Research in Social Sciences
ISSN: 2641-5305
Volume 8, Issue 3, pp. 62-70
2025
DOI: 10.53935/26415305.v8i3.391

Influential Factors in the Mathematical Journey of Elementary Students

♣***Emeline Obcial***: *Hawanay Elementary School, Philippines.*

Kaitlin Marie Opingo: *Cebu Technological University, Philippines.*

Veronica Calasang: *Cebu Technological University, Philippines.*

Randy Mangubat: *Cebu Technological University, Philippines.*

ABSTRACT: *This study examines the influence of various factors on students' mathematical literacy, focusing on parental and home environments, technology use, school resources, and social-emotional variables. Utilizing a descriptive-correlational design, the research assessed how these elements impact the mathematical performance of students across key areas such as number identification, quantity discrimination, and problem-solving. The findings reveal that parental involvement and home resources do not significantly affect students' mathematical outcomes. Moreover, a considerable gap in technology access suggests a deep digital divide that potentially undermines the educational benefits of digital resources. School factors like teacher support and safety are seen positively, yet they show limited impact on enhancing mathematical skills beyond basic competence. The study underscores the need for educational strategies that better integrate effective technological tools and foster environments that support both the academic and emotional development of students. These insights aim to guide future educational policies and practices to improve mathematical literacy in a holistic and inclusive manner.*

Key words*: Early Childhood Education, Early grade mathematics assessment, Mathematical literacy, Parental involvement in education.*

1. Introduction

Mathematical literacy is a vital 21st-century skill that equips individuals with the ability to analyze, interpret, and apply mathematical concepts to real-life contexts. It encompasses more than computation—it involves understanding patterns, evaluating quantitative data, and employing critical thinking to solve problems and make sound decisions (UNESCO, 2022). This competency plays a pivotal role in students' academic development, especially in science, technology, engineering, and mathematics (STEM), where mathematical skills are central to driving innovation and global competitiveness (Alcantara & Reyes, 2023; Singh & Yeo, 2021; Suson 2019). Moreover, mathematical proficiency supports economic resilience, enabling individuals to respond to workplace shifts, contribute to data-driven systems, and thrive in digitally evolving industries (Garcia & Tomas, 2023; Santos & Dizon, 2022).

Understanding the determinants of mathematical literacy in the early years is crucial, as these formative stages shape learners' academic trajectories. Studies show that early intervention in numeracy instruction significantly reduces future learning gaps, particularly among disadvantaged groups (Mendoza et al., 2022; Lee & Ocampo, 2023; Suson, 2024; Villanueva & Espiritu, 2021). International assessments such as the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student

Research in Social Sciences
ISSN: 2641-5305
Vol. 8, No. 3, pp. 62-70
2025
DOI: *10.53935/26415305.v8i3.391*

♣*Corresponding Author: Emeline Obcial*

Copyright:
© 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

Assessment (PISA) consistently report disparities in mathematical proficiency across nations. In TIMSS 2019, the Philippines scored just 297—far below the global benchmark of 500 while PISA 2018 ranked the country 79th in math out of 100 nations, signaling the urgency of pedagogical reform (IEA, 2019; OECD, 2020).

To address foundational numeracy, many education systems use the Early Grade Mathematics Assessment (EGMA), a diagnostic tool designed to measure early math competencies such as number recognition, quantity comparison, pattern sequencing, and computation. EGMA has been shown to improve learning outcomes when aligned with targeted instruction, as demonstrated in countries like Kenya, Indonesia, and the Philippines (Hernando & Uy, 2022; Hansen & Liu, 2023; Roldan & Bartolome, 2024). The OECD (2021) underscores that strengthening mathematical literacy is a national imperative for equipping young learners with the skills to participate in a technology-driven society and global economy.

In response, the Philippine Department of Education (DepEd) has adopted strategic reforms such as the K–12 Basic Education Program and the Matatag Curriculum, which aim to boost core competencies in math and science, while fostering analytical thinking and practical problem-solving (DepEd, 2023). Nevertheless, many Filipino students continue to face persistent challenges in foundational mathematics, hindering both academic achievement and long-term employability. This study sought to evaluate the mathematical literacy of early-grade learners using EGMA and to examine key contextual factors that influence their performance. The study's findings are intended to contribute to the evolving global conversation on math education by offering evidence-based insights tailored to the local context. Identifying and addressing the root causes of underperformance is essential to developing numerate, future-ready learners who can contribute meaningfully to their communities and to national development (Torralba & Cruz, 2023; Navarro & Dela Cruz, 2024; Morrow & Jenkins, 2025).

2. Literature Review

A comprehensive review of the literature underscores the profound influence of socioeconomic status on children's mathematical literacy, highlighting the gap in educational achievement between different economic groups. Studies such as those by Wallace and Green (2024) and Torres and Fernandez (2025) emphasize that parental education and household income are crucial determinants of early mathematical success. These researchers argue that access to resources and enriched learning environments, typically more available to children from affluent backgrounds, play a significant role in developing foundational mathematical skills. Research by Patel et al. (2023) supports the notion that socioeconomic factors extend beyond direct financial resources, including parental involvement and expectations, which significantly influence children's academic trajectories in mathematics. Similarly, the work of Kim and Cho (2024) delves into how cultural values related to education within different socioeconomic strata affect children's attitudes towards learning, particularly in mathematics.

On the methodological front, the validity and utility of tools like the Early Grade Mathematics Assessment (EGMA) are well-documented by scholars such as Hansen and Liu (2023), who demonstrate how EGMA proficiently measures essential mathematical skills among early learners. Furthermore, studies by Gomez and Bradley (2024) illustrate how such assessments can guide targeted interventions by pinpointing specific deficits in student groups, thereby enhancing instructional strategies. The impact of technological resources on enhancing mathematical learning has also been explored, with researchers like Morrow and Jenkins (2025) finding that technology, when integrated effectively into the curriculum, can bridge gaps in mathematical literacy among students from lower socioeconomic backgrounds. Conversely, research by Singh and Matthews (2023) provides a critical view on the over-reliance on technology, suggesting that without strategic implementation, technology could widen the achievement gap rather than close it. Moreover, the literature by Clarke and Watson (2024) expands on the role of teacher efficacy in mathematics education, showing that teacher preparedness and continuous professional development are pivotal in elevating student performance, especially in underprivileged educational settings. The synthesis of these studies presents a clear narrative: while socioeconomic factors pose significant challenges to equitable education in mathematics, well-implemented educational assessments, targeted interventions, and effective use of technology can mitigate these obstacles. This literature not only deepens our understanding of the dynamics at play but also offers a roadmap for educational policy and practice aimed at fostering mathematical proficiency across diverse student populations.

Research in Social Sciences
ISSN: 2641-5305
Vol. 8, No. 3, pp. 62-70
2025
DOI: *10.53935/26415305.v8i3.391*

♣*Corresponding Author: Emeline Obcial*

Copyright:
© 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

3. Methodology

The research deployed a descriptive-correlational design to investigate the mathematical literacy levels at Hawanay Elementary School, utilizing the Early Grade Mathematics Assessment (EGMA) as the primary evaluative tool. A group of 93 students from grades 1 through 3 was selected through convenience sampling based on accessibility and their willingness to participate. The EGMA toolkit was employed to assess mathematical skills comprehensively, covering areas such as number identification, quantity discrimination, pattern recognition, and basic arithmetic operations. These assessments were adapted to various literacy levels, incorporating both oral and written formats to ensure inclusive participation from all students. In addition to the EGMA, supplementary data were collected using questionnaires filled out by the students and their parents. These questionnaires helped gather essential demographic and contextual information, including family educational backgrounds, income levels, and other relevant environmental factors that could influence the students' mathematical literacy. The study utilized descriptive statistics to map out the range and distribution of the students' mathematical skills and employed correlational analysis to pinpoint significant predictors of mathematical success. The validity and reliability of the study were bolstered by the standardized procedures of the EGMA, which has been validated through prior research and extensive field testing.

4. Results and Discussion

Table 1. Parental and Home Environment

Indicators	Mean	VD
My parents regularly help me with my homework.	2.75	A
I feel emotionally supported by my family.	2.81	A
I have access to books, internet, and other leaming materials at home.	2.30	D
My family expects me to perform well in school.	2.33	D
My home environment provides a quiet space for studying.	2.37	D
Grand Mean	2.51	A

Table 1 reveals varied aspects of the parental and home environment and their impact on students' academic engagement. Students reported moderate levels of parental involvement in homework and emotional support, with mean scores of 2.75 and 2.81, respectively, indicating general agreement that parents are somewhat supportive but perhaps not consistently engaging. Critically, access to essential learning resources such as books and internet is lacking, as reflected in a mean score of 2.30, which falls into the "Disagree" category. Similarly, low expectations for academic performance and inadequate quiet spaces for studying at home are evident with scores of 2.33 and 2.37, respectively, also categorized as "Disagree." These findings highlight significant deficiencies in the home learning environment, suggesting that many students do not receive the necessary resources or motivational support needed for optimal academic achievement. The overall Grand Mean of 2.51 encapsulates a scenario where improvements are crucial, particularly in enhancing resource access and creating conducive learning environments to foster better educational outcomes.

Table 2. Technology-Related Factors.

Indicators	Mean	VD
I have reliable access to computers/tablets for schoolwork.	1.63	SD
Using technology improves my learning experience.	1.96	D
I spend a lot of time on social media or video games.	1.23	SD
Technology often distracts me from studying.	1.63	SD
I easily adapt to using new educational software or platforms.	1.56	SD
Grand Mean	1.60	SD

Table 2 highlights the technology-related factors impacting students' educational experiences. The data indicates significant challenges with technology integration and usage among the students. Notably, the mean score for reliable access to computers or tablets for schoolwork is strikingly low at 1.63, marked as "Strongly

Research in Social Sciences
ISSN: 2641-5305
Vol. 8, No. 3, pp. 62-70
2025
DOI: *10.53935/26415305.v8i3.391*

♣*Corresponding Author: Emeline Obcial*

Copyright:
© 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

Disagree" (SD). This suggests a severe lack of access to necessary technological tools which are crucial for modern education. Similarly, the perceived impact of technology on enhancing learning experiences is also low, with a score of 1.96 under "Disagree" (D), indicating that students do not feel that technology significantly benefits their learning process. Furthermore, the data reveal minimal distractions from technology, with very low scores on spending time on social media or video games (1.23) and technology causing distractions from studying (1.63), both categorized as "Strongly Disagree." This could reflect the limited access to technology rather than disciplined use. Additionally, students' ability to adapt to new educational software or platforms also scored low at 1.56, categorized as "Strongly Disagree," suggesting difficulties in engaging with digital learning tools when available. The Grand Mean of all these indicators is 1.60, falling into the "Strongly Disagree" category, which underscores a critical need for interventions to improve access to and training in technology use at the school.

Table 3. School-Related Factors

Indicators	Mean	VD
My teachers are supportive and help me succeed.	3.26	SA
My school provides adequate resources (e.g., books, labs, facilities).	2.68	A
I feel safe at school.	3.28	SA
My classmates are supportive and help me with schoolwork	2.65	A
I participate in extra-curricular activities provided by my school.	2.79	A
Grand Mean	2.93	A

Table 3 outlines various school-related factors affecting students' learning experiences and their perceptions of the school environment. The data reveals a generally positive view of teacher support and the safety of the school environment, with both indicators scoring above 3.0. Specifically, students feel that their teachers are supportive and help them succeed, with a mean score of 3.26, falling under "Strongly Agree" (SA). Similarly, students' sense of safety at school is also strong, with a mean of 3.28, also categorized as "Strongly Agree." These aspects are crucial for creating a conducive learning atmosphere and positively impact student engagement and success. However, when it comes to resources provided by the school, such as books, labs, and facilities, the mean score drops to 2.68, which is classified under "Agree." This suggests that while resources are somewhat adequate, there is room for improvement to fully meet student needs. Support from classmates and participation in extracurricular activities are also viewed positively but with lower scores of 2.65 and 2.79, respectively, both falling under "Agree." These lower scores indicate a moderate level of peer support and engagement in school activities, pointing to potential areas where the school might enhance student interaction and involvement in additional learning opportunities. The Grand Mean of 2.93, categorized under "Agree," reflects an overall positive but varied perception of the school environment, indicating strengths in teacher support and safety but also highlighting areas for improvement in resource provision and enhancing the broader educational experience through extracurricular and peer interaction enhancements.

Table 4. Social-Emotional Factors

Indicators	Mean	VD
I am confident in my academic abilities.	2.18	D
I have positive relationships with my classmates.	2.74	A
I can manage my emotions well when faced with challenges.	2.42	D
I feel supported by my friends.	2.44	D
I am able to manage stress effectively.	2.28	D
Grand Mean	2.41	D

Table 4 provides insight into the social-emotional factors affecting students, highlighting several areas of concern that could impact their overall academic and personal development. The responses indicate that students face challenges in several key areas of their social and emotional well-being. The mean score for confidence in academic abilities is notably low at 2.18, falling under "Disagree" (D). This suggests that many students do not feel confident in their capabilities, which can significantly hinder their motivation and performance in school. Similarly, the ability to manage emotions and stress effectively also received low

Research in Social Sciences
ISSN: 2641-5305
Vol. 8, No. 3, pp. 62-70
2025
DOI: *10.53935/26415305.v8i3.391*

Corresponding Author: Emeline Obcial

Copyright:
© 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

scores, with 2.42 and 2.28 respectively, both categorized as "Disagree." These responses indicate that students may struggle to handle emotional challenges and stress, which are crucial skills for coping with academic pressures and personal growth. While students reported slightly more positive relationships with classmates, with a mean score of 2.74 under "Agree," the overall support from friends is still seen as lacking, with a score of 2.44 under "Disagree." This could reflect a school environment where students feel only moderately connected to their peers, potentially limiting the emotional and social support necessary for a healthy educational experience. The Grand Mean of all these indicators is 2.41, also categorized under "Disagree," pointing to significant room for improvement in the school's support for social and emotional development. Enhancing these aspects of student life is essential for fostering a supportive community that can contribute positively to both academic success and personal well-being.

Table 5. Learners' Performance

Indicators	Mean	VD
Number Identification	80	Satisfactory
Quantity Discrimination	81	Satisfactory
Missing Number (Patterns)	80	Satisfactory
Addition And Subtraction Level 1	80	Satisfactory
Addition And Subtraction Level 1	80	Satisfactory
Word Problem- Solving Skill	81	Satisfactory

Table 5 provides a snapshot of student performance across various fundamental mathematical competencies, all of which are uniformly rated as "Satisfactory." The indicators assessed include Number Identification, Quantity Discrimination, Missing Number (Patterns), Addition and Subtraction Level 1, and Word Problem-Solving Skill, with mean scores consistently around 80-81. This demonstrates that students have a basic understanding of core mathematical concepts, from recognizing and working with numbers to engaging in more complex tasks like solving word problems. The ability to identify patterns and execute basic arithmetic operations indicates a foundational level of mathematical proficiency that meets the required standards. However, while these scores reflect a balanced competence across different areas, they also suggest room for further enhancement. The uniform "Satisfactory" ratings point to the potential for targeted educational interventions that could push these competencies towards more advanced levels, ensuring that students do not just meet but excel beyond the basic curriculum requirements, thereby better preparing them for future academic challenges.

Table 6. Significant Relationship Between the Parental and Home Environment to Learners' Performance

Constructs	r-value	t-value	P value	Remarks	Decision
Number Identification	0.192252	1.452883	0.151938	Not Significant	Do not reject
Quantity Discrimination	0.004946	0.036681	0.970872	Not Significant	Do not reject
Missing Number	0.116674	0.871231	0.387415	Not Significant	Do not reject
Addition_Level_1	-0.0228	-0.16915	0.866299	Not Significant	Do not reject
Subtraction Level 1	-0.18055	-1.36138	0.178944	Not Significant	Do not reject
Word Problem	-0.04537	-0.33681	0.737538	Not Significant	Do not reject

Table 6 examines the relationship between various parental and home environment factors and the mathematical performance of students across different tasks. The results indicate that there is no statistically significant relationship between these home factors and the students' performance in mathematics. This is demonstrated through the correlation coefficients (r-values), t-values, and P values associated with each construct. For Number Identification, the r-value is 0.192252, which suggests a weak positive relationship, but the P value of 0.151938 leads to a decision to not reject the null hypothesis, indicating that this relationship is not statistically significant. Similarly, Quantity Discrimination shows an even weaker correlation (r-value of 0.004946) and a very high P value of 0.970872, firmly establishing the lack of a significant connection.

Missing Number tasks have a slightly higher r-value of 0.116674, yet this still translates into a non-significant relationship, as reflected by the P value of 0.387415. The constructs Addition Level 1 and Subtraction Level 1 also show negative correlations (r-values of -0.0228 and -0.18055, respectively), but like

Research in Social Sciences
ISSN: 2641-5305
Vol. 8, No. 3, pp. 62-70
2025
DOI: *10.53935/26415305.v8i3.391*

♣*Corresponding Author: Emeline Obcial*

Copyright:
© 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

the others, these are not significant, with P values well above the threshold for statistical significance. Finally, the Word Problem solving skill correlation is weakly negative (r-value of -0.04537) and not statistically significant, with a P value of 0.737538. Overall, these findings suggest that the parental and home environment, as measured in this study, do not have a significant impact on the mathematical performance of students. This could indicate that other factors, perhaps related to school-based resources or individual student characteristics, might play a more critical role in influencing student outcomes in mathematics.

Table 7. Significant Relationship Between the Technology Factors to Learners' Performance

Constructs	r-value	t-value	P value	Remarks	Decision
Number Identification	0.074012	0.550399	0.584274	Not Significant	Do not reject
Quantity Discrimination	-0.0739	-0.54957	0.584837	Not Significant	Do not reject
Missing Number	-0.06247	-0.46419	0.644346	Not Significant	Do not reject
Addition_Level_1	-0.0553	-0.41072	0.682875	Not Significant	Do not reject
Subtraction Level 1	0.127449	0.952962	0.344779	Not Significant	Do not reject
Word Problem	0.10419	0.776924	0.440532	Not Significant	Do not reject

Table 7 from analyzes the relationship between technology factors and students' performance in various mathematical tasks. The data reveals that there is no statistically significant correlation between the use of technology and mathematical performance across all assessed categories. For Number Identification, a correlation coefficient (r-value) of 0.074012 suggests a very weak positive relationship, but with a P value of 0.584274, it is clear that this relationship is not statistically significant, leading to a decision to not reject the null hypothesis. Similarly, Quantity Discrimination shows an almost identical negative correlation (r-value of -0.0739) with a P value of 0.584837, again indicating no significant impact of technology factors on this task. Missing Number and Addition Level 1 both also exhibit negative correlations (r-values of -0.06247 and -0.0553, respectively), and their high P values (0.644346 and 0.682875, respectively) further confirm the lack of significant statistical influence from technology usage on these mathematical tasks. Conversely, Subtraction Level 1 displays a somewhat higher positive correlation (r-value of 0.127449), yet with a P value of 0.344779, it still does not reach statistical significance. Lastly, the Word Problem task, with a correlation coefficient of 0.10419 and a P value of 0.440532, also fails to show a significant impact from technology. Overall, these results from Table 7 suggest that technology, as integrated or used in the current educational setting, does not significantly influence the students' mathematical performance. This might imply that either the technology is not effectively integrated into the learning process or that other factors may be overshadowing its potential benefits. This information could guide future decisions on educational technology policies and integration strategies to more effectively support student learning outcomes.

Table 8. Significant Relationship Between the School Factor to Learners' Performance

Constructs	r-value	t-value	P value	Remarks	Decision
Number Identification	0.267105	2.055587	0.044582	Significant	Do not reject
Quantity Discrimination	-0.03114	-0.23104	0.818143	Not Significant	Do not reject
Missing Number	0.111817	0.834491	0.407615	Not Significant	Do not reject
Addition_Level_1	-0.01546	-0.1147	0.909102	Not Significant	Do not reject
Subtraction Level 1	0.050311	0.373587	0.710148	Not Significant	Do not reject
Word Problem	-0.02703	-0.20055	0.841789	Not Significant	Do not reject

Table 8 School assesses the relationship between various school factors such as the availability of resources, teacher support, and the learning environment—and the performance of students in different mathematical tasks. The results reveal a mixed influence of these factors on student outcomes. For Number Identification, there is a notable positive correlation (r-value of 0.267105), which is statistically significant with a P value of 0.044582. This indicates that school factors positively influence students' ability to identify numbers, suggesting that aspects such as quality of instruction or resources specific to this skill are effective. However, the other areas assessed do not show significant relationships for instance Quantity Discrimination has a very slight negative correlation (r-value of -0.03114) with a high P value of 0.818143, indicating that the school factors measured do not significantly affect this skill. Missing Number also shows a positive

Research in Social Sciences
ISSN: 2641-5305
Vol. 8, No. 3, pp. 62-70
2025
DOI: *10.53935/26415305.v8i3.391*

♣*Corresponding Author: Emeline Obcial*

Copyright:
© 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

correlation (r-value of 0.111817), but with a P value of 0.407615, it is not significant, suggesting that school factors have a minimal impact on students' ability to identify patterns or complete sequences. Addition Level 1 and Subtraction Level 1 both display very weak correlations (r-values of -0.01546 and 0.050311, respectively) and high P values (0.909102 and 0.710148, respectively), indicating no significant effects from the school environment Word Problem solving also shows a negligible negative correlation (r-value of -0.02703) with a P value of 0.841789, suggesting that the school factors considered do not meaningfully impact students' problem-solving abilities in mathematics. Overall, these findings highlight that while certain school-related factors can significantly impact some aspects of students' mathematical skills, particularly number identification, they generally have little to no significant effect on other mathematical tasks assessed. This might suggest that interventions at the school level need to be more targeted or that additional factors outside the measured school variables could be influencing student performance.

Table 9. Significant Relationship Between the Social-Emotional Factors to Learners' Performance

Constructs	r-value	t-value	P value	Remarks	Decision
Number Identification	0.198829	1.504597	0.138149	Not Significant	Do not reject
Quantity Discrimination	-0.05704	-0.42373	0.673413	Not Significant	Do not reject
Missing Number	-0.0424	-0.31474	0.754148	Not Significant	Do not reject
Addition_Level_1	0.091439	0.680983	0.498739	Not Significant	Do not reject
Subtraction Level 1	-0.00404	-0.02999	0.976187	Not Significant	Do not reject
Word Problem	0.07789	0.57941	0.564679	Not Significant	Do not reject

Table 9 explores the relationship between social-emotional factors and students' performance in various mathematical tasks. The analysis involves examining how aspects such as emotional support, self-confidence, and stress management correlate with mathematical abilities. The results indicate that these social-emotional factors do not show statistically significant relationships with the performance in any of the mathematical tasks evaluated. Number Identification shows a moderately positive correlation (r-value of 0.198829) but with a P value of 0.138149, indicating that the relationship between social-emotional factors and students' ability to identify numbers is not statistically significant. Quantity Discrimination and Missing Number have negative correlations (r-values of -0.05704 and -0.0424, respectively), and high P values (0.673413 and 0.754148, respectively), further suggesting that social-emotional factors do not significantly impact these areas. Addition Level 1 shows a small positive correlation (r-value of 0.091439) which is also not significant (P value of 0.498739), indicating a lack of strong influence from social-emotional conditions on students' addition skills. Subtraction Level 1 presents an almost negligible negative correlation (r-value of -0.00404) with a very high P value of 0.976187, indicating no significant effect of social-emotional factors. Word Problem solving ability exhibits a slight positive correlation (r-value of 0.07789), but like the others, it has a high P value of 0.564679, signaling no significant relationship. Overall, these findings suggest that the social-emotional factors considered in this study do not have a significant impact on mathematical performance across the various tasks. This could imply that while social-emotional well-being is crucial for overall student development, its direct influence on specific academic skills in mathematics, as measured here, may be limited. Further research might explore different dimensions of social-emotional factors or different methodologies to capture more nuanced effects on academic outcomes.

5. Discussion

The research reveals intricate dynamics between various environmental and emotional factors and their influence on students' mathematical performance. Notably, the parental and home environment factors, as depicted in the studies, exhibit negligible statistical significance in enhancing students' mathematical skills (Smith & Davis, 2021). This observation challenges traditional assumptions that robust home support directly correlates with academic prowess, particularly in mathematics (Johnson & Lee, 2022). The minimal impact of these home factors, such as the availability of learning resources and parental involvement in homework, suggests that external variables not captured in the study such as parental education levels or broader socioeconomic conditions might exert more substantial effects (Patel et al., 2023). This discrepancy underscores the need for a broader investigative lens that encompasses a more comprehensive range of socioeconomic and educational variables to better understand their synergistic impact on student achievement.

Research in Social Sciences
ISSN: 2641-5305
Vol. 8, No. 3, pp. 62-70
2025
DOI: *10.53935/26415305.v8i3.391*

♣*Corresponding Author: Emeline Obcial*

Copyright:
© 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

Furthermore, the technology-related factors reflect a significant digital divide, impacting students' engagement and performance in mathematical tasks. The data indicates that inadequate access to essential technological tools significantly hampers the potential benefits of digital resources in learning environments (Morrow & Jenkins, 2025; Suson, 2020). Despite the growing emphasis on digital literacy as a cornerstone of modern education, the findings suggest that ineffective integration of technology could actually exacerbate educational disparities rather than ameliorate them (Singh & Matthews, 2023). This situation calls for strategic educational reforms focused on not only equipping schools with necessary technological infrastructure but also ensuring that educators are sufficiently trained to harness these tools effectively (Clarke & Watson, 2024). Addressing these gaps is crucial for preparing students to meet the demands of a progressively digital world, thereby enhancing their academic outcomes and future career opportunities.

6. Conclusion

The study provides insightful revelations into the factors influencing mathematical literacy among students. Despite traditional beliefs in the significant role of parental involvement and home resources, the findings indicate these elements do not have a marked impact on students' mathematical achievements. This challenges educational stakeholders to reconsider the effectiveness of current home-based support strategies. Similarly, the study highlights a substantial digital divide, suggesting that inadequate technological access and integration could hinder rather than help students' learning progress. These insights emphasize the necessity for schools to develop targeted interventions that address these disparities and enhance both access and quality of educational tools and resources. It's imperative for future policies to focus not just on provision but also on the effective integration of technology in education, ensuring that all students have the resources and support needed to succeed in an increasingly digital world.

References

Alcantara, L., & Reyes, B. (2023). Integrating STEM education in Philippine classrooms: The role of mathematical literacy. Philippine Journal of Education and Innovation, 12(1), 65–79.

Clarke, L., & Watson, D. (2024). Teacher preparedness and technology use in mathematics education: An analysis of effectiveness. Journal of Educational Technology, 49(2), 134–150.

DepEd. (2023). MATATAG Curriculum Guide. Department of Education, Republic of the Philippines. https://www.deped.gov.ph

Garcia, F., & Tomas, H. (2023). Economic applications of math proficiency: A Philippine perspective. Journal of Economic Literacy, 8(2), 112–124.

Gomez, P., & Bradley, R. (2024). Assessing the impact of targeted mathematical interventions: A case study using the Early Grade Mathematics Assessment. Journal of Math Education, 27(1), 45–60.

Hansen, J., & Liu, S. (2023). Validity and utility of the Early Grade Mathematics Assessment in diverse educational settings. Educational Assessment, 28(3), 209–225.

IEA. (2019). TIMSS 2019 International Results in Mathematics and Science. https://timss2019.org

Johnson, M., & Lee, A. (2022). Parental involvement and its effects on children's mathematics achievement. Journal of Educational Psychology, 114(2), 204–219.

Kim, Y., & Cho, S. (2024). Cultural values and their impact on mathematical education across socioeconomic strata. International Journal of Educational Development, 44(2), 158–172.

Morrow, V., & Jenkins, E. (2025). Digital divide and educational equity: Strategies for integrating technology in schools. Educational Technology Research and Development, 73(1), 146–165.

Morrow, V., & Jenkins, E. (2025). Technology in the classroom: Bridging the mathematical literacy gap in lower socioeconomic school districts. Technology, Education, and Learning, 32(4), 332–348.

OECD. (2020). PISA 2018 results: What students know and can do. https://www.oecd.org/pisa/publications

OECD. (2021). 21st-century readers: Developing literacy skills in a digital world. https://www.oecd.org

Patel, S., Green, J., & Wallace, D. (2023). Socioeconomic factors and early mathematical success: A comprehensive analysis. Journal of Educational Psychology, 115(2), 275–290.

Singh, S., & Matthews, J. (2023). Technology and learning disparities: Bridging the gap in education. Computers & Education, 160, Article 104024. https://doi.org/10.1016/j.compedu.2020.104024

Smith, J., & Davis, H. (2021). The role of home environment in academic achievement. Review of Educational Research, 91(3), 345–369.

Suson, R. L. (2019). 21st-century instruction: Accelerating students' outcome in mathematics. International Journal of Education, Learning and Development, 7(6), 24–29.

Suson, R. L. (2024). Factors influencing student satisfaction in blended learning: A structural equation modelling approach. International Journal of Learning, Teaching and Educational Research, 23(7), 207–227.

Suson, R. L., Ermac, E. A., Anoos, W. G., Anero, M. B., Tomabiao, N. J. D., Taperla Jr, I. M., ... & Espina, R. C. (2020). Prototype learning activities: Road map to academic achievement. Cypriot Journal of Educational Sciences, 15(6), 1535–1543.

Torralba, G., & Cruz, J. (2023). Contextualizing math instruction in Philippine primary schools. Philippine Journal of Pedagogy, 18(1), 52–67.

Research in Social Sciences
ISSN: 2641-5305
Vol. 8, No. 3, pp. 62-70
2025
DOI: *10.53935/26415305.v8i3.391*

♣*Corresponding Author: Emeline Obcial*

Copyright:
© 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

Torres, R., & Fernandez, G. (2025). The influence of parental education and income on children's academic achievements in mathematics. Journal of Socio-Economics in Education, 7(1), 88–103.
UNESCO. (2022). Reimagining our futures together: A new social contract for education. https://unesdoc.unesco.org/ark:/48223/pf0000379707
Wallace, K., & Green, T. (2024). Exploring the impact of socioeconomic status on mathematical literacy in primary education. Sociology of Education, 97(1), 50–65.

Research in Social Sciences
ISSN: 2641-5305
Vol. 8, No. 3, pp. 62-70
2025
DOI: *10.53935/26415305.v8i3.391*

Corresponding Author: Emeline Obcial

Copyright:
© 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).