2020) stressed that successful mathematical problem-solving involves collaboration, strategic planning, and guided instruction.

In Vygotsky's view, learning in math is not just about memorizing facts. It is about interacting with others, getting the right help, and gradually becoming more capable. This process of receiving help and then becoming independent is central to developing confidence in math. Gonzalez et al. (2018) also found that students who engaged in collaborative learning and received scaffolding from their teachers did better in math compared to students who worked alone. They argued that students who learn in a supportive and interactive environment are more likely to persist through challenges and succeed.

The relevance of Vygotsky's theory in the research is clear. It shows that students who get the right kind of support, whether from their teacher or peers, are more likely to develop confidence in their math abilities. This theory helps explain why social interaction, collaboration, and guidance are crucial in developing students' problem-solving skills and resilience in mathematics. By focusing on how students learn from one another and how teachers can support them, Vygotsky's theory provides valuable insights into how to help students become more confident and booming in mathematics.

Legal Frameworks

Laws and guidelines uphold the Philippine education system, aiming to help students grow both academically and personally. It is essential in subjects like mathematics, where learners must not only understand numbers and formulas but also believe in their ability to solve problems and perform well academically. For this study, which focuses on the relationship between self-confidence, students' perceived problem-solving skills, and their academic performance in Grade 7 mathematics, three primary legal documents provide strong support: Republic Act No. 10533 or the Enhanced Basic Education Act of 2013, the K to 12 Curriculum Standards, and DepEd Order No. 8, s. 2015. These legal bases emphasize the importance of developing confident, capable, and high-performing learners through well-structured curricula and meaningful assessments (DepEd, 2015; Republic Act No. 10533, 2013).

Republic Act No. 10533, also known as the Enhanced Basic Education Act of 2013, provides a robust legal framework for the Philippine educational system. It mandates the implementation of the K to 12 Basic Education Program, which aims to develop learners holistically by strengthening not just their academic skills but also their emotional, physical, and social growth (RA 10533, Section 5). This law emphasizes the need for a learner-centered approach, where it not only teaches students subject content but also develops them into confident, responsible, and independent thinkers. In mathematics, this law supports the use of teaching methods that help students understand concepts, solve problems in meaningful contexts, and evaluate their learning. As such, it closely relates to this study, which examines the relationship between self-confidence, perceived problem-solving skills, and students' academic performance in Grade 7 mathematics. By promoting more profound

understanding and learner empowerment, the law aligns to help students not only succeed in tests but also believe in their ability to learn and perform well in math.

The K-12 Curriculum Standards provide the overall guide for what students should learn in each subject and at each grade level. In mathematics, the curriculum focuses not only on solving equations or memorizing facts but also on helping students understand concepts deeply, explain their thinking, and solve problems in real-life situations. The standards promote the development of learners who are confident, persistent, and independent —traits essential to both self-confidence and effective problem-solving. As Garcia and Chun (2017) point out, the K to 12 curriculum aims not only to produce academically competent learners but also to nurture personal attributes that support lifelong learning. These features are directly related to the three main variables of this study: self-confidence, perceived problem-solving skills, and academic performance. When students feel more confident and capable, they are more likely to engage in challenging tasks, which can lead to improved academic outcomes. The curriculum standards are highly relevant to the present investigation.

The third legal basis is DepEd Order No. 8, s. 2015, which gives the guidelines for classroom assessment in the K to 12 Program. This order explains how teachers should measure what students have learned and how assessment should help students improve. More importantly, it says that assessments should help students understand their progress and build confidence in their abilities. It means that tests, quizzes, and class activities are not just for grading but also for helping students become more aware of their capabilities and feel more confident. In mathematics, this kind of assessment plays a crucial role in helping students track their academic performance and recognize their ability to solve problems. Thus, this legal basis directly supports the present study by connecting assessment practices to the development of self-confidence, enhancement of problem-solving skills, and the improvement of academic performance among Grade 7 students.

These three legal documents support this study by promoting teaching that focuses on the needs of students, provides practical ways to assess their learning, and helps them grow both in knowledge and confidence. These laws encourage teachers to go beyond just giving lessons and help students believe in themselves, think clearly, and do better in school. It is particularly essential in mathematics, where students often struggle and require additional support. Because these legal bases align with the study's goals, which aim to understand the relationship between self-confidence, problem-solving skills, and academic performance in Grade 7 mathematics, they demonstrate that the study is relevant and aligned with the objectives of the Philippine education system. Both theory and law strongly support the study.

In conclusion, this study establishes a comprehensive foundation by drawing on Bandura's Social Cognitive Theory, Dweck's Mindset Theory, and Vygotsky's Social Constructivist Theory, which align with the guiding principles of Philippine educational laws. These theories collectively explain how students' beliefs about their abilities, their approach to challenges, and their interactions with others are crucial for developing both self-confidence and practical problem-solving skills in mathematics. Simultaneously, the relevant legal frameworks reinforce the nation's commitment to fostering well-rounded learners who are not only academically proficient but also confident and critical thinkers. By integrating these powerful theoretical perspectives with practical policy mandates, this study gains a robust framework for investigating the precise connections between self-confidence, perceived problem-solving skills, and academic performance among Grade 7 mathematics students, ultimately aiming to contribute valuable insights for enhancing mathematics education in the Philippines.

Self-confidence plays a crucial role in determining students' academic performance, particularly in mathematics. A student's belief in their ability to understand and apply mathematical ideas directly affects their drive, persistence, and approach to problem-solving. Because of this, self-confidence is a key factor that can either help or hinder school success. It is particularly true for Grade 7 learners who are moving from basic math to more complex concepts in high school. Numerous studies have demonstrated that students with higher self-confidence in their abilities tend to perform better

academically. Fennema and Sherman (1976) emphasized that students who believe in their mathematical abilities tend to be more engaged and persistent, which often leads to improved academic performance. Their research indicated that self-confidence has a direct influence on students' motivation and effort, leading to better outcomes in mathematics. This finding aligns with Zimmerman's (2000) demonstration of the significant role that belief in one's capability plays in school success. Students who believe they are capable of succeeding in math tend to approach problems more positively, try harder, and ultimately achieve higher academic success.

Moving further, self-confidence links to problem-solving abilities. Bandura (1997) stated that a student's belief in their abilities not only affects how students approach tasks but also impacts their ability to solve complex problems. When students are confident in their problem-solving abilities, they are more likely to engage with challenging mathematical tasks, employ effective strategies, and persist even when faced with difficulties. Hunt (2014) supports this view by demonstrating that students who perceive themselves as capable problem-solvers are more likely to excel academically in mathematics as they employ more advanced methods and are less easily discouraged.

Numerous educational studies have investigated the relationship between self-confidence, problem-solving skills, and academic achievement. Pajares (2006) suggested that self-confidence is a key factor in academic performance because it influences students' willingness to tackle challenging tasks. He noted that students with higher levels of self-confidence tend to be more resilient, taking risks and exploring diverse approaches to solving problems. In mathematics, problem-solving skills are essential for success, making it imperative in this field. Students who feel confident in their abilities are more likely to apply themselves fully and persist in solving complex problems, leading to higher academic achievement.

Further studies have confirmed the impact of these variables on academic performance. Dela Cruz (2018) conducted a study focusing on Filipino students and found that self-confidence in mathematics positively correlated with their academic performance. The study indicated that students who were confident in their mathematical abilities not only performed better in tests but also exhibited a greater willingness to engage with mathematical challenges. Similarly, Santos and Garcia (2019) found that students' perceived problem-solving skills significantly influenced their success in mathematics, with those who believed in their problem-solving capabilities consistently achieving higher grades.

For Grade 7 learners in the Philippines, the transition to high school mathematics often presents challenges due to gaps in foundational skills. Tano and Ramos (2020) found that students who lacked self-confidence in their mathematical abilities were more likely to struggle academically, particularly when encountering more advanced topics in high school. These students often lacked the persistence necessary to overcome difficulties, resulting in lower academic performance. It emphasizes the importance of cultivating self-confidence and problem-solving skills in students, particularly as they transition to more advanced mathematical concepts in high school.

Additionally, the development of self-confidence and problem-solving skills can contribute to the overall academic success of Grade 7 students. Jansen and Nilsen (2019) found that students who engaged in activities that built their self-confidence in math were better prepared to solve complex problems, resulting in higher academic performance. It is true that when students have access to supportive learning environments that encourage growth in both areas. Moreover, Alonzo and Banti (2021) found that integrating self-confidence-building exercises in the classroom led to improved problem-solving skills and higher performance on mathematics exams.

The existing body of literature suggests that self-confidence and problem-solving abilities are not only vital for academic success in mathematics but are also interrelated. Students with higher self-confidence tend to have a more positive outlook on solving problems, which, in turn, enhances their academic performance.

THE PROBLEM

Statement of the Problem

This study aimed to investigate the relationship between self-confidence, perceived problem-solving skills, and academic performance in Mathematics among Grade 7 students from selected public schools in Mandaue City for the 2024-2025 school year, providing a basis for an action plan.

Therefore, it attempted to answer the following questions:

1. What is the perceived self-confidence level in Mathematics among the respondents?
2. What is the perceived level of problem-solving skills in Mathematics among the respondents?
3. What is the level of academic performance of the respondents in Mathematics?
4. Is there a significant relationship between the:
   4.1 Perceived self-confidence and problem-solving skills in Mathematics among the respondents?
   4.2 Perceived self-confidence and academic performance of the respondents in Mathematics?
   4.3 Perceived problem-solving skills and academic performance of the respondents in Mathematics?
5. Based on the findings, what action plan do the findings suggest?

Statement of the Hypotheses

Based on the objectives, this study was tested the following null hypotheses at the 0.05 level of significance:

Ho_1: There is no significant relationship between the self-confidence and perceived problem-solving skills in Mathematics among the respondents.

Ho_2: There is no significant relationship between the self-confidence and academic performance of the respondents in Mathematics.

Ho_3: There is no significant relationship between the perceived problem-solving skills and academic performance of the respondents in Mathematics.

Significance of the Study

This study would be a great benefit to the following:

DepEd officials. This study will serve as a valuable reference for DepEd officials in developing policies and programs that promote students' self-confidence and problem-solving skills in mathematics. The results inform curriculum enhancements and teacher training initiatives aimed at improving student performance in mathematics nationwide.

School administrators. This study will provide them with insights into the impact of self-confidence on students' mathematical problem-solving skills. The findings help inform the design of intervention programs, school policies, and support systems that foster a positive learning environment and encourage students to develop confidence in mathematics.

Teachers. The findings of this study provide a basis for implementing teaching strategies that enhance students' self-confidence and problem-solving skills. By understanding how self-confidence influences mathematical performance, educators can adopt instructional methods that motivate students, reduce math anxiety, and create a more engaging and supportive classroom experience.

Students. This study will benefit them as they are the primary beneficiaries. By understanding the relationship between self-confidence and perceived problem-solving skills, this study will highlight the importance of self-confidence in improving students' mathematical skills. By understanding the connection between their beliefs, skills, and problem-solving success, students can develop a growth mindset and apply strategies to enhance their learning experience and performance in mathematics.

Researcher. This study will contribute to the existing body of knowledge on self-confidence and mathematics education. Researcher can use these findings as a basis for further studies that explore the psychological and cognitive factors affecting students' mathematical performance, particularly in the context of public schools.

Future Researchers. This study also examines additional variables, such as the role of teacher-student relationships, parental support, and the classroom environment, in shaping self-confidence and problem-solving skills in mathematics. This study will serve as a foundation for more in-depth investigations aimed at improving mathematics education.

RESEARCH METHODOLOGY

This chapter explained the methods used in this study. It described the research design, the step-by-step process of the study, and the research setting. This section also covered the participants, the tools used for data collection, and the actual steps taken to gather information. It then details how the data was analyzed using statistics and the procedures for scoring. Lastly, it discussed the ethical considerations that guided the entire research, thereby ensuring its responsible and fair execution.

Design

This study aimed to determine the significant relationship between perceived self-confidence, problem-solving skills, and academic performance in Mathematics among Grade 7 students in Basak National High School. To achieve this, the study used a descriptive-correlational research design. According to Creswell (2018), correlational research is a non-experimental design used to measure the degree of association between two or more variables without manipulating them. This study employs this design because it allows the researchers to observe and understand how students' self-confidence, problem-solving skills, and math performance are naturally related.

In this study, Descriptive analysis summarized the level of self-confidence, problem-solving skills, and academic performance of Grade 7 students. It is done by analyzing responses from questionnaires and reviewing academic records. This study used Correlation analysis to determine the strength and direction of the relationships among these variables, following the principles of correlational research as defined by Creswell (2018). It involved using statistical calculations to determine, for example, whether higher self-confidence was typically associated with better math performance. The information for the study was collected using a questionnaire that had two parts: students' self-confidence and problem-solving skills. This study based academic performance on the third-quarter final grade. To examine the relationship between self-confidence, problem-solving skills, and academic performance in Mathematics, the researchers employed basic statistical tools, such as frequency distribution, percentage analysis, and correlation tests. Given the small population size, the study utilized total enumeration, including all members as participants to ensure equal representation without the need for random sampling.

Flow of the Study

This study employed an Input-Process-Output (IPO) framework to gather and analyze data, resulting in the development of an action plan to enhance students' self-confidence and problem-solving skills in Mathematics.

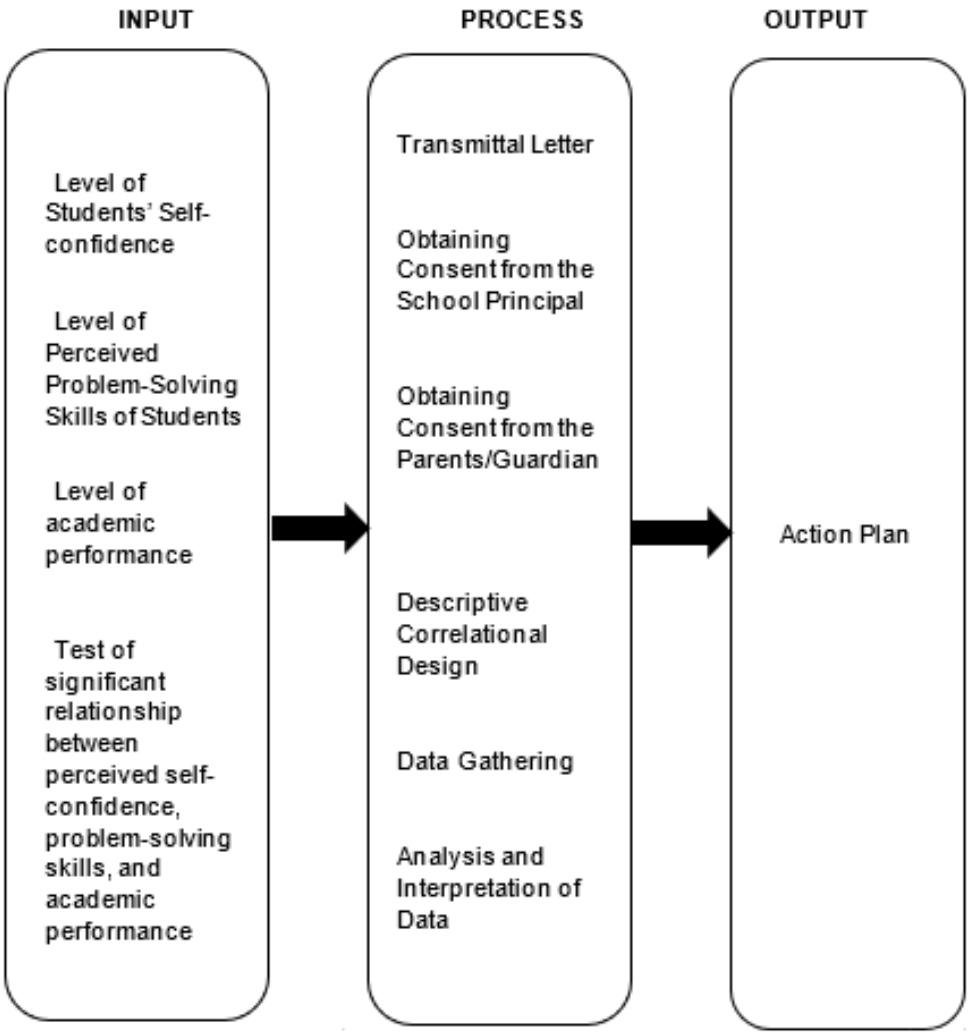

Figure 2 - Flow of the Study

This study strictly adhered to ethical guidelines to protect the rights and well-being of participants. Before data collection, the researchers obtained permission from school authorities, and they sought informed consent from students and their guardians. Participation is entirely voluntary, and students have the right to withdraw at any time without consequences. All responses remain confidential, and the researchers used data solely for research purposes. By ensuring these ethical considerations, the study maintains fairness, integrity, and respect for all participants.

The input stage focused on collecting data about students' self-confidence, problem-solving skills, and academic performance in Mathematics.

In the process stage, the study began by securing approval and consent from the School Division of Mandaue City, school principals, and parents or guardians to ensure adherence to ethical research practices. After obtaining permission, students answered a survey questionnaire to assess their self-confidence and problem-solving skills. Meanwhile, the researchers requested their Mathematics grades from their Mathematics teacher as a measure of their academic performance. Once the researchers gathered all the data, they organized, recorded, and analyzed it using statistical methods. Descriptive analysis summarized the students' self-confidence, problem-solving skills, and academic performance, and correlation analysis helped determine if a relationship existed between these factors.

Figure 3. Location Map of the Research Environment

The output stage resulted in a proposed action plan based on the study's findings, aiming to support students in developing stronger self-confidence and better problem-solving skills, which may contribute to improved the performance.

Environment -This study is conducted at Basak National High School, a newly established school founded in year 2023. The said institution is located at Basak, Mandaue City, Cebu, Philippines. It is committed to delivering quality education and fostering student development. Currently, it offers education from Grade 7 to Grade 8, with future plans for expansion. The school collaborates with parents, teachers, and local organizations to support students' academic growth.

The school operates in a two-story building with a total of six rooms, accommodating six sections for Grade 7 and four sections for Grade 8. To efficiently manage its student population, the school follows a two-shift schedule. The first shift runs from 6:00 AM to 12:00 noon, while the second shift operates from 12:20 PM to 6:20 PM. With an average class size of 50 students per section in Grade 7 and 38 students per section in Grade 8, this setup allows for a structured and efficient learning environment.

For the school year 2024-2025, the school has a total population of 441 students, 296 of which are Grade 7 students and 145 are Grade 8 students, guided by 12 teachers dedicated to fostering academic excellence. The school actively participates in educational programs and initiatives designed to enhance student learning outcomes, particularly in mathematics and other core subjects.

Respondents

The respondents of this study were the 296 Grade 7 students, selected deliberately because they represent a crucial stage in students' academic journey where foundational mathematical skills and self-confidence are often developed or challenged. Choosing Grade 7 students is essential as this level marks the transition from elementary to secondary education, a period characterized by significant cognitive and affective changes that can impact problem-solving ability and self-confidence.

The use of total enumeration in selecting all Grade 7 students as respondents strengthens the study's validity and reliability by including the full population rather than a subset or sample. This inclusive approach is particularly appropriate given the manageable size of 296 students, allowing for a more precise and holistic understanding of the relationship between self-confidence and problem-solving skills across the entire grade level. It also mitigates sampling bias and enhances the representativeness of the data, ensuring that the analysis captures the varied academic and affective profiles present in the school.

Table 1. Distribution of the Respondents

Section	f	%
Generosity	50	16.89
Honesty	50	16.89
Humility	49	16.55
Integrity	48	16.23
Loyalty	49	16.55
Resiliency	50	16.89
Total	**296**	**100.00**

Instrument

This study employed a structured questionnaire comprising two main parts to collect data on students' self-confidence in mathematics and their perceived problem-solving skills. The first part of the questionnaire, assessing self-confidence in mathematics, was adapted from the self-confidence scale developed by Nurmi et al. (2003), which was based on the Fennema-Sherman Mathematics Attitude Scales (FSMAS) by Fennema and Sherman (1976). The second part used the original version of the problem-solving skills scale developed by Erdem-Keklik (2013), with no revisions made to the items. In this study, permission to use and adapt these tools was formally requested from the authors through email, and the appendices contain documentation of this correspondence.

The Self-Confidence Scale was first developed in 1976 by Fennema and Sherman. This tool has since seen widespread use to measure students' confidence in math. Nurmi et al. (2003) employed a version of this scale to investigate the self-confidence of fifth-grade students and its impact on their performance. Pajares and Miller (1994) also found that this scale worked well in measuring students' self-confidence when solving math problems.

Similarly, Erdem-Keklik (2013) developed a problem-solving skills scale that proved reliable in her study and has been used in other research as well. One example is a study by Uysal (2007), which used this scale with high school students and showed strong internal consistency. These examples demonstrate that both tools are reliable for assessing students' confidence and problem-solving skills in math.

It is essential to note that the self-confidence scale, although stemming from an attitude scale (FSMAS), is specifically designed to measure an individual's belief in their ability to succeed in mathematics, which is a direct reflection of self-confidence in that subject. The questions on this scale directly ask about students' perceived skills and assurance in math, not just their general feelings about it. Because of this, its use aligns perfectly with measuring self-confidence in math.

To maintain consistency across both parts of the instrument, this study employed a five-point Likert scale for all items. Students rated their level of agreement using the following scale: 5 for "Strongly

Agree," 4 for "Agree," 3 for "Neutral," 2 for "Disagree," and 1 for "Strongly Disagree." Higher scores reflected stronger agreement with each item, which indicated a greater sense of self-confidence or stronger perceived problem-solving skills, depending on the section.

To assess students' academic performance in mathematics, this study obtained their final grades from the third grading period directly from their mathematics teacher. These grades utilized the Department of Education's Electronic Class Record (DepEd ECR). Based on the DepEd's grading scale, the performance of each respondent was classified into one of the following categories: Outstanding (90–100), Very Satisfactory (85–89), Satisfactory (80–84), Fairly Satisfactory (75–79), and Did Not Meet Expectations (Below 75).

The instrument was reviewed and validated by the thesis adviser, who is an expert in mathematics education and educational assessment. The adviser's feedback confirmed the appropriateness and reliability of the instrument for the study. The complete questionnaire, including all questions for both the self-confidence and problem-solving skills scales, is available in the Appendices.

Data Gathering Procedure

Preliminary Stage. The first step involved obtaining consent from the School Division of Mandaue City to ensure the study complied with local educational regulations. The next step was getting permission from the school principal where the respondents were enrolled. It ensured that the school officially approved the research. Finally, written consent was obtained from the parents or guardians of the students, as the study involved minors. This step ensured that ethical guidelines regarding the involvement of children in research were adhered to.

Data Gathering Stage. During this stage, ethical considerations guided the process. Informed consent was obtained from students' parents or guardians, ensuring that participation was voluntary and that students understood they could withdraw from the study at any time without any negative consequences or academic repercussions. All participants received assurance of their privacy and confidentiality, meaning that their responses were not linked to their names, and all collected data was stored securely to prevent unauthorized access.

The study assessed students' self-confidence in mathematics and their perceived problem-solving skills using a questionnaire, with responses recorded on a five-point Likert scale. In addition to the questionnaire, students' final mathematics grades from the third grading period were gathered from the DepEd Electronic Class Record (ECR), serving as the measure of their academic performance. The study conducted all data collection activities in a manner that minimized disruption to regular school activities and ensured a comfortable environment for the participants.

Post Data Gathering Stage. Once the data was collected, it was analyzed using appropriate statistical methods to determine if there were any correlations between self-confidence, problem-solving skills, and academic performance. Based on the results, the study proposed action plans to help improve students' self-confidence, problem-solving skills, and academic performance.

Statistical Treatment of the Data

After data collection, appropriate statistical tools were used to facilitate the analysis in consultation with a statistician. The following statistical treatments were applied:

Frequency Count. A tool identified how many respondents shared the same responses, particularly in terms of their self-confidence and perceived problem-solving skills in Mathematics. It helped in determining the number of individuals in specific response categories.

Percentage. A statistical tool that describes the proportion of respondents of the total number of participants. It provided insights into the distribution of the students' self-confidence levels, problem-solving abilities, and academic performance.

Weighted Mean. The weighted mean was utilized to determine the average level of students' self-confidence and perceived problem-solving skills. This measure helped interpret the general trend of responses based on a five-point Likert scale.

Standard Deviation. To assess the extent of variation in the responses. It indicated how consistently the students rated their confidence and problem-solving skills and whether their perceptions were closely clustered or widely spread.

Pearson Product-Moment Correlation Coefficient (PPMCC). A tool that determines the strength and direction of the relationship between the student's self-confidence, perceived problem-solving skills, and academic performance in Mathematics. It identified whether higher self-confidence and better problem-solving skills were associated with higher academic achievement.

Scoring Procedure

The study employed a 5-point Likert scale to evaluate students' self-confidence and problem-solving skills in mathematics. The responses to each statement were rated on a scale to determine the extent to which respondents agreed or disagreed with each statement.

Scoring Students' Self-Confidence in Mathematics

Scale	Numerical Rating	Descriptive Rating	Verbal Interpretation
5	4.21 – 5.00	Very High	The respondents strongly agree that they are confident in math.
4	3.41 – 4.20	High	The respondents agree that they are confident in math.
3	2.61 – 3.40	Moderate	The respondents are unsure if they are confident in math.
2	1.81 – 2.60	Low	The respondents disagree that they are confident in math.
1	1.00 – 1.80	Very Low	The respondents strongly disagree that they are confident in math.

Scoring Students' Problem-Solving Skills in Mathematics

Scale	Numerical Rating	Descriptive Rating	Verbal Interpretation
5	4.21 – 5.00	Very High	The respondents strongly agree that they are good at solving math problems.
4	3.41 – 4.20	High	The respondents agree that they are good at solving math problems.
3	2.61 – 3.40	Moderate	The respondents are unsure if they are good at solving math problems.
2	1.81 – 2.60	Low	The respondents disagree that they are good at solving math problems.
1	1.00 – 1.80	Very Low	The respondents strongly disagree that they are good at solving math problems.

DepEd Academic Performance Rating Scale

The Department of Education (DepEd) Academic Rating Scale is used to assess students' performance in mathematics. This scale follows the grading system prescribed by the Department of Education (DepEd, 2017).

Scoring Range	Descriptive Rating	Verbal Interpretation
90 - 100	Outstanding	The student shows excellent performance in mathematics.
85 - 89	Very Satisfactory	The student performs above expectations in mathematics.
80 - 84	Satisfactory	The student meets expectations in mathematics.
75 - 79	Fairly Satisfactory	The student performs below expectations in mathematics.
Below 75	Did not meet Expectations	The student does not meet the required performance level in mathematics.

DEFINITION OF THE TERMS

For the readers to fully understand the research. The researcher provides the definitions of the following terms.

Mathematical Problem-Solving. It refers to the process by which students understand, analyze, and solve mathematical problems, including both textbook and real-life situations that require logical and strategic thinking.

Mathematics Performance. It refers to the academic outcomes of Grade 7 students in mathematics, as reflected in their official grades based on the Department of Education (DepEd) grading system.

Perceived Problem-Solving Skills. It refers to students' self-evaluation of their ability to solve mathematical problems effectively by using appropriate methods, analyzing data, and applying logical reasoning.

Self-Confidence in Mathematics. It refers to students' confidence in their ability to understand and solve mathematical problems successfully, which in turn influences their motivation and persistence in learning.

CHAPTER 2

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter detailed the analysis and interpretation of the data collected for this study. It examined the relationships among Grade 7 students' self-confidence in mathematics, their perceived problem-solving skills, and their academic performance in the subject.

LEVEL OF SELF-CONFIDENCE LEVEL IN MATHEMATICS AMONG THE RESPONDENTS

This section presented the findings regarding the perceived self-confidence level in mathematics among the Grade 7 student respondents as one of the key variables in this study.

Table 2
Level of Self-Confidence in Mathematics Among the Respondents

S/N	Indicators	WM	SD	Verbal Description
1	I am sure that I can learn mathematics.	3.65	0.88	High
2	I am able to get a good mark in mathematics.	3.29	0.78	Moderate
3	Mathematics is one of my strengths in school.	3.15	0.98	Moderate

4	Mathematics is easy for me.	2.88	0.92	Moderate
5	I believe that I would also do more difficult mathematics.	3.02	0.92	Moderate
6	I am the type of person who is good at mathematics.	2.95	0.94	Moderate
7	I trust in myself in mathematics.	3.56	0.92	High
8	I am good at mathematics.	3.06	0.94	Moderate
9	I can do also difficult mathematics tasks.	2.85	0.96	Moderate
10	I know that I can be successful in mathematics.	3.28	0.90	Moderate
Aggregate Weighted Mean		**3.17**		**Moderate**
Aggregate Standard Deviation			**0.91**	
Legend: 4.21-5.00-Very High; 3.41-4.20-High; 2.61-3.40-Moderate; 1.81-2.60-Low; 1.00-1.80-Very Low				

The data presented in Table 2 indicated that the Grade 7 students perceived their self-confidence in mathematics at a moderate level, with an aggregate weighted mean of 3.17 (SD = 0.91). Specific indicators showed variability, with the highest self-confidence reported in the statements "I am sure that I can learn mathematics" (WM = 3.65, High) and "I trust in myself in mathematics" (WM = 3.56, High), while items such as "I can do also difficult mathematics tasks" (WM = 2.85, Moderate) and "Mathematics is easy for me" (WM = 2.88, Moderate) received relatively lower scores. This suggests that although students generally expressed belief in their mathematical capabilities, they were less confident with more challenging tasks and finding mathematics easy.

The moderate level of self-confidence suggests that while students possessed a basic assurance in their mathematical abilities, many remained uncertain when facing difficult or complex problems. Such findings align with common patterns in adolescent learners as they navigate the increasing cognitive demands of middle school mathematics. The disparity between general confidence in learning mathematics and confidence in handling difficult tasks reflects a nuanced affective profile, where students may feel capable of success broadly but are hesitant or less self-assured with higher-order problem-solving. This could influence their persistence and performance when confronted with challenging mathematical concepts.

The moderate self-confidence level among Grade 7 students implies a need for instructional strategies aimed at boosting students' belief in their capabilities, especially regarding difficult mathematics tasks. Enhancing self-confidence in these areas can improve engagement, reduce math anxiety, and foster a growth mindset—key factors that contribute to better problem-solving skills and academic achievement. Educators should consider interventions such as scaffolded learning, positive reinforcement, and providing opportunities for mastery experiences to strengthen students' affective disposition towards mathematics.

Multiple studies conducted within the last five years support the observed moderate level of self-confidence in mathematics and its implications. Azizah and Prabowo (2022) found that interventions focusing on self-confidence notably improved students' problem-solving performance in mathematics. Similarly, Wahyuni, et al., (2024) highlighted that moderate self-confidence often corresponded with cautious engagement in mathematical tasks, affecting overall achievement. On a Philippine context, Siniguian (2025) reported that students' moderate self-confidence hindered their willingness to tackle complex mathematical problems, underscoring the importance of confidence-boosting strategies in local schools.

LEVEL OF PERCEIVED PROBLEM-SOLVING ABILITIES IN MATHEMATICS AMONG THE RESPONDENTS

This section presented the findings regarding the perceived level of problem-solving abilities in mathematics among the Grade 7 student respondents. As a crucial component of this study, understanding this aspect is vital for determining its influence on self-confidence and academic

performance. The detailed results are summarized in Table 3, providing a clear overview of how these students assess their skills in tackling mathematical problems.

Table 3
Level of Perceived Problem-Solving Abilities in Mathematics Among the Respondents

S/N	Indicators	WM	SD	Verbal Description
1	I believe that if I make enough efforts, I will solve any problems	3.70	1.00	High
2	I always think about using strategy when solving problems.	3.64	0.88	High
3	I can solve problems effectively	3.11	0.91	Moderate
4	I can interpret collected data and relate it to the problem.	3.14	0.91	Moderate
5	I can reach a solution when I try hard enough.	3.56	0.95	High
6	I can think of multiple solutions for a problem.	3.30	0.96	Moderate
7	When I can't find the right result, I can easily determine where I went wrong.	3.25	1.01	Moderate
8	I am good at mathematics.	3.05	0.95	Moderate
9	I can solve difficult mathematics tasks.	2.89	0.90	Moderate
10	I know that I can be successful in mathematics.	3.22	1.00	Moderate
Aggregate Weighted Mean		**3.29**		**Moderate**
Aggregate Standard Deviation			**0.95**	

Legend: 4.21-5.00-Very High; 3.41-4.20-High; 2.61-3.40-Moderate; 1.81-2.60-Low; 1.00-1.80-Very Low

Table 3 showed that the Grade 7 students perceived their problem-solving abilities in mathematics at a moderate level, with an aggregate weighted mean of 3.29 (SD = 0.95). Items such as "I believe that if I make enough efforts, I will solve any problems" (WM = 3.70, High), "I always think about using strategy when solving problems" (WM = 3.64, High), and "I can reach a solution when I try hard enough" (WM = 3.56, High) indicated relatively strong confidence in their effort and strategy use. Meanwhile, indicators related to actual performance, such as "I can solve difficult mathematics tasks" (WM = 2.89, Moderate) and "I am good at mathematics" (WM = 3.05, Moderate), scored lower. Overall, students demonstrated moderate confidence in their problem-solving skills but varied in self-perceived effectiveness with complex tasks.

The moderate level of perceived problem-solving abilities suggests that while students recognized the importance of effort and strategic thinking, many still experienced challenges in successfully solving complex mathematics problems. This aligns with the cognitive development stage of Grade 7 learners who are increasingly exposed to more demanding tasks that require critical thinking and multiple-step solutions. The higher ratings on effort and strategy use may indicate a positive attitude toward problem solving, but the moderate scores on performance-related indicators reflect ongoing uncertainties or difficulties in execution, potentially limiting their overall success.

The findings implied that interventions aimed at strengthening students' problem-solving skills should focus not only on cultivating effort and strategic approaches but also on enhancing their actual performance and confidence with difficult mathematics tasks. Tailored instructional methods such as scaffolded practice, guided reflection on errors, and exposure to diverse problem types could empower students to bridge the gap between effort and effective problem-solving. This balanced

development is critical for improving academic outcomes and fostering confidence that extends beyond effort to actual competence in mathematics.

Lee and Kwon (2023) reported that middle school students generally showed moderate self-perceived problem-solving skills, emphasizing the need for instructional strategies that integrate metacognitive training. Similarly, Johnson and Liu (2024) found that while students appreciated the value of effort and planning in math problem-solving, many lacked confidence in successfully resolving complex tasks, a situation that could be improved by targeted scaffolding. Furthermore, Garcia and Santos (2022) highlighted that fostering both strategic thinking and actual problem-solving proficiency positively influenced students' mathematics achievement and self-confidence, underscoring the importance of addressing both dimensions in education.

LEVEL OF ACADEMIC PERFORMANCE OF THE RESPONDENTS IN MATHEMATICS

Table 4 displayed the academic performance level of the Grade 7 student respondents in mathematics, categorized according to the Department of Education's grading scale. The data indicated that the students generally achieved commendable results in the subject.

Table 4. Level of Academic Performance of the Respondents in Mathematics

Level	Numerical Range	f	%
Outstanding	90-100	75	25.34
Very Satisfactory	85-89	61	20.61
Satisfactory	80-84	69	23.31
Fairly Satisfactory	75-79	91	30.74
Did not Meet the Expectations	Below 75	0	0.00
Total		**296**	**100.00**
Mean		83.69	
St. Dev.		6.48	

Table 4 demonstrated that the Grade 7 students from Basak National High School generally achieved commendable academic performance in mathematics, with a mean score of 83.69 and a standard deviation of 6.48. Notably, 25.34% of the students attained an "Outstanding" rating (90-100), 20.61% were rated as "Very Satisfactory" (85-89), 23.31% as "Satisfactory" (80-84), and 30.74% as "Fairly Satisfactory" (75-79). Importantly, no students fell below the passing mark of 75, indicating that the entire cohort met the minimum academic expectations.

The distribution of academic performance suggests that most Grade 7 students possess a solid foundation in mathematics, with substantial proportions achieving above-average and satisfactory levels. The absence of failing grades indicates effective mastery of the competencies aligned with the Department of Education's standards. However, the largest group being in the "Fairly Satisfactory" category also signals potential room for enhancement in instructional practices to elevate more students into higher performance bands. These results reflect a positive learning outcome but also highlight the need for continuous support to sustain and improve achievement.

The findings imply that while the school's Grade 7 students are generally performing well in mathematics, educators should continue to focus on differentiated instruction and targeted interventions to raise the performance of students on the lower spectrum of the grading scale. Strategies aimed at enhancing problem-solving skills and boosting self-confidence could further advance academic achievement. The positive overall performance could serve as a strong basis for integrating more challenging mathematical tasks and enriching students' learning experiences to promote higher-order thinking.

Recent international studies resonate with these findings regarding Grade 7 mathematics achievement. Berrame (2024) observed that moderate to high academic achievement among middle school students is common when proficiency in fundamental mathematical concepts is developed, but challenges remain in progressing to advanced skills. Refugio, et al., (2022) emphasized the

positive impact of home-based learning approaches on improving academic performance in mathematics, particularly noting gains from structured support and interventions. Cerbito (2024) found that ongoing formative assessments and targeted exercises enhanced learner performance in Grade 7 mathematics, highlighting the importance of adaptive teaching met to student needs.

TEST OF SIGNIFICANCE OF RELATIONSHIP BETWEEN SELF-CONFIDENCE AND PERCEIVED PROBLEM-SOLVING ABILITIES IN MATHEMATICS AMONG THE RESPONDENTS

This section presented the findings from the test of the relationship between students' perceived self-confidence and their perceived problem-solving abilities in mathematics. The results of this statistical analysis are summarized in Table 5, providing evidence for the presence and nature of the association between self-confidence and problem-solving skills in mathematics among the Grade 7 student respondents.

Table 5. Test of Significance of Relationship Between Self-Confidence and Perceived Problem- Solving Abilities in Mathematics Among the Respondents

Variables	r-value	Strength of Correlation	p-value	Decision	Remarks
Self-confidence and Problem Solving Abilities	0.757*	Strong Positive	0.000	Reject Ho	Significant
*significant at p<0.05 (two-tailed)					

The results presented in Table 5 revealed a strong positive correlation between Grade 7 students' perceived self-confidence and their perceived problem-solving abilities in mathematics, with an r-value of 0.757 and a p-value of 0.000. The significance level set at $p < 0.05$ was met, leading to the rejection of the null hypothesis. This indicates a statistically significant relationship between the two variables, where higher levels of self-confidence were associated with higher perceived problem-solving abilities among the respondents.

The strong positive relationship suggests that students who reported greater confidence in their mathematical capabilities also perceived themselves as more competent in solving mathematical problems. This finding aligns with existing educational theories which assert that self-confidence acts as a motivational and cognitive facilitator, enabling learners to approach problem-solving tasks with increased persistence, strategic thinking, and resilience. It reflects the interconnectedness of affective and cognitive domains in mathematics learning, where enhancements in self-belief may directly contribute to improved problem-solving performance perceptions.

Given the significant association, educational interventions aiming to improve students' mathematical problem-solving skills should simultaneously address self-confidence development. Enhancing students' belief in their abilities could lead to greater engagement with challenging tasks and utilization of effective problem-solving strategies, ultimately boosting academic success. For Basak National High School, this underscores the importance of fostering a supportive learning environment that reinforces both affective and cognitive growth to cultivate capable and confident mathematics learners.

Recent studies provide strong support for the observed relationship between self-confidence and problem-solving abilities in mathematics. Azizi and Sani (2023) found that self-efficacy significantly predicted students' mathematical problem-solving success, highlighting confidence as a crucial determinant of effective strategy use. Likewise, Martinez and Chung (2024) demonstrated that interventions focused on enhancing mathematical self-confidence resulted in marked improvements in students' problem-solving performances across diverse contexts. Furthermore, Torres, et al., (2021) emphasized that the reciprocal dynamics between confidence and problem-solving skills fostered better academic resilience among Filipino middle school students, emphasizing the need to integrate affective support into math instruction.

TEST OF SIGNIFICANCE OF RELATIONSHIP BETWEEN SELF-CONFIDENCE AND ACADEMIC PERFORMANCE OF THE RESPONDENTS IN MATHEMATICS

This section determined the connection between students' perceived self-confidence in mathematics and their actual academic performance in the subject. The outcomes of this statistical test are presented in Table 6, providing insight into the extent and nature of the association between students' confidence levels and their mathematics grades among the Grade 7 respondents.

Table 6. Test of Significance of Relationship Between Self-Confidence and Academic Performance of the Respondents in Mathematics

Variables	r-value	Strength of Correlation	p-value	Decision	Remarks
Self-confidence and Mathematics Performance	0.202*	Negligible Positive	0.000	Reject Ho	Significant
*significant at p<0.05 (two-tailed)					

Table 6 showed that there was a statistically significant but negligible positive correlation between the Grade 7 students' perceived self-confidence in mathematics and their actual academic performance, with an r-value of 0.202 and a p-value of 0.000. Since the p-value was less than the 0.05 significance level, the null hypothesis was rejected, indicating that self-confidence and academic performance were significantly related, although the strength of the relationship was very weak.

The negligible correlation implied that while higher self-confidence was associated with better mathematics performance, the association was not strong enough to suggest that self-confidence alone substantially influenced academic outcomes. This result may reflect the complexity of academic performance, which can be affected by multiple cognitive, motivational, and environmental factors beyond self-confidence. It also suggests that while self-confidence has some positive impact on mathematics achievement, other variables such as instructional quality, learning habits, and prior knowledge may play more dominant roles in determining student success.

Given the significant yet weak relationship, educators and policymakers should recognize self-confidence as one of several important factors influencing mathematics achievement among Grade 7 students. Programs aimed at improving academic performance should include components that build self-confidence but must also address other critical determinants such as content mastery, problem-solving skills, and socio-emotional support. At Basak National High School, a holistic approach that combines boosting students' affective attributes like self-confidence with enhancing cognitive skills and instructional interventions could more effectively promote higher academic performance.

Recent studies support the notion that self-confidence contributes to academic performance but often interacts with other factors to produce meaningful outcomes. For instance, Navarro and Lizada (2023) found that self-confidence modestly correlated with mathematics achievement, highlighting that motivation and study habits were also crucial mediators. In international contexts, Wang and Chen (2021) reported that self-confidence alone did not strongly predict performance; instead, it worked synergistically with problem-solving skills and learning strategies to affect success. Moreover, Reyes, et al., (2022) emphasized that in Filipino students, efforts to improve self-confidence should be integrated with content-specific skill-building to achieve sustained gains in mathematics.

TEST OF SIGNIFICANCE OF RELATIONSHIP BETWEEN PERCEIVED PROBLEM-SOLVING ABILITIES AND ACADEMIC PERFORMANCE OF THE RESPONDENTS IN MATHEMATICS

This section determined the connection between students' perceived problem-solving abilities in mathematics and their actual academic performance in the subject. The outcomes of this statistical test are presented in Table 7, providing insight into the association between students' perceived problem-solving capabilities and their mathematics grades among Grade 7 respondents.

Table 7. Test of Significance of Relationship Between Perceived Problem-Solving Abilities and Academic Performance of the Respondents in Mathematics					
Variables	**r-value**	**Strength of Correlation**	**p-value**	**Decision**	**Remarks**
Problem Solving Abilities and Mathematics Performance	0.245*	Negligible Positive	0.000	Reject Ho	Significant
*significant at p<0.05 (two-tailed)					

Table 7 revealed a statistically significant but negligible positive correlation between the Grade 7 students' perceived problem-solving abilities in mathematics and their actual academic performance, with an r-value of 0.245 and a p-value of 0.000. Since the p-value was below the 0.05 significance level, the null hypothesis was rejected. This indicates that students who perceived themselves as having better problem-solving abilities tended to have slightly higher mathematics grades, although the strength of this relationship was very weak.

The negligible positive correlation suggested that while perceived problem-solving ability had some association with academic performance, it was not a strong predictor of students' mathematics achievement on its own. This finding is consistent with the understanding that academic performance is influenced by a complex interplay of factors beyond self-perceptions, including cognitive skills, instructional quality, study habits, and motivation. Thus, although feeling competent in problem-solving might encourage better performance, it is likely insufficient by itself to lead to substantial improvements in grades without supportive external factors.

Given the significant yet weak relationship, educators and school administrators should recognize problem-solving ability perceptions as one part of a multifaceted system influencing mathematics achievement. Programs aiming to enhance academic performance should not only cultivate students' confidence in problem-solving but also simultaneously develop their actual skills through guided practice, feedback, and cognitive strategy training. For Basak National High School, this implies adopting a balanced approach that integrates affective factors and skill-based instruction to improve both students' perceived capabilities and their measurable academic outcomes.

Recent studies underscore the nuanced role of perceived problem-solving abilities in predicting academic success. For instance, Kumar and Singh (2023) found that students' perceived problem-solving skills had a modest correlation with their test scores, but effective teaching methods amplified this effect. In the Philippine context, Reyes and Salazar (2024) highlighted that students' confidence in problem-solving positively influenced mathematics performance when combined with collaborative and scaffolded classroom activities. Additionally, Carter and Nguyen (2021) internationally emphasized that while self-perceptions contribute to motivation and engagement, they must be supported by targeted cognitive interventions to significantly impact academic achievement.

CHAPTER 3

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter presented a summary of the study, outlines its key findings, draws conclusions based on these findings, and offers recommendations derived from the study's results. These recommendations were designed to contribute to understanding and improving the factors related to self-confidence, perceived problem-solving abilities, and academic performance in Mathematics among Grade 7 students.

SUMMARY

This quantitative correlational study aimed to determine the relationship between self-confidence perceived problem-solving abilities, and academic performance in Mathematics among Grade 7 students in Mandaue City. Specifically, it sought to determine the level of self-confidence, the

perceived level of problem-solving skills, and the level of academic performance in Mathematics among the respondents. Furthermore, the study investigated whether significant relationships existed between self-confidence and perceived problem-solving skills, self-confidence, and academic performance, and perceived problem-solving skills and academic performance in Mathematics.

The study involved Grade 7 students as respondents. Data were collected using a survey questionnaire designed to measure self-confidence and perceived problem-solving abilities in Mathematics. Academic performance data were obtained from the respondents' Third-Quarter grades in Mathematics.

This study treated the gathered data statistically using descriptive and inferential methods. It employed frequency counts, percentages, and weighted means to describe the levels of self-confidence, perceived problem-solving abilities, and academic performance. To determine the significance of relationships between the variables, the Pearson Product-Moment Correlation (Pearson's r) was utilized, with a 0.05 level of significance for hypothesis testing.

FINDINGS

Based on the statistical treatment and analysis of the gathered data, the following key findings were derived:

The Grade 7 student respondents exhibited a moderate level of self-confidence in Mathematics, with an Aggregate Weighted Mean of 3.17. While they showed a high level of confidence in their ability to learn mathematics, their confidence in viewing mathematics as a personal strength or perceiving it as easy remained moderate. Similarly, the respondents reported a moderate level of perceived problem-solving abilities, with an Aggregate Weighted Mean of 3.29. They demonstrated a strong belief in the role of effort in resolving mathematical problems, though other indicators of problem-solving skills were rated at a moderate level.

In terms of academic achievement, the Grade 7 students showed satisfactory academic performance in Mathematics, with an overall mean score of 83.69. Most students achieved ratings of "Satisfactory" (23.31%) and "Very Satisfactory" (20.61%), while a notable 25.34% reached the "Outstanding" category. Importantly, no respondents fell under the "Did Not Meet Expectations" classification.

Regarding the relationships between variables, a strong positive correlation was found between self-confidence and perceived problem-solving abilities ($r = 0.757$, $p = 0.000$). This relationship was statistically significant, leading to the rejection of the null hypothesis (Ho1). It indicates that students with higher self-confidence are significantly more likely to have a stronger perception of their problem-solving abilities. A negligible positive correlation was observed between self-confidence and academic performance in Mathematics ($r = 0.202$, $p = 0.000$). Despite its weak strength, the relationship was statistically significant, resulting in the rejection of the null hypothesis (Ho2). This suggests that while self-confidence has a meaningful connection to academic performance, its direct impact is limited. Lastly, a negligible positive correlation was also found between perceived problem-solving abilities and academic performance in Mathematics ($r = 0.245$, $p = 0.000$). The statistical significance of this finding led to the rejection of the null hypothesis (Ho3), implying that although perceived problem-solving abilities are significantly linked to academic performance, their influence is similarly not very strong.

CONCLUSION

These results suggested that self-confidence plays a foundational role in how students approach problem-solving in mathematics and that perceived competence in problem-solving correlates to their academic success, albeit moderately. From a professional standpoint, this underscores the importance of fostering both affective and cognitive domains—particularly self-confidence—within mathematics instruction in secondary schools. Educators should be encouraged to implement teaching strategies that not only build mathematical skills but also actively promote students' belief in their capabilities, as this holistic approach can lead to more persistent, motivated learners who are better equipped to meet academic demands.

In terms of program development and policy formulation, the study's outcomes highlight the need for integrating self-confidence enhancement and problem-solving training into existing mathematics curricula and support programs. School administrators and policymakers are urged to support professional development for teachers that emphasizes affective factors alongside pedagogical skill-building and to allocate resources for interventions that address psychological barriers such as math anxiety and low self-efficacy. Ultimately, these efforts are expected to improve not only individual student performance but also overall school achievement in mathematics, contributing to more robust educational outcomes in Mandaue City's public schools.

RECOMMENDATIONS

It is recommended that the Action Plan for mathematics educators must be implemented for targeted programs focusing on both building students' self-confidence and enhancing their problem-solving skills, such as collaborative tasks, scaffolded challenges, and positive feedback strategies. School leaders and policymakers should further support these initiatives by integrating confidence and skills development components into the curriculum and providing ongoing teacher training to sustain improvements in student performance.

CHAPTER 4

OUTPUT OF THE STUDY

ACTION PLAN

This chapter presented the practical output of this study: an action plan. This plan was designed to address the findings related to self-confidence, perceived problem-solving abilities, and academic performance in Mathematics among Grade 7 students.

Rationale

The action plan in this study is designed to directly respond to the key findings related to the moderate levels of self-confidence and perceived problem-solving abilities among Grade 7 students, as well as their satisfactory but improvable academic performance in Mathematics. Recognizing the strong positive relationship between self-confidence and problem-solving skills, alongside the mild yet significant correlations these have with academic achievement, the rationale of this plan is to cultivate a learning environment and instructional approach that holistically develop both the affective and cognitive capacities of learners. By addressing these interconnected areas, the plan seeks to empower students to engage more confidently and effectively with mathematical challenges, ultimately enhancing their overall performance and readiness for higher-level mathematics.

Objectives

This action plan aims to:

Increase students' self-confidence in mathematics by incorporating regular confidence-building activities and positive reinforcement strategies.

Improve students' mathematical problem-solving skills through scaffolded instruction and guided practice of diverse problem types.

Enhance academic performance in mathematics by integrating affective support with skill development in daily lessons.

Foster persistence and resilience in students when facing difficult mathematical tasks by promoting growth mindset principles.

Equip teachers with targeted professional development to implement strategies that support self-confidence and problem-solving skill enhancement.

Scheme of Implementation

This action plan aims to enhance self-confidence and problem-solving skills among Grade 7 students. The study will submit the plan to the school administration for approval. After receiving approval, mathematics teachers will collaborate to implement the strategies effectively. The researcher will monitor the process to evaluate progress and make necessary adjustments.

ACTION PLAN

Areas of Concern	Objectives	Strategies	Persons Involved	Budget	Source of Budget	Time Frame	Expected Outcome	Actual Accomplish-ment	Remarks
Moderate self-confidence in Mathematics	Enhance students' self-confidence in mathematics, raising it from a moderate to a high level.	Conduct self-confidence sessions, journaling, and positive reinforcement activities	School Administrators, Teachers, Students	P10,000	School MOOE	Weeks 1–2 of every quarter	Students exhibit greater confidence in solving mathematical tasks, demonstrating a shift from moderate to high levels of self-confidence.		
Moderate problem-solving abilities in Mathematics	Strengthen students' problem-solving abilities in mathematics by moving from a moderate to a proficient level through explicit instruction and guided practice.	Implement weekly workshops and peer-assisted learning; use step-by-step strategies	School Administrators, Math Teachers, Students/ Peer Tutors	P10,000	School MOOE	Weekly (throughout the school year)	Students demonstrate improved proficiency in solving mathematical problems, progressing from moderate to proficient levels.		
Moderate academic performance in math	Increase academic achievement by integrating skill and confidence-building activities	Conduct differentiated lessons, remedial classes, and enrichment activities	School Administrators, Teachers, Students	P5,000	School MOOE	Monthly	Students achieve higher academic performance and improved grades in math		

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