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Growth Mindset, Mathematics Self-Efficacy and Academic Performance Among Grade 7 Students: Basis for Instructional Development Program

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Abstract

This study examined the relationships among growth mindset, mathematics self-efficacy, and academic performance among Grade 7 students at Maria Clara L. Lobregat National High School during School Year 2025–2026 and used the findings as the basis for an instructional development program. Anchored in Bandura's Social Cognitive Theory and Dweck's Growth Mindset Theory, the study employed a quantitative-correlational design involving 303 students selected from a population of 1,247 learners across 22 sections through stratified random sampling with proportional allocation. Data were collected using a three-part survey questionnaire covering demographic characteristics, an eight-item growth mindset scale, and a 17-item mathematics self-efficacy scale, while academic performance was represented by final Mathematics grades. Results revealed moderate growth mindset (M=3.10), moderate mathematics self-efficacy (M=3.46), and satisfactory Mathematics performance (M=84.64). Growth mindset was moderately and positively correlated with mathematics self-efficacy (r=0.521, p=0.000), while growth mindset (r=0.311, p=0.000) and mathematics self-efficacy (r=0.317, p=0.000) had significant but weaker positive relationships with Mathematics performance. Growth mindset differed significantly only according to father's educational qualification, whereas mathematics self-efficacy showed no significant differences across the demographic variables examined. The findings indicate that learners' beliefs and confidence contribute to, but do not solely determine, Mathematics achievement. The study supported the development and recommended pilot implementation of the GROW-MATH Program, incorporating differentiated instruction and structured learning support to strengthen persistence, confidence, engagement, and mathematical learning. The study supports SDG 4—Quality Education and SDG 3—Good Health and Well-Being through its focus on mathematics learning, confidence, resilience, and emotional well-being. It contributes to educational, institutional, community, and socio-economic sustainability by providing context-specific evidence for instructional improvement, learner support, and sustained participation in mathematics learning.

Keywords: Academic Performance, Grade 7 Students, GROW-MATH Program, Growth Mindset, Mathematics, Mathematics Self-Efficacy, Sustainability

1. Introduction

Mathematics achievement is influenced not only by cognitive ability but also by learners' beliefs, motivation, confidence, persistence, and emotional responses to academic challenges. Two psychological constructs that have

received considerable attention are growth mindset and mathematics self-efficacy. A growth mindset reflects the belief that intellectual ability can develop through effort, appropriate strategies, and persistence, whereas mathematics self-efficacy concerns learners' confidence in successfully performing mathematical tasks. Both constructs are associated with engagement, resilience, problem-solving, and academic achievement (Dweck &Yeager, 2021; Schunk & DiBenedetto, 2021). These constructs are particularly relevant to Grade 7 learners, who are transitioning from elementary to junior high school and encountering increased academic demands and more abstract mathematical concepts. At Maria Clara L. Lobregat National High School, differences in students' persistence, confidence, and responses to difficult mathematical tasks suggest variations in growth mindset and mathematics self-efficacy. Accordingly, this study examines the relationship between these psychological factors and mathematics academic performance among Grade 7 students during School Year 2025–2026, with the findings intended to inform an Instructional Development Plan.

A growth mindset is the conviction that intelligence and competence can develop through deliberate effort, effective strategies, and persistence (Dweck & Yeager, 2021). Learners with growth-oriented beliefs tend to perceive mistakes and difficulties as opportunities for learning rather than evidence of limited ability. Consequently, they demonstrate stronger problem-solving, engagement, adaptability, persistence, and confidence in mathematical tasks (Luo et al., 2022; Villanueva &Cruz, 2024; Caberoy et al., 2025). Mathematics self-efficacy refers to learners' confidence in their capacity to perform mathematical tasks and solve problems successfully. Higher self-efficacy supports resilience, participation, effort, and persistence, whereas lower self-efficacy is associated with anxiety, frustration, and poorer performance (Schunk & DiBenedetto, 2021). Evidence further indicates that self-efficacy predicts mathematics achievement because confident students are more likely to persist when solving complex problems (Chen et al., 2024). These psychological factors are relevant at Maria Clara L. Lobregat National High School, where Grade 7 learners exhibit varying responses to mathematical difficulty. Some persist through challenging problems, while others withdraw and doubt their ability. Understanding these differences can provide a basis for instructional strategies that strengthen students' motivation, resilience, confidence, and mathematics achievement.

The literature consistently associates growth mindset with adaptive learning behaviors. Students who believe that ability can improve tend to demonstrate greater cognitive engagement, perseverance, self-regulation, and use of metacognitive strategies (Limeri et al., 2020; Jaidumrong et al., 2023). Growth mindset interventions may also improve achievement and reduce failure, particularly when supported by learning environments that emphasize effort, mastery, and mistakes as part of learning (Yeager et al., 2022; Rissanen et al., 2021). Growth mindset can also moderate socioeconomic disadvantages, increase tolerance of mistakes, reduce anxiety, strengthen persistence, and encourage continued engagement in mathematics and STEM (Claro et al., 2021; Chen and Zimmerman, 2021; Luo et al., 2022; Nielsen & Yeager, 2022; Flores et al., 2023). However, international evidence suggests that mindset does not necessarily produce large direct gains in achievement. Its effects may operate through motivation, self-regulation, adaptability, self-efficacy, and emotional responses. Dong et al. (2023) found that growth mindset was associated with mathematics performance through intrinsic motivation, stronger mathematics self-efficacy, reduced anxiety, and constructive responses to errors, while Chen et al. (2024) linked it to academic buoyancy and adaptability. Furthermore, isolated interventions may have small or inconsistent effects, with stronger outcomes occurring when mindset principles are incorporated into broader mastery-oriented and self-efficacy-supportive classroom practices. Meta-analytic evidence similarly suggests stronger effects on motivation and engagement than on direct academic achievement. Mathematics self-efficacy is likewise a major motivational and psychological predictor of achievement. It influences students' motivation, strategy use, persistence, and emotional responses (Bai & Wang, 2021; Usher et al., 2021). Students with greater confidence invest more effort, persist with difficult tasks, and engage more effectively in self-regulated learning (Talsma et al., 2021; Zimmerman & Schunk, 2021; Lau & Lee, 2022). Self-efficacy can also protect learners against mathematics anxiety and support resilience during demanding mathematical activities (Caviola et al., 2022). Adaptive digital platforms may further strengthen self-efficacy by providing feedback, progressive mastery experiences, and opportunities to monitor improvement (Kim et al., 2023). Academic performance therefore emerges as a multidimensional outcome involving cognitive, motivational, emotional, and contextual factors rather than intellectual ability alone (Credé et al., 2020). Persistence, emotional regulation, engagement, self-regulation, confidence, and adaptive beliefs contribute to mathematics achievement (Martin et al., 2022; Richardson et al., 2021; Talsma et al., 2021; Bai & Wang, 2021). Positive emotions can promote deeper learning and engagement, while mathematics anxiety may impede problem-solving unless buffered by stronger self-efficacy (Putwain et al., 2021; Caviola et al., 2022). Engagement itself involves behavioral, emotional, and cognitive dimensions that collectively contribute to achievement (Fredricks et al., 2020; Zimmerman and Schunk, 2021).

International research provides broad evidence connecting growth mindset and mathematics self-efficacy with student outcomes. Growth-oriented students demonstrate persistence, resilience, motivation, self-regulation, and more adaptive responses to difficulties across different cultural and educational settings (Dweck & Yeager, 2021; Limeri et al., 2020). Large-scale and cross-cultural studies further suggest that these beliefs can support students

facing socioeconomic or academic disadvantages (Claro et al., 2021; Yeager et al., 2022). International research particularly emphasizes mathematics self-efficacy as a predictor of performance. Talsma et al. (2021) reported a strong positive relationship between self-efficacy and mathematics achievement, while Bai and Wang (2021) showed that confident learners persisted more effectively with difficult problems. Longitudinal evidence indicates that self-efficacy can mediate the relationship between previous and later achievement through increased effort and engagement (Lau and Lee, 2022). It is also associated with self-regulated learning and reduced mathematics anxiety (Zimmerman and Schunk, 2021; Caviola et al., 2022). Philippine literature reflects similar patterns. Growth mindset has been associated with motivation, resilience, confidence, persistence, and willingness to engage with challenging mathematical tasks (Fernandez & Dela Cruz, 2022; Villanueva and Cruz, 2024). Local evidence emphasizes teachers' role in developing these beliefs through growth-oriented communication, constructive feedback, effort-focused instruction, and learning environments where mistakes are treated as opportunities for improvement. Similarly, mathematics self-efficacy among Filipino learners develops through mastery experiences, classroom interactions, teacher feedback, peer support, and emotional regulation (Dela Cruz, 2022; Reyes and Almazan, 2021; Bautista, 2022; Flores et al., 2023). Local research associates stronger self-efficacy with participation and mathematics achievement (Flores et al., 2023). Empirical Philippine studies further reinforce these relationships. Growth-oriented beliefs have been associated with persistence, resilience, adaptation to online learning, confidence, and mathematics performance among secondary learners (Santiago, 2021; Domingo and Perez, 2022; Ramirez, 2023; Lopez and Javier, 2024). Mathematics self-efficacy has similarly been strengthened through mastery-oriented tasks, constructive feedback, peer modeling, and supportive classroom environments (Dela Cruz, 2022; Villanueva and Santos, 2023; Reyes and Almazan, 2021; Flores et al., 2023; Bautista, 2022). Local studies identify self-efficacy and academic mindset as predictors of mathematics achievement (Campanilla, 2025; Mabuti, 2023; Flores and Salimaco, 2025; Galangco, 2023); Bravo and Nobles (2023). Collectively, international and Philippine findings indicate that mathematics achievement is shaped by interconnected cognitive, motivational, affective, and contextual processes. Students with stronger growth-oriented beliefs and mathematics self-efficacy generally demonstrate greater persistence, engagement, resilience, and academic performance (Dweck & Yeager, 2021; Limeri et al., 2020; Pajares & Urdan, 2021; Usher et al., 2021; Fernandez & Dela Cruz, 2022; Villanueva & Cruz, 2024; Flores & Salimaco, 2025; Galangco, 2023; Campanilla, 2025; Mabuti, 2023).

The study is anchored in Albert Bandura's Social Cognitive Theory and Carol Dweck's Growth Mindset Theory. Bandura's Social Cognitive theory (1999b, 2006) explains behavior through the reciprocal influence of personal attributes, environmental conditions, and behavior. Within this perspective, self-efficacy represents individuals' beliefs in their ability to perform behaviors necessary to achieve desired outcomes. Students with stronger self-efficacy tend to demonstrate greater interest and persistence and achieve better academic outcomes, whereas learners with lower self-efficacy may exhibit avoidance, anxiety, and poorer performance (Schunk & DiBenedetto, 2021). Growth Mindset Theory proposes that intelligence and academic abilities are not fixed but can improve through practice, strategy, effort, and persistence (Dweck, 2006; Dweck & Yeager. Applied to mathematics, a growth mindset encourages learners to interpret setbacks as part of learning and to remain motivated, resilient, and committed to improvement. The two perspectives complement each other in explaining mathematics achievement. Students with stronger growth mindsets tend to demonstrate greater self-efficacy and improved mathematics performance through stronger problem-solving and persistence (Bravo & Nobles, 2023; Chen et al., 2024). Philippine findings similarly associate growth-oriented beliefs with greater motivation and persistence in mathematical tasks (Caberoy et al., 2025). Conceptually, the study treats growth mindset and mathematics self-efficacy as independent variables associated with academic performance in mathematics. Growth mindset reflects learners' beliefs regarding the development of intellectual capacity through effort and strategy (Dweck & Yeager, 2021), while mathematics self-efficacy represents confidence in performing mathematical tasks and solving complex problems (Bandura, 1999a; Schunk & DiBenedetto, 2021). Academic performance is represented by students' final Mathematics grades for School Year 2025–2026. The framework assumes that growth-oriented beliefs and stronger mathematics self-efficacy promote engagement, resilience, and persistence, which are associated with stronger academic outcomes (Bravo & Nobles, 2023; Caberoyetal., 2025; Chen et al., 2024).

Although international and Philippine research broadly supports associations among growth mindset, mathematics self-efficacy, and mathematics performance, a context-specific gap remains. Limited research has examined the combined influence of growth mindset and mathematics self-efficacy on mathematics achievement specifically among Grade 7 learners in public-school settings. This population is important because Grade 7 represents the transition from elementary to junior high school, during which students encounter increased academic rigor, more abstract mathematics, and new learning environments. Existing research also indicates that academic achievement is influenced by multiple environmental, instructional, and psychological variables (Caberoy et al., 2025). The present study deliberately focuses on growth mindset and mathematics self-efficacy to examine their relationship with academic performance using a quantitative correlational approach. Other potentially influential factors, including parental involvement, socioeconomic status, peer relationships, instructional practices, classroom climate, and school resources, are outside its scope. The study is further localized to Maria Clara L. Lobregat

National High School, limiting the generalizability of its findings but allowing context-specific examination of non-cognitive beliefs during early adolescence, a period in which academic self-perceptions are developing. Thus, the study seeks to determine relationships among growth mindset, mathematics self-efficacy, and mathematics academic achievement among Grade 7 learners during School Year 2025–2026 and use the resulting evidence as the basis for an Instructional Development Plan intended to strengthen motivation, resilience, confidence, and mathematics performance.

The study aligns with SDG 4 – Quality Education through its focus on improving mathematics learning by examining psychological factors associated with engagement, persistence, confidence, and achievement. Understanding growth mindset and mathematics self-efficacy can provide evidence for instructional strategies and interventions that support Grade 7 learners, particularly those experiencing difficulty in mathematics. The proposed Instructional Development Plan further connects the study to efforts to strengthen teaching practices and student learning outcomes. The study also relates to SDG 3 – Good Health and Well-Being through the emotional dimensions of mathematics learning. Mathematics anxiety, frustration, fear of mistakes, confidence, and resilience are repeatedly associated with students' learning experiences. Higher self-efficacy can protect learners from anxiety and promote resilience during demanding mathematics activities (Caviola et al., 2022), while growth-oriented beliefs can support emotional resilience and adaptive coping (Flores et al., 2023). Accordingly, fostering constructive academic beliefs may contribute simultaneously to educational outcomes and learners' emotional well-being.

The study primarily contributes to educational sustainability by examining psychological conditions that can support sustained learning, engagement, resilience, and mathematics achievement. Identifying how growth mindset and mathematics self-efficacy relate to performance can provide an empirical basis for instructional supervision, curriculum planning, learner support, and targeted interventions. These findings may assist Department Heads, Master Teachers, and Education Program Supervisors in developing pedagogical strategies, teacher training initiatives, and learning programs that strengthen learner resilience and mathematics achievement. The study also supports community and institutional sustainability by recognizing the interconnected roles of students, teachers, school leaders, and families in sustaining positive learning environments. Students may develop greater awareness of how their beliefs and confidence influence their academic behavior, while parents may gain a clearer understanding of the importance of encouragement, constructive study habits, and supportive home learning environments. At the institutional level, evidence concerning mindset and self-efficacy can inform strategies for addressing learning difficulties and strengthening mathematics instruction. Finally, the study has relevance to socio-economic sustainability insofar as quality and equitable mathematics education contributes to learners' continued academic development. International evidence suggests that growth-oriented beliefs may help learners remain resilient even under disadvantaged academic and socioeconomic circumstances (Claro et al., 2021). Within the scope of the present study, strengthening psychological resources such as persistence, confidence, and resilience can support more sustainable participation in mathematics learning. Overall, the study positions growth mindset and mathematics self-efficacy as important psychological factors associated with mathematics achievement among Grade 7 learners. By generating context-specific evidence from Maria Clara L. Lobregat National High School and translating the findings into an Instructional Development Plan, the research contributes primarily to educational, emotional well-being, institutional, community, and socio-economic dimensions of sustainability while supporting the objectives of SDG 3 and SDG 4.

2. Material and methods

2.1 Research Design

The study utilized a quantitative-correlational research design to determine the relationships among growth mindset and mathematics self-efficacy as independent variables and academic performance in Mathematics as the dependent variable. The design allowed the researchers to statistically examine the degree and direction of naturally occurring relationships without manipulating the variables. It also determined whether growth mindset and mathematics self-efficacy significantly predicted mathematics academic performance among Grade 7 students. The findings served as the basis for developing an instructional development program intended to improve students' motivation and academic outcomes.

2.2 Locale of the Study

The study was conducted at Maria Clara L. Lobregat National High School (MCLLNHS) in Zamboanga City, Philippines, a large public secondary school serving junior and senior high school learners from diverse socioeconomic and cultural backgrounds. The school was selected because of its large student population and accessibility to the researcher. Grade 7 learners were considered appropriate for the study because they had transitioned from elementary to secondary education and were adapting to more complex learning competencies under the enhanced K-12 Mathematics curriculum.

2.3 Respondents of the Study

The respondents consisted of Grade 7 students officially enrolled at Maria Clara L. Lobregat National High School during School Year 2025–2026. The target population comprised 1,247 students distributed across 22 Grade 7 sections, from which 303 respondents participated in the study. The sample included 99 male and 204 female students. In terms of age, 117 were 12 years old, 150 were 13, 19 were 14, 13 were 15, and four were 16 years old or above. Most respondents were therefore within the expected age range for Grade 7, with 12- and 13-year-old students accounting for 88.1% of the sample. The respondents also represented varying levels of paternal and maternal educational attainment. Eligible respondents were officially enrolled Grade 7 learners with complete Mathematics grades, fully accomplished survey instruments, and signed student assent and parental consent forms. Students with missing academic records, transferees with unverified grades, those absent during survey administration, those without signed consent forms, and those who submitted incomplete questionnaires were excluded.

2.4 Sample and Sampling Procedure

The minimum sample size was determined using the Raosoft Sample Size Calculator. From the population of 1,247 Grade 7 students, a minimum sample of 303 respondents was calculated using a 95% confidence level, 5% margin of error, and 50% response distribution. This statistically determined sample was considered adequate for the correlational and predictive analyses. Stratified random sampling with proportional allocation was employed to ensure representation across all 22 Grade 7 sections. Each section constituted a stratum, and the number of respondents assigned to each was determined according to its proportion of the total population. Within each stratum, respondents were randomly selected through the lottery method. The resulting allocation produced a total sample of 303 students from the population of 1,247.

2.5 Research Instrument

Data were collected using a three-part survey questionnaire adapted from validated standardized instruments. The first part gathered demographic information, including sex, age, section, and parents' educational attainment. Academic performance was represented by the respondents' final Mathematics grades for School Year 2025–2026, retrieved from official class records and verified by the adviser. The second part measured growth mindset using an eight-item scale adapted from Sigmundsson and Haga (2024). Responses were rated on a four-point Likert scale ranging from 1(Not like me at all) to 4 (Very much like me), with higher composite mean scores indicating stronger growth mindset. Mean scores from 1.00–1.50 represented a very low level, 1.51–2.50 a low level, 2.51–3.50 a moderate level, and 3.51–4.00 a high level. The third part assessed mathematics self-efficacy using a 17-item scale adapted Usher and Pajares (2009). Items were scored on a five-point scale ranging from 1(Never) to 5(Usually), with higher composite scores indicating stronger mathematics self-efficacy. Mean scores of 1:00-1.50 indicated very low self-efficacy, 1.51-2.50 low, 2.51-3.50 moderate, 3.51- 4.50 high, and 4.51-5.00 very high. The combined instrument underwent expert evaluation to establish its contextual appropriateness for Grade 7 learners. A three-member panel consisting of the chairman and two panel members evaluated face validity, construct representation, clarity, and alignment with the research objectives, and their recommendations were incorporated into the final questionnaire. The Growth Mindset Scale developed by Sigmundsson and Haga (2024) had a reported Cronbach's alpha of 0.825, while the Mathematics Self- Efficacy Scale developed by Usher and Pajares (2009) had a Cronbach's alpha of 0.95. These coefficients supported the internal consistency and psychometric adequacy of the instruments.

2.6 Data Gathering Procedure

Data collection followed pre-administration, actual administration, and post-administration procedures. Before data collection, permission was obtained from the Schools Division Superintendent of the Department of Education (DepEd) Division of Zamboanga City and the Principal of Maria Clara L. Lobregat National High School. Ethical clearance was also obtained from the Universidad de Zamboanga Research Ethics Committee (UZ-REC) to ensure compliance with research standards involving minors. During administration, the researcher personally administered the questionnaires measuring growth mindset and mathematics self-efficacy during scheduled class periods under teacher supervision. Standardized instructions were read verbatim to ensure consistent understanding and responses across the 22 sampled sections. Completed questionnaires were immediately retrieved and checked for completeness. With administrative authorization, the respondents' official final Mathematics grades for School Year 2025–2026 were also obtained from their class advisers. After administration, completed questionnaires and grade records were anonymized using unique alphanumeric identifiers. The data were encoded, checked for errors, and consolidated into a master spreadsheet for statistical processing using descriptive and inferential analyses (Caberoy et al., 2025). Physical and electronic records were subsequently secured according to institutional data privacy protocols.

2.7 Data Analysis Techniques

The quantitative data were coded, compiled, and analyzed using statistical software, with descriptive and inferential statistics applied at a 0.05 level of significance. Frequencies and percentages summarized respondents' sex, age, father's educational attainment, and mother's educational attainment. Weighted means and standard

deviations were used to determine the overall levels of growth mindset, mathematics self-efficacy, and academic performance in Mathematics and to describe the dispersion of scores around their respective means. For inferential analysis, an independent samples t-test determined significant differences in growth mindset and mathematics self-efficacy when respondents were grouped according to sex. One-way analysis of variance (ANOVA) examined significant differences according to age, father's educational attainment, and mother's educational attainment. The Pearson Product-Moment Correlation Coefficient measured the strength, direction, and significance of the relationships among growth mindset, mathematics self-efficacy, and academic performance in Mathematics. The results provided the empirical basis for formulating an intervention program intended to enhance students' growth mindset and mathematics self-efficacy and improve mathematics academic performance.

2.8 Ethical Considerations

The study adhered to established ethical standards for protecting participants' rights, welfare, and privacy. Ethical approval was obtained from the Universidad de Zamboanga Research Ethics Committee (UZ-REC), while administrative permissions were secured from the Schools Division Superintendent, school administrators, and class advisers of Maria Clara L. Lobregat National High School. Because the respondents were minors, dual-consent procedures were implemented. Written parental consent and student assent were obtained after the study's objectives, scope, and potential minimal risks, including temporary survey fatigue, were communicated. Participation was voluntary, and respondents could withdraw at any time without penalty. In accordance with the Data Privacy Act 2012, anonymity and confidentiality were maintained through coded identifiers and aggregate data analysis. Physical records were stored in locked file cabinets, while electronic files were encrypted and password-protected. Data will be retained securely for five years before permanent destruction through paper shredding and digital wiping (Caberoy et al., 2025). The study reported no conflicts of interest.

3. Results and Discussion

3.1 Growth Mindset, Mathematics Self-Efficacy, and Academic Performance

3.1.1 Growth Mindset of Grade 7 Students

The participants demonstrated a moderate level of growth mindset, with an overall mean of 3.10, interpreted as "Like me." The highest-rated statement was "Effort makes me stronger" (M=3.18), followed by "I can help improve myself and way I learn" and "I see learning as my goal," both with means of 3.15. Confidence in personal skills and possibilities also received a relatively high mean of 3.14. In contrast, "I like to take challenges and try new things" and willingness to spend additional time developing skills and knowledge obtained the lowest means of 2.98. Thus, although the learners generally believed that effort and practice can improve their abilities, they were less inclined to actively seek challenges or devote additional time to mastery. The findings support Dweck and Yeager's (2021) Implicit Theories of Intelligence and are consistent with (Limeri, 2020; Jaidumrong et al., 2023), who associated incremental beliefs with persistence, metacognition, and problem-solving engagement. However, the relatively lower challenge-seeking behavior supports Chen and Zimmerman's (2021) observation that belief in growth does not necessarily translate into academic risk-taking without sufficient support. This hesitation may also reflect fear of failure or low academic self-concept (Fernandez & Dela Cruz, 2022). These findings support instructional practices that treat mistakes as learning opportunities and provide progressively challenging tasks to strengthen resilience and willingness to engage with mathematical difficulty.

3.1.2 Mathematics Self-Efficacy of Grade 7 Students

The participants demonstrated moderate mathematics self-efficacy, with a grand mean of 3.46, interpreted as "Sometimes." The highest mean was recorded for doing well on mathematics assignments (M=3.83), followed by being motivated by classmates who perform better (M=3.75), observing adults who perform well in mathematics (M=3.74), and observing how teachers solve mathematical problems (M=3.62). These findings indicate relatively stronger confidence associated with task performance and observational learning. In contrast, lower means were recorded for perceived peer recognition of mathematical ability (M=3.18), previous success in mathematics (M=3.22), and receiving praise for mathematical ability (M=3.22). Overall, the learners displayed confidence in some mathematical situations, but this confidence was not consistently stable across contexts. The findings are consistent with (Usher&Pajares, 2009) theoretical framework, which identifies mastery experiences and vicarious modelling as important sources of self-efficacy. The influence of observing peers and adults also supports (Lau & Lee, 2022; Bai & Wang, 2021), who emphasized the contribution of vicarious reinforcement to persistence and confidence. Meanwhile, lower ratings related to emotional stability are consistent with (Caviola et al., 2022), who associated mathematics anxiety and affective fatigue with reduced self-efficacy. In Philippine settings, (Reyes &Almazan, 2021; Dela Cruz, 2022) emphasized peer collaboration and positive reinforcement, while (Bautista, 2022) highlighted the role of teacher feedback in developing students' perceptions of mathematical competence. The findings therefore support constructive feedback, peer-supported learning, scaffolded practice, and low-stakes assessment as approaches for strengthening mathematics self-efficacy.

3.1.3 Academic Performance in Mathematics

The participants obtained an overall Mathematics mean grade of 84.64, corresponding to a Satisfactory level. Of the 303 learners, 109 (36.0%) were classified as Satisfactory, 107 (35.3%) as Very Satisfactory, 46 (15.2%) as Outstanding, 40 (13.2%) as Fairly Satisfactory, and one (0.3%) Did Not Meet Expectations. Grades ranged from 73.00 to 97.00, with a standard deviation of 4.86. Thus, most learners were concentrated within the Satisfactory and Very Satisfactory performance categories. The findings support the view that mathematical achievement involves cognitive, motivational, and affective factors (Credé et al., 2020; Martin et al., 2022). The concentration of students in the middle achievement levels is consistent with (Yeager et al., 2022; Limeri et al., 2020), who emphasized persistence, self-directed effort, and growth-oriented beliefs in advancing academic proficiency. Mathematics achievement is also associated with self-efficacy and emotional regulation (Richardson et al., 2021; Talsma et al., 2021), with stronger self-efficacy supporting complex problem-solving (Bai and Wang, 2021) and mathematics anxiety potentially interfering with cognitive processing (Caviola et al., 2022; Putwain et al., 2021). Philippine evidence similarly emphasizes adaptive instructional support, contextualized learning, and confidence-building classroom environments (Bautista, 2022). These results indicate a need for differentiated enrichment for learners approaching higher performance levels and additional support for those experiencing difficulty.

3.2 Differences in Growth Mindset and Mathematics Self-Efficacy Across Demographic Profiles

3.2.1 Growth Mindset Across Profile Variables

Growth mindset did not significantly differ according to sex ($p=0.692$), age ($p=0.703$), or mother's educational qualification ($p=0.419$), resulting in non-rejection of the null hypothesis for these variables. Male and female students recorded similar means of 3.08 and 3.11, respectively. Growth mindset, however, significantly differed according to father's educational qualification ($p=0.009$), leading to rejection of the null hypothesis. Respondents whose fathers held a Master's degree recorded the highest mean of 3.63, while those whose fathers held a Doctorate degree recorded a mean of 2.63. The absence of significant differences by sex and age is consistent with (Dweck & Yeager, 2021), which views mindset as responsive to social and developmental environments rather than determined by fixed demographic characteristics. The significant difference associated with paternal educational attainment corresponds with (Claro et al., 2021), who emphasized the relevance of home environments and parental educational characteristics to learning beliefs. Similarly, (Limeri et al., 2020; Jaidumrong et al., 2023) emphasized the influence of contextual and structural support on beliefs about effort and resilience, while Philippine studies by (Fernandez & Dela Cruz , 2022) identified adult influence and family support as factors associated with students' academic dispositions. The results suggest that growth-oriented classroom support remains relevant across demographic groups while recognizing possible differences associated with students' home backgrounds.

3.2.2 Mathematics Self-Efficacy Across Profile Variables

No significant differences in mathematics self-efficacy were found according to sex ($p=0.756$), age ($p=0.403$), father's educational qualification ($p=0.079$), or mother's educational qualification ($p=0.227$). Consequently, the null hypothesis was not rejected for any of the demographic variables. Although descriptive differences occurred, including higher means among students whose fathers held a Master's degree ($M=3.93$) and whose mothers held a Doctorate degree ($M=3.85$), these differences were not statistically significant. These findings indicate that mathematics self-efficacy was relatively consistent across the demographic categories examined. This supports Bandura's social cognitive framework as discussed by (Usher et al., 2021; Bai &Wang, 2021), which emphasizes mastery experiences, vicarious models, and social persuasion rather than demographic characteristics as major sources of self-efficacy. Likewise, (Zimmerman & Schunk, 2021; Lau & Lee, 2022) associated task-specific confidence with engagement and skill development, while (Caviola et al., 2022) emphasized self-regulation and emotional processing. In the Philippine context, (Dela Cruz, 2022; Reyes & Almazan, 2021; Bautista, 2022) identified instructional practices, peer collaboration, and teacher feedback as important supports for mathematics self-efficacy. Thus, classroom-based interventions may strengthen confidence across demographic groups through mastery opportunities, formative feedback, and reduced mathematics anxiety.

3.3 Relationships Among Growth Mindset, Mathematics Self-Efficacy, and Academic Performance

Growth mindset had a statistically significant moderate positive correlation with mathematics self-efficacy ($r=0.521$, $p=0.000$). Growth mindset also had a statistically significant positive correlation with mathematics performance ($r=0.311$, $p=0.000$), while mathematics self-efficacy was significantly positively correlated with mathematics performance ($r=0.317$, $p=0.000$). The manuscript classifies the latter two relationships as very weak positive correlations. Since all three relationships were statistically significant, the null hypothesis was rejected for each paired relationship. These findings indicate that stronger growth-oriented beliefs tended to accompany stronger mathematics self-efficacy and that both psychological constructs were positively, although more weakly, associated with mathematics performance. The association between growth mindset and mathematics self-efficacy is consistent with Banduras' Social Cognitive Theory and (Dweck &Yeager, 2021) Implicit Theories of Intelligence. Growth-oriented beliefs encourage learners to interpret mathematical difficulty as part of learning, supporting persistence and confidence (Limeri et al., 2020; Jaidumrong et al., 2023). However, the weaker associations with actual academic performance indicate that positive beliefs alone do not determine grades. This

interpretation is consistent with (Talsma et al., 2021; Bai & Wang, 2021), while (Yeager et al., 2022) identified mindset as supporting resilience and (Caviola et al., 2022) described self-efficacy as a buffer against mathematics anxiety. Philippine studies similarly indicate that the relationship between non-cognitive beliefs and achievement occurs within broader classroom and competency contexts (Flores et al., 2023). Thus, positive mindset and self-efficacy should be complemented by structured content mastery, scaffolded problem-solving, formative assessment, and supportive learning environments.

3.4 GROW-MATH Instructional Development Program

The findings provided the basis for the GROW-MATH Program (Growth Mindset, Resilience, Opportunity, and Wellness in Mathematics Enhancement Program), an instructional framework intended to address the gap between students' affective self-beliefs and mathematical performance. The program responds to the moderate growth mindset, satisfactory academic performance, relatively weak challenge-seeking and additional mastery-time behaviors, and the observed relationships among growth mindset, self-efficacy, and mathematics performance. It incorporates three differentiated pathways—Remedial, Core, and Extension—together with Structured Peer-Assisted Learning and a five-stage lesson sequence consisting of a mindset warm-up, scaffolded lesson proper, guided practice, differentiated tasks, and process feedback. Teacher support is provided through a professional development Learning Action Cell session. The program reflects the study's finding that psychological readiness requires instructional support to translate into stronger mathematics achievement. Its differentiated and scaffolded components are consistent with the evidence that mindset and self-efficacy require targeted instructional mediation to contribute to higher achievement (Macnamara&Burgoyne, 2023; Stohlmann&Yang, 2024; Zou & Mustakim, 2024). Structured Peer- Assisted Learning (PAL) (Oppong-Gyebi et al., 2023) further supports the program's emphasis on collaborative learning. Accordingly, the intervention integrates affective development with differentiated mathematical instruction to strengthen learner confidence while supporting measurable academic improvement.

4. Conclusion & Recommendations

The study concludes that Grade 7 learners demonstrated moderate levels of growth mindset and mathematics self-efficacy and satisfactory academic performance in Mathematics, indicating generally positive learning beliefs with room for improvement in confidence and achievement. Growth mindset had a significant positive relationship with mathematics self-efficacy, while both growth mindset and mathematics self-efficacy had weak but significant relationships with academic performance, suggesting that learners' beliefs and confidence contribute to, but do not solely determine, Mathematics achievement. These findings support the development of the GROW-MATH Program as a structured intervention to strengthen learners' persistence, confidence, and engagement in challenging mathematical tasks.

School administrators are encouraged to pilot the GROW-MATH Program for at least one grading period, allocate resources for teacher training, and establish monitoring mechanisms through periodic performance reviews and classroom observations. Mathematics teachers and guidance personnel are encouraged to integrate at least one mindset-based activity per week, apply scaffolded problem-solving strategies, and provide timely formative feedback to strengthen learners' confidence and engagement. Future researchers are encouraged to examine the effectiveness of the GROW-MATH Program and related interventions and employ experimental or quasi-experimental designs to determine the causal effects of growth mindset and self-efficacy interventions on Mathematics performance.

The study was limited to Grade 7 learners at Maria Clara L. Lobregat National High School during School Year 2025–2026 and examined only growth mindset and mathematics self-efficacy in relation to academic performance. Growth mindset and mathematics self-efficacy were measured through validated self-report scales, while academic performance was based on final Mathematics grades. Other potentially influential factors, including parental involvement, socio-economic status, peer relationships, instructional practices, classroom climate, and school resources, were outside the study's scope. Moreover, conducting the study in only one public secondary school limits the generalizability of the findings to other educational settings.

5. Compliance with ethical standards

The authors conducted the study in accordance with established ethical standards for research involving minors. They secured the required ethical and administrative permissions before data collection, obtained written parental consent and student assent, ensured voluntary participation and the right to withdraw without penalty, and protected participants' privacy and confidentiality through coded identifiers, aggregate data analysis, and secure storage of physical and electronic records in accordance with applicable data privacy requirements.

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