



## Individual Learner Factors and Mathematics Performance among Grade 6 Learners: A Correlational Study

Vanessa Namuag Lim<sup>1\*</sup>, Rosemarie D Paceño<sup>2</sup>

<sup>1</sup> Agusan Colleges Inc., Butuan City, Philippines

<sup>2</sup> PhD, Agusan Colleges Inc., Butuan City, Philippines

\* Corresponding Author: **Vanessa Namuag Lim**

---

### Article Info

**ISSN (Online):** 2582-7138

**Impact Factor (RSIF):** 8.04

**Volume:** 07

**Issue:** 01

**Received:** 16-12-2025

**Accepted:** 17-01-2026

**Published:** 19-02-2026

**Page No:** 809-813

### Abstract

This study examined individual learner factors, including confidence, learning preferences, study habits, motivation, and goal-setting, and their association with learners' mathematics performance. It employed a quantitative descriptive-correlational research design. A total of 185 Grade 6 learners from five selected public elementary schools in the Southeast Butuan District served as respondents and were selected through cluster sampling guided by Slovin's formula. Data were collected using a researcher-made questionnaire that measured individual learner factors, as well as selected home- and school-related variables. Mathematics performance was determined using learners' official grades from the First Periodical Test in Mathematics. The instrument underwent expert validation and pilot testing, yielding acceptable to high reliability indices with Cronbach's alpha ranging from .75 to .85. Descriptive statistics and Pearson correlation analysis were utilized to analyze the data and determine significant relationships. Findings revealed that several individual learner factors were significantly associated with mathematics performance. Confidence in doing mathematics showed a weak but statistically significant relationship with performance ( $r = .196, p = .028$ ). Learning preferences also exhibited a weak yet significant relationship ( $r = .203, p = .022$ ). Motivation and goal-setting demonstrated a weak but significant association with mathematics performance ( $r = .221, p = .013$ ). In contrast, study habits showed a weak and non-significant relationship with mathematics performance ( $r = .152, p = .090$ ). Overall, the results suggest that confidence, learning preferences, and motivation play meaningful roles in learners' mathematics achievement and should be considered in designing targeted instructional intervention.

**Keywords:** Confidence, Learning Preferences, Mathematics Performance, Motivation

---

### 1. Introduction

Mathematics is universally recognized as a cornerstone of modern education and a vital tool for personal, technological, and socio-economic development. Beyond its role as an academic subject, mathematics equips learners with essential life skills such as logical reasoning, critical thinking, problem-solving, and quantitative literacy, all of which are necessary for navigating everyday situations and future career demands. Despite its importance, mathematics remains one of the most challenging subjects for learners worldwide. Many students experience persistent difficulties, low achievement, and anxiety in mathematics, which often hinder their academic progress and confidence in learning.

Global assessments continue to highlight disparities in mathematics achievement across education systems (Peer, 2024) [10]. Results from the 2022 Programme for International Student Assessment (PISA) revealed that countries such as Singapore, Macao, and Japan consistently demonstrate high levels of mathematical proficiency, while developing countries, including the Philippines, remain among the lowest-performing (Organisation for Economic Co-operation and Development, 2023) [9].

In the Philippine context, only a small percentage of learners reached the minimum proficiency (Organisation for Economic Co-operation and Development, 2023) <sup>[9]</sup> level in mathematics, indicating limited ability to apply basic procedures, interpret mathematical information, and reason effectively in familiar contexts. These findings raise serious concerns about the development of foundational numeracy skills, particularly at the elementary level where critical learning habits and attitudes toward mathematics are formed. In response, the Department of Education has implemented various initiatives aimed at improving mathematics teaching and learning, including curriculum reforms, strengthened numeracy programs, and teacher capacity-building efforts. While these initiatives reflect a strong commitment to addressing learning gaps, performance data suggest that challenges persist at the school and district levels. In the Southeast Butuan District, results from the first quarter Mathematics 6 examination during School Year 2025–2026 revealed uneven achievement among Grade 6 learners, with several schools reporting low pass rates and many learners failing to meet the required proficiency benchmark. These variations in performance within the same district point to differences in learner characteristics and learning experiences that warrant closer examination.

Despite ongoing interventions, a considerable number of Grade 6 learners continue to struggle in mathematics, suggesting that broader instructional reforms alone may not fully address the problem. There is a need to focus on learner-centered factors that directly influence how students engage with and perform in mathematics. Individual learner factors such as confidence, learning preferences, study habits, and motivation play a critical role in shaping learners' academic outcomes, yet these factors are often underexplored in local contexts.

Addressing this gap, the present study examined the relationship between individual learner factors and mathematics performance among Grade 6 learners in the Southeast Butuan District using a correlational approach. By identifying which learner-related factors are significantly associated with mathematics achievement, the study aims to provide empirical evidence that can guide the development of targeted, learner-responsive intervention programs. Ultimately, this research seeks to contribute to improved instructional practices and enhanced mathematics performance at the elementary level.

## 2. Theoretical Framework

This study was anchored on three theories that collectively explain the diverse learning factors influencing Grade 6 learners' performance in Mathematics: The Theory of Planned Behavior (Ajzen, 1991) <sup>[2]</sup>; Constructivist Learning Theory (Piaget, 1952; Vygotsky, 1978) <sup>[11, 14]</sup>, and Multiple Intelligences Theory (Gardner, 1983) <sup>[5]</sup>. These theories jointly provided a comprehensive lens through which learners' behavioral intentions, motivational drives, cognitive engagement, and individual differences are understood.

The Theory of Planned Behavior (TPB) posits that human behavior is influenced by three main determinants: attitude toward the behavior, subjective norms, and perceived behavioral control. These factors collectively shape an individual's behavioral intentions, which, in turn, predict actual performance (Ajzen, 1991) <sup>[2]</sup>.

In the context of this study, TPB explained how learners' attitudes toward mathematics, social expectations, and confidence in their mathematical abilities determined their engagement and persistence in learning tasks. Learners who perceived mathematics as valuable, received encouragement from teachers and peers, and believed in their capacity to solve problems were more likely to exhibit positive learning behaviors. Thus, TPB supported the examination of learner-related factors such as study habits, confidence, and participation by showing that these were influenced by both personal beliefs and environmental expectations. The intervention program derived from this study therefore, sought to strengthen positive attitudes and perceived control among learners to promote active participation and improved performance in mathematics.

The Constructivist Learning Theory asserts that learners actively construct knowledge through experience and interaction with their environment. Piaget (1952) <sup>[11]</sup> emphasized cognitive development through the processes of assimilation and accommodation, while Vygotsky (1978) <sup>[14]</sup> introduced the concept of the Zone of Proximal Development (ZPD), highlighting the importance of social interaction and scaffolding in learning. In the context of Mathematics 6, constructivism explained how learners developed mathematical understanding through hands-on activities, problem-solving tasks, and guided collaboration. Teachers served as facilitators who scaffolded learning experiences, helping learners progress from simple to complex mathematical concepts. This theory directly related to the teaching–learning factors examined in the study, emphasizing the role of instructional methods, peer collaboration, and active engagement in knowledge construction. Hence, the proposed intervention program incorporated constructivist strategies such as interactive lessons, contextualized problems, and cooperative learning to deepen comprehension and make mathematics learning more meaningful.

Howard Gardner's Multiple Intelligences Theory proposed that intelligence is not a single general ability but a combination of distinct intelligences, such as logical-mathematical, linguistic, spatial, interpersonal, intrapersonal, and kinesthetic abilities, among others. Gardner (1983) <sup>[5]</sup> contended that learners possess varied strengths and learning preferences that influence how they process information and demonstrate understanding. For Mathematics 6 learners, this theory highlighted that students approached problem-solving differently, with some excelling through logical reasoning, others through visual representation or collaboration. Recognizing and leveraging these differences significantly enhanced mathematics learning outcomes. This theory aligned with the study's individual learner factors, particularly in addressing learning preferences, cognitive diversity, and self-efficacy. By moving beyond a one-size-fits-all approach, the multiple intelligences framework supported the creation of a dynamic, inclusive, and differentiated learning environment.

Taken together, these theoretical perspectives allowed for a holistic understanding of the learning factors affecting Grade 6 learners' mathematics performance in the Southeast Butuan District. The integration of these theories guided the development of a comprehensive intervention program aimed at enhancing motivation, strengthening positive learning behaviors, addressing diverse learning needs, and promoting

meaningful and sustained improvement in mathematics achievement.

### 3. Problem Formulation

This study sought to determine the learning factors affecting the Mathematics 6 performance of Grade 6 learners in the Southeast Butuan District as a basis for the development of a proposed intervention program. Specifically, it aimed to examine the mathematics performance of the Grade 6 learners and determine whether a significant relationship exists between individual learner-related factors and their mathematics performance through correlation analysis.

### 4. Significance of the Study

The study is significant as it provides context-specific, evidence-based insights into the learning factors that influence the mathematics performance of Grade 6 learners. Its findings directly benefit Grade 6 learners by informing targeted instructional approaches that address their learning needs; mathematics teachers by guiding the refinement of teaching strategies and pedagogical practices; parents and guardians by increasing awareness of home-related factors that support learning; and school administrators by serving as a basis for data-driven planning, program development, and policy formulation. Overall, the study supports the creation of more responsive instructional practices and learning support systems that contribute to improved mathematics achievement at the school and district levels.

### 5. Scope and Limitations

This study was conducted during the third quarter of School Year 2025–2026 and focused on Grade 6 learners from selected schools in the Southeast District, Division of Butuan City, to determine how various profiles and learning factors are associated with mathematics performance. It examined learner-specific factors such as confidence, learning preferences, study habits, motivation, and goal-setting, alongside home and school-related factors including parental support, classroom environment, teaching quality, and peer influence. By assessing learners' mathematics achievement and analyzing the relationships between these factors, the study identified the factors that would be significantly associated with performance and used the findings as a basis for developing an intervention program aimed at enhancing learners' mathematical skills and academic outcomes.

### 6. Methodology

The study employed a quantitative descriptive–correlational research design to examine the relationships between individual, home, and school-related learning factors and the mathematics performance of Grade 6 learners in the Southeast Butuan District. The research was conducted in five selected public elementary schools Don Francisco Elementary School, Datu Santiago B. Ecleo, Sr. Memorial Elementary School, M.L. Pineda Elementary School, San Juan Elementary School, and Pigdaulan Central Elementary School chosen based on accessibility, availability of participants, and representativeness. A total of 185 Grade 6 learners served as respondents and were selected using cluster sampling guided by Slovin's formula.

Data were collected using a researcher-made survey questionnaire that measured learner profile variables, individual learner factors (confidence, learning preferences, study habits, and motivation and goal-setting), and home and school-related factors (parental support, classroom environment, teaching quality, and peer influence). Mathematics performance was measured using learners' official grades from the First Periodical Test in Mathematics. The instrument underwent expert validation and pilot testing, yielding acceptable to high reliability indices (Cronbach's  $\alpha = .75-.85$ ). Data gathering followed ethical protocols, including approval from education authorities, parental consent, and confidentiality safeguards. Correlation analysis was used to describe the data and determine significant relationships between learning factors and mathematics performance.

### 7. Results and Discussion

This section presents the correlation analysis between the individual learner factors and the mathematics performance of the Grade 6 Learners

The correlation analysis between the individual learner factors and the academic performance of the Grade 6 learners revealed that the individual learner factors have a weak association with academic performance: confidence in doing mathematics ( $\rho = .196$ ;  $p = .028$ ); learning preferences ( $\rho = .023$ ;  $p = .022$ ); and motivation and goal-setting ( $\rho = .221$ ;  $p = .013$ ). This finding indicates that while the levels of manifestation of the individual learner factors are high, there is a weak bearing on the academic performance of the learners.

**Table 1:** Correlation analysis between the individual learner factors and the mathematics performance of the Grade 6 Learners

Individual Learner Factors		Academic Performance
Confidence in doing Mathematics	Correlation Coefficient	.196*
	p-value	.028
	Decision on $H_0$	Reject $H_0$
	Interpretation/Remarks	Significant
Learning preferences	Correlation Coefficient	.203*
	p-value	.022
	Decision on $H_0$	Reject $H_0$
	Interpretation/Remarks	Significant
Study Habits	Correlation Coefficient	.152
	p-value	.090
	Decision on $H_0$	Do not reject $H_0$
	Interpretation/Remarks	Not significant
Motivation and goal-setting	Correlation Coefficient	.221*
	p-value	.013
	Decision on $H_0$	Reject $H_0$
	Interpretation/Remarks	Significant

\*significant @  $p < .05$

## Discussion

The weak yet significant relationships observed between individual learner factors and academic performance in Table 6.1 can be explained through common classroom experiences and everyday school observations. Confidence in doing mathematics, while important, does not always translate directly into higher test scores. Teachers often observe that some learners appear confident during class discussions and activities but still struggle when required to independently apply concepts in written assessments. This suggested that confidence may support participation and willingness to try, but mastery of skills and accuracy in problem-solving ultimately determine performance.

Similarly, learning preferences showing a weak association with academic performance may reflect the reality that classrooms typically employ uniform teaching approaches rather than fully individualized instruction. In practice, learners may prefer certain methods such as listening to explanations or using visual aids, but they are often required to adapt to the dominant instructional style used by the teacher. As a result, preferred learning modes may enhance comfort and engagement but do not strongly influence achievement outcomes when assessments are standardized and content-driven.

The weak relationship between motivation and goal-setting and academic performance may also be attributed to structural and contextual factors in the school setting. Learners may express strong motivation and clear goals, yet face challenges such as limited time for practice, difficulty of mathematical concepts, or gaps in foundational skills. Teachers frequently observe that motivated learners still require sustained guidance, feedback, and scaffolding to translate effort into measurable performance gains. Overall, these observations suggest that while individual learner factors positively shape attitudes and behaviors toward learning, academic performance in mathematics is more strongly influenced by instructional quality, assessment demands, and consistent learning support than by personal factors alone.

This finding supports Franco (2025) <sup>[4]</sup>, who reported that learners' motivation and interest are positively correlated with mathematics achievement among Grade 6 pupils. It is further reinforced by Miro *et al.* (2024) <sup>[7]</sup>, who emphasized that learners who see purpose and relevance in mathematical tasks demonstrate stronger engagement and improved conceptual understanding, thereby supporting better academic outcomes.

The weakest result is the non-significant relationship between study habits and mathematics performance. This finding aligns with Sicuan (2025) <sup>[12]</sup>, who found that study hours alone did not significantly affect mathematics achievement, highlighting that mere frequency of studying does not ensure learning gains. It also supports Villar and Mallik (2023) <sup>[13]</sup>, whose study revealed that while learners strongly agreed with self-learning practices, these did not necessarily translate into higher performance unless supported by quality instruction and guidance.

Study habits were found to have no significant relationship with academic performance ( $\rho = .152$ ;  $p = .090$ ) which indicates that the high level of study habits did not do much bearing on the academic performance of the learners. Study habits are usually good, in this specific group of Grade 6 learners, simply "having a habit" wasn't enough to guarantee higher grades compared to the other factors. A study habits

won't bear fruit when it only geared toward memorization if the teacher's exam focus on application or critical thinking. The absence of a significant relationship between study habits and academic performance can be explained through common classroom experiences and school-based observations. Teachers often observe that while many learners report having good study habits, such as completing homework or reviewing lessons, these practices may be routine or surface-level rather than strategic and effective. For instance, learners may spend time studying but focus on memorization instead of understanding problem-solving processes, which limits the impact of their efforts on assessment performance.

The findings indicated that individual learner factors influence mathematics performance in varying degrees, with motivation, confidence, and learning preferences contributing modestly, while study habits alone show limited impact. This pattern is consistent with Ocampo *et al.* (2023) <sup>[8]</sup>, who found that learning styles and learner characteristics do not independently determine achievement, and with Abalde and Oco (2023) <sup>[1]</sup>, who emphasized that internal learner factors become effective only when paired with appropriate instructional strategies. Collectively, the results suggest that individual dispositions support mathematics learning but are insufficient predictors of performance without strong instructional and contextual support.

From among the home and school-related factors, teaching quality ( $\rho = .187$ ;  $p = .036$ ) has a significant relationship with the academic performance of the learners. This finding confirms the Piaget's theory of constructivism (Piaget, 1952) <sup>[11]</sup>, which puts the teacher as the facilitator of learning, guiding them in the construction of knowledge. If the quality of teaching is commendable, it naturally follows that the learners will have better academic performance levels.

Peer influence also has a significant relationship with academic performance ( $\rho = .223$ ;  $p = .012$ ). This indicates that the interaction with peers was seen by the learners as a good avenue for further understanding of the lessons in mathematics. This is especially felt in group activities where the learners are able to collaborate with group mates in doing mathematics activities.

The significant relationship between teaching quality and academic performance can be clearly explained through everyday classroom experiences and observations. Teachers who present lessons clearly, use varied examples, and patiently address learners' questions tend to create learning environments where pupils feel guided rather than pressured.

## 8. Conclusion

The study concludes that individual learner factors are associated with mathematics performance among Grade 6 learners, but their influence varies in strength. Confidence in doing Mathematics, learning preferences, and motivation and goal-setting show weak yet significant relationships with academic performance, indicating that these factors positively support learners' engagement and achievement in Mathematics. However, study habits do not exhibit a significant relationship with mathematics performance, suggesting that the mere presence of study routines is insufficient to guarantee higher achievement without effective strategies and understanding. Overall, the results imply that while personal learner characteristics contribute to mathematics performance, they function more as supporting factors and are most effective when complemented by quality

instruction and meaningful learning experiences.

### 9. Thank-You Note

Thank you to the school heads, teachers, parents, and especially the 185 Grade 6 learners from the five participating public elementary schools for your time, cooperation, and support. Your willingness to participate made this research possible and contributed valuable insights that will help strengthen teaching and learning practices. Your contribution is sincerely appreciated.

### 10. References

1. Abalde RM, Oco LP. Learner characteristics and instructional strategies as predictors of mathematics achievement in elementary schools. *J Educ Res Pract.* 2023;13(2):145-58.
2. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process.* 1991;50(2):179-211. doi:10.1016/0749-5978(91)90020-T.
3. Alinsunurin J. Education reform and human capital development in the Philippines. *Philipp J Educ.* 2021;100(1):1-15.
4. Franco DM. Motivation, interest, and mathematics achievement of Grade 6 pupils. *Int J Learn Teach.* 2025;17(1):55-68.
5. Gardner H. *Frames of mind: the theory of multiple intelligences.* New York: Basic Books; 1983.
6. Hibi JR. Learner engagement and pedagogical challenges in mathematics education. *Asian J Educ Stud.* 2025;8(1):22-34.
7. Miro AC, Santos RP, Dela Cruz JA. Purpose-driven learning and conceptual understanding in elementary mathematics. *J Curric Instr.* 2024;11(3):201-14.
8. Ocampo LA, Reyes MT, Villanueva CS. Learning styles and academic performance in mathematics: implications for classroom instruction. *Philipp Soc Sci J.* 2023;6(2):89-102.
9. Organisation for Economic Co-operation and Development. *PISA 2022 results (Volume I): the state of learning and equity in education.* Paris: OECD Publishing; 2023.
10. Peer LS. Global trends in literacy and numeracy: insights from international assessments. *Comp Educ Rev.* 2024;68(1):33-50.
11. Piaget J. *The origins of intelligence in children.* New York: International Universities Press; 1952.
12. Sicuan RL. Study habits and mathematics achievement of elementary learners. *J Basic Educ Res.* 2025;9(1):77-90.
13. Villar JP, Mallik KA. Self-learning practices and academic performance in mathematics. *Int J Educ Stud.* 2023;15(2):120-34.
14. Vygotsky LS. *Mind in society: the development of higher psychological processes.* Cambridge (MA): Harvard University Press; 1978.

### How to Cite This Article

Lim VN, Paciono RD. Individual learner factors and mathematics performance among Grade 6 learners: A correlational study. *Int J Multidiscip Res Growth Eval.* 2026;7(1):809–813.

### Creative Commons (CC) License

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.