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Numeracy Skills of Grade 1 Learners

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Abstract:

Numeracy skills must be acquired as early as Grade 1 to build a strong foundation for understanding more complex mathematical concepts. This study assessed the numeracy skill levels of 217 Grade 1 learners to inform an intervention plan. Using a descriptive research design and a self-made test questionnaire, the study evaluated learners across four areas: number and number sense, patterns and algebra, geometry, and measurement. Results showed a satisfactory overall performance, with very satisfactory levels in number and number sense and patterns and algebra, and satisfactory levels in geometry and measurement. Analysis by sex showed no significant differences across the areas, except for measurement. Regarding parents' educational attainment, learners with both lower and higher levels of parental education performed similarly, except in measurement where attainment was significant. For number of siblings, both groups performed similarly, though it was found to significantly affect number and number sense. The study concluded that while some demographic factors showed minor influence, overall skill levels remained within satisfactory to very satisfactory ranges. Strengthening these basic numeracy skills is essential to support lifelong mathematical competence and help learners face real-world challenges. Recommendations were made to address identified gaps.

Keywords: Numeracy skills, number and number sense, patterns and algebra, geometry, measurement

Introduction:

Nature of the Problem

Numeracy is a concept used to identify the knowledge and capabilities required to accommodate the mathematical demands of private and public life and to participate in society as informed, reflective, and contributing citizens (Geiger et al., 2015). As a result, starting in Grade 1, the Philippine educational system emphasized helping students develop their numeracy skills. This was a crucial step in creating a solid mathematical foundation that will enable kids and adults to become informed and equipped to handle mathematical problems in the real world. However, Recent numeracy results revealed unimpressive data that motivated the researcher to examine first-graders numeracy abilities.

The Regional Memorandum No. 768 s.2023 and the Division Memorandum No. 753 s.2023 sparked the administration of the Rapid Mathematics Assessment (RMA) for grades 1-3 at the beginning of the school year 2023-2024 in the Department of Education. It is a tool that helps teachers gather data and understand their learner's current numeracy and mathematical needs. As one of the administrating teachers of the assessment tool during the Pre-Test in the school year 2024-2025, the researcher discovered that out of the 494 Grade 1 takers in a district, only 40 were highly proficient, and 53 pupils were still not proficient. Furthermore, the end-of-year results of the Early Grade Mathematics Assessment (EGMA) for the school year 2023-2024, which were also annually conducted to elementary pupils in the department, gave us first-hand data that showed that among the 490 assessed learners, 3.88% or 19 learners were non-numerates. This raw data proved what teachers, learners, and parents struggled with daily.

A child's level of knowledge and learning at the beginning of school or during their first year of education is a very good predictor of their achievement levels five or more years later (Wright, 2013), making teaching in the first year of formal schooling crucial. The researcher, being a fellow Grade 1 teacher in the research venue and a school Mathematics coordinator, intended to investigate further the level of numeracy skills of Grade 1 learners in a district of a large division in Central Philippines as the basis for an intervention plan.

Current State of Knowledge

Numeracy goes beyond basic math and numbers, encompassing essential skills such as measurement, shapes, dimensions, directions, data, chance, mathematical relationships, and logical thinking, as well as the use of both analog and digital tools (Tout et al., 2021). Among these areas, geometry encourages greater participation in classroom interactions compared to arithmetic, particularly in the early grades (Beck & Vogler, 2022). Measurement

also plays a vital role in various aspects of life, including science, engineering, and commerce, making its early introduction crucial (Eran, 2020). Foundational numeracy skills are also deeply influenced by socio-economic conditions and the home learning environment (Cheung et al., 2021). Aunio (2019) emphasized that early numeracy development is a strong predictor of future mathematical success and career achievement, underscoring the value of early education in building these foundational skills.

In line with this, Dulay et al. (2019) noted that early interventions focused on literacy and numeracy greatly benefit children from low- to middle-income families. Cua (2015) further explained how reading comprehension aids mathematical performance. Numeracy requires both competence and confidence in applying fundamental operations to solve problems (Gigante, 2020), making early mastery critical for success in higher education (Munda et al., 2024). In the Philippines, mathematics is taught using a spiral progression approach, starting with number sense—understanding numbers, operations, relationships, and computation (Santos et al., 2022). However, challenges in algebraic thinking, particularly generalizing patterns, persist even through middle school (Bongala & David, 2019). Geometry and measurement continue to be crucial, given their practical applications in daily life (Parreño & Marpa, 2019) and the complexity of measuring through model-based interpretations, as noted by Wilson and Maul (2023). These domains—number sense, algebra, geometry, and measurement—must be prioritized in Grade 1, as Belleza (2022) highlighted their importance in helping students apply mathematical knowledge in real-life situations.

Numeracy acquisition, however, is not uniform. Balt, Fritz, and Ehlert (2020) showed that students' conceptual understanding develops over time and influences long-term performance, stressing the importance of targeted interventions. Geometry, for example, evolves as students begin associating concepts with 2D and 3D forms (Kuzle & Gracin, 2020). Age also plays a role, as Maung et al. (2023) found older Grade 1 students outperform younger peers due to more exposure and practice, regardless of gender. Alimi et al. (2020) similarly found that mother tongue instruction enhances numeracy and literacy skills for all students, reinforcing the value of culturally relevant pedagogy.

Other studies emphasized arithmetic as a foundational domain. Yustitita and Abadi (2021) pointed out its role in improving overall mathematics performance, consistent with the core focus of this study on number and number sense, patterns and algebra, geometry, and measurement—domains supported by Aunio and Räsänen. Salminen et al. (2021) found that parent-child interactions influence literacy and numeracy development as early as toddlerhood. The current study recognizes learner profiles, especially parental education, as significant to numeracy acquisition. Girard (2021) found that parents engaged in formal, challenging numeracy activities had higher academic expectations, while Silinskas et al. (2020) showed maternal education had a more direct impact on arithmetic skills. Interestingly, Barham et al. (2019) found male Grade 1 learners outperformed females in some contexts, though parental education remained the most significant influence.

Further supporting these findings, Cheung et al. (2020) identified a strong link between children's numeracy skills and factors such as parents' education, home math activities, and available resources. Cayang and Ursabia (2024) stressed the value of game-based and student-centered strategies, though continuous improvement is still needed. Juguilon (2023) highlighted the impact of family support on academic success, advocating for school programs to enhance parental involvement. Gender patterns also emerged, with studies by Tanghal and Tanghal (2022), Bulabon (2019), Andamon and Tan (2018), and Oyog (2024) consistently showing female learners excelling academically, often in households with modest educational backgrounds. Contrarily, Pinero and Canedo (2024) observed more learners from smaller families, while Vilog et al. (2023) raised alarms over students' waning interest in mathematics. These findings point to the urgent need for collaborative efforts among educators, parents, and stakeholders to create motivating and supportive environments that foster strong numeracy skills in early education.

Theoretical Underpinnings

This study was anchored on the Integrated Theory of Numerical Development proposed by Siegler in 2016. This theory states that a major theme of numerical development from childhood to adulthood is the gradual expansion of the kinds and ranges of numbers with accurately represented magnitudes (Siegler, 2016). This means that numerical development mainly focuses on acquiring numerical magnitude knowledge or the children's growing understanding of numerical magnitudes.

In addition, understanding numerical magnitudes is linked to, indicative of, and has a causal relationship with other essential components of mathematics, such as arithmetic and overall math performance. Thus, being numerate early will positively impact every learner's constant progress. Not only success in academics but also in handling real-life situations as adults soon.

This integrated theory of numerical development was significant to this study, emphasizing the mainstream of numeracy development from infancy until adulthood. Moreover, its unifying theme was children's growing understanding of numerical magnitudes. Thus, it was important to focus on and study the numeracy skills of Grade 1 learners as a basis for making an intervention plan.

Objectives

This study aimed to determine the level of numeracy skills of Grade 1 learners in a district of a large school division in Central Philippines for the school year 2024-2025 as the basis for an intervention plan. Specifically, this research sought to answer the following questions: 1) the level of numeracy skills of Grade 1 Learners in the area of number and number sense, patterns and algebra, geometry, and measurement; 2) is the level of numeracy skills of Grade 1 Learners when grouped according to the aforementioned variables; and 3) the significant difference in the level of numeracy skills of Grade 1 Learners when grouped and compared according to the aforementioned variables.

Methodology

This section presents a discussion of the research methodology used, the subjects and respondents of the study, the research instruments used, the validity and reliability of the instruments, the procedure for data gathering, and the statistical tools and procedures for data analysis.

Research Design

This study employed the descriptive research design to establish the level of numeracy skills of Grade 1 Learners in a district of a large school division in Central Philippines for the first and second quarter of school year 2024-2025 as the basis for an intervention plan.

According to Creswell (2023), the descriptive research design is a study that describes the characteristics of a population or phenomenon being studied. Primarily used to gain an understanding of a group or phenomenon. This involved collecting data through surveys, interviews, or observation.

This study focused on determining the level of numeracy skills of Grade 1 learners; a descriptive research study was a vital tool. It helped researchers understand a specific issue and provided valuable insights for future studies (Sirisilla & Sirisilla, 2023). Thus, the researcher was in good trust with using the research design.

Study Respondents

The respondents of this study were 217 Grade 1 pupils selected from a total enrollment of 494 across fourteen elementary schools under the Basic Education Curriculum (BEC) of the K to 12 Program. Due to the large population, the Cochran formula was used to determine an appropriate sample size, ensuring the desired level of precision and confidence (Nanjundeswaraswamy & Divakara, 2021). To achieve equal representation from each school, stratified sampling was employed by dividing the population into subgroups or strata (Hayes, 2021), followed by simple random sampling to select the individual participants, thereby ensuring a representative and unbiased sample.

Instruments

The level of numeracy skills of Grade 1 learners was assessed using a researcher-made test questionnaire, with items developed based on relevant literature. The questionnaire consisted of two parts: Part I gathered demographic data, including the learners' sex, parents' highest educational attainment, and number of siblings; Part II measured the learners' numeracy skills across four key areas—Number and Number Sense, Patterns and Algebra, Geometry, and Measurement. Each of the first two areas contained nine items, with scores interpreted as follows: 0–1 (Poor), 2–3 (Fair), 4–5 (Satisfactory), 6–7 (Very Satisfactory), and 8–9 (Excellent). Geometry and Measurement each had six items, with score ranges interpreted as 0–2 (Poor), 3–4 (Satisfactory), and 5–6 (Excellent). It was subjected to validity (4.74-excellent) and reliability (0.703-good). All of them were interpreted as worthy and good; respectively.

Data Gathering Procedure

After establishing the validity and reliability of the research instrument, the researcher sought permission from the Schools Division Superintendent and the District Supervisor to conduct the study. Upon receiving approval, Grade 1 teachers from participating schools were oriented and agreed to administer the test questionnaires. Each learner received a parental consent form, an assent form, and Part I of the test questionnaire prior to the test day to allow time for orientation and data completion. Information was also disseminated to parents via Facebook Messenger group chats and text messages. For nearby schools, the researcher personally administered the test. During the test, Grade 1 respondents answered a multiple-choice questionnaire, with teacher advisers reading and translating the questions into the mother tongue to ensure understanding. Afterward, the researcher collected all test materials, checked the responses, and compiled the scores for statistical analysis.

Data Analysis and Statistical Treatment

Objective No. 1 utilized a descriptive-analytical scheme and mean to describe the level of numeracy skills of Grade 1 learners in terms of number and number sense, patterns, algebra, geometry, and measurement.

Objective No. 2 utilized a descriptive-analytical scheme and mean to describe the level of numeracy skills of Grade 1 learners when grouped according to the variables.

Objective No. 3 utilized a comparative analytical scheme and t-test to determine the significant level of numeracy skills of Grade 1 learners when grouped and compared according to the variables.

Ethical Consideration

The researcher ensured that ethical concerns were considered while conducting this study. Protection of the anonymity and confidentiality of the participants was given focus, and respondents were assured that the information they provided would not be used against them. Also, the researcher considered the risk-benefit ratio and ensured that risk would be kept to a minimum. Moreover, the learner respondents and parents in this study were given an orientation on the study. The purpose of the study was explained to them, and they had the right to decide whether to let their child participate without incurring any penalty. Learners were also informed that they have the right to withdraw if they feel uncomfortable with the conduct of the study. Written parental consent and the learners' ascent form were obtained. The procedure that the learner respondents went through was also explained.

Results and Discussion

This section presents, analyzes, and interprets the data that were gathered consistent with its predetermined objectives.

Table 1

Level of Numeracy Skills of Grade 1 Learners According to Number and Number Sense, Patterns and Algebra, Geometry and Measurement

Areas	Mean	Interpretation
Number and Number Sense	5.66	Satisfactory
Patterns and Algebra	6.59	Very Satisfactory
Sub-mean	**6.13**	**Satisfactory**
Geometry	3.98	Satisfactory
Measurement	3.71	Satisfactory
Sub-mean	**3.85**	**Satisfactory**

Table 1 presents the level of numeracy skills of Grade 1 learners in the areas of number and number sense, patterns, algebra, geometry, and measurement.

The learner respondents received a mean score of 5.66 for number and number sense, which was considered satisfactory. The respondents' ability to count, compare, and order numbers, use ordinal numbers, compose, decompose, and determine a digit's place value is explained by this result, which indicates that they are already at the developing level. However, in order to effectively master the desired numeracy skills, it still requires immediate attention. This relates to the results of a study (Balt et al., 2020) that shows that students' performance improved dramatically over time and that their initial conceptual numerical understanding positively impacted their learning progress. The study also adds that in order to address the growing elaboration of conceptual numerical understanding over time, targeted intervention is required.

The respondents' mean score for patterns and algebra was 6.59, the highest of the four (4) categories. It provided a highly satisfactory level of verbal interpretation. According to the data, these students are already doing very well when it comes to applying addition properties, adding numbers, expressing expanded forms of numbers, and solving problems either orally or visually. This outcome demonstrates how deeply young Filipino students understand fundamental algebraic and pattern-based arithmetic concepts. This supports Yustitita and Abadi's 2021 study, which emphasized the importance of arithmetic as a subject to enhance future math learning outcomes.

The third area in this study was geometry. The learners obtained a mean score of 3.98, which was interpreted as satisfactory. This means numeracy skills in competencies like identification, comparison, composition, and decomposition of simple 2-dimensional shapes are already attainable for Grade 1 learners. However, emphasis

must be placed on the concepts that will be understood effectively. The results of a study showed that with time, students associate geometry with 2- and 3-dimensional forms, which may be because (surface) area and volume calculations were added to the measurement of distances in the higher grades. Additionally, great attention was given to 2- and 3-dimensional forms in the mathematics curriculum, and students developed different ideas for these forms in every grade (Kuzle & Gracin, 2020).

Measurement was the final area covered in this study. A satisfactory mean score of 3.71 was obtained by the respondents. The findings indicate that first-graders still lack exceptional proficiency in measuring and comparing object lengths and distances using non-standard units and in resolving measurement-related issues. Therefore, it is crucial to teach students even the fundamental ability to measure in order to solve problems or situations they will encounter in real life. This supports Saefurohman's (2021) findings that improving students' numeracy literacy can improve their problem-solving mindset.

Table 2

Level of Numeracy Skills of Grade 1 Learners According to Number and Number Sense, Patterns, and Algebra, Geometry, and Measurement When Grouped According to Sex

Areas	**Male**		**Female**	
	Mean	**Interpretation**	**Mean**	**Interpretation**
Number and Number Sense	5.55	Very Satisfactory	5.76	Very Satisfactory
Patterns and Algebra	6.65	Very Satisfactory	6.55	Very Satisfactory
Sub-mean	**6.10**	**Very Satisfactory**	**6.16**	**Very Satisfactory**
Geometry	4.00	Satisfactory	3.97	Satisfactory
Measurement	3.56	Satisfactory	3.85	Satisfactory
Sub-mean	**3.78**	**Satisfactory**	**3.91**	**Satisfactory**

Table 2 shows the level of numeracy skills of Grade 1 learners when grouped according to sex. The mean scores for male and female respondents in number and number sense, patterns, and algebra were all interpreted as very satisfactory. In contrast, both categories attained a satisfactory level in geometry and measurement.

The mean score for female respondents was 5.76 in number and number sense, compared to 5.55 for male respondents. It goes on to explain why female students are more adept than male respondents at counting, comparing, and ordering numbers and using ordinal numbers to describe the location of objects. The results also suggest that female Grade 1 students study more effectively than male students regarding numbers and sense. This significant finding contradicts a study showing that gender is not always the cause of differences in the development of early numeracy skills (Maung et al., 2023).

Male respondents scored 6.65 on average for patterns and algebra, compared to 6.55 for female learners. Male respondents demonstrated higher proficiency in adding numbers, applying properties of addition, solving problems, and expressing the expanded form of numbers, even though both were at a very satisfactory level. When it comes to patterns and algebraic activities, male learners perform exceptionally well. This contradicts research showing no discernible gender-based pattern in Grade 1 students' early numeracy abilities (Maung et al., 2023).

In geometry, the mean score for male students was 4.00, whereas the mean score for female students was only 3.97. This suggests that male respondents outperform female respondents when recognizing basic two-dimensional shapes of various sizes and orientations, comparing and differentiating them, and assembling and disassembling triangles, squares, and rectangles. According to a study, mother tongue instruction improved students' reading and math abilities in a state's elementary schools, irrespective of gender (Alimi et al., 2020).

Lastly, the mean score for female learners was 3.85, which was higher than that for male learners, 3.56. This implies that female respondents are more adept at comparing and resolving issues involving objects and measuring lengths and distances between them using non-standard units. This may also explain why female Grade 1 learners focus more on completing measurement-related tasks. It affirms a study (Maung et al., 2023) that clearly states that the difference in the numeracy level of Grade 1 learners could be due to individual developmental needs.

Table 3

Level of Numeracy Skills of Grade 1 Learners According to Number and Number Sense, Patterns, and Algebra, Geometry, and Measurement When Grouped According to Parents' Highest Educational Attainment

Areas	Lower Educational Attainment		Higher Educational Attainment	
	Mean	Interpretation	Mean	Interpretation
Number and Number Sense	5.69	Very Satisfactory	5.64	Very Satisfactory
Patterns and Algebra	7.16	Very Satisfactory	6.13	Very Satisfactory
Sub-mean	**6.43**	**Very Satisfactory**	**5.89**	**Very Satisfactory**
Geometry	4.14	Satisfactory	3.85	Satisfactory
Measurement	4.18	Satisfactory	3.34	Satisfactory
Sub-mean	**4.16**	**Satisfactory**	**3.60**	**Satisfactory**

Table 3 presents the data on the level of numeracy skills of Grade 1 learners when grouped according to parents' highest educational attainment. The mean scores for learners with parents with lower and higher educational attainment in number, number sense, patterns, and algebra were very satisfactory. In contrast, in the areas of geometry and measurement, they were satisfactory levels for both categories.

In number and number sense, respondents with parents who only obtained lower educational attainment had a mean score of 5.69, higher than that of the higher category with only a 5.64 mean score. It implies that even if a learner is from a family with lower educational attainment, they better master numbers and understand their sense. Furthermore, this data also implies that learners are better taken care of by parents with only lower educational attainment for the reason that they have the most time to follow up on lessons and help their kids in enrichment activities, compared to parents with higher educational attainment, who mostly are working daily for eight hours or probably more. Following this result, a study suggested that the associations between parental measures, home environments, and young children's developing literacy and numeracy skills emerge as early as toddlerhood (Salminen et al., 2021).

For patterns and algebra, the lower category achieved a better mean score of 7.16 than the 6.13 of the higher category. This connotes that learners with parents who only obtained lower educational attainment perform better in patterns and algebra than those with higher educational attainment. This explains the unselfish act of parents who only have lower educational attainment to provide the simplest but best way to help their kids become numerate through constant parental involvement in their child's life in school and, most importantly, at home. It is also important to note that the associations between the growing child and their home environment at this important developmental stage were reciprocal and not limited to within-domain effects (Salminen et al., 2021).

In geometry, the learners with parents in the lower category also excelled with a 4.14 mean score compared to the 3.85 learners in the higher category. Although both mean scores were interpreted as satisfactory, learners with parents in the lower category have more motivation to engage with simple 2-dimensional shapes like triangles, rectangles, and squares. Another proof of the dynamic engagement of learner-parent quality time that boosts the learners' interest in Mathematics. This confirms the study of Girard (2021) that parents who reported the most frequent numeracy activities at home tend to have the highest academic expectations for their child.

For measurement, respondents under the lower category obtained a mean score of 4.18, while 3.34 was obtained by those under the higher category of educational attainment. This implies that Grade 1 learners under the lower category have great skills in measuring lengths and distances using non-standard units and solving problems associated with measuring. This result infers that the learners who belong to the family with parents obtaining a higher education category are more likely to have working parents, which may result in insufficient time of contact with children to follow up on lessons or help them with school work. The findings of a study suggested that the associations between parental measures, home environments, and young children's developing literacy and numeracy skills emerge as early as toddlerhood. It is also important to note that the associations between the growing child and their home environment at this important developmental stage were reciprocal and not limited to within-domain effects (Salminen et al., 2021).

Table 4

Level of Numeracy Skills of Grade 1 Learners According to Number and Number Sense, Patterns, and Algebra, Geometry, and Measurement When Grouped According to Number of Siblings

Areas	Few Siblings		Many Siblings	
	Mean	Interpretation	Mean	Interpretation

Number and Number Sense	6.50	Very Satisfactory	5.31	Satisfactory
Patterns and Algebra	6.94	Very Satisfactory	6.45	Very Satisfactory
Sub-mean	**6.72**	**Very Satisfactory**	**5.88**	**Very Satisfactory**
Geometry	4.06	Satisfactory	3.95	Satisfactory
Measurement	4.02	Satisfactory	3.59	Satisfactory
Sub-mean	**4.04**	**Satisfactory**	**3.77**	**Satisfactory**

Table 4 presents the data on the level of numeracy skills of Grade 1 learners when grouped according to number of siblings. The mean scores for learners with few and many siblings in number and number sense and patterns and algebra were all interpreted as very satisfactory levels. In contrast, the mean scores of the two (2) categories were both satisfactory in geometry and measurement.

In number and number sense, learners with few siblings acquired a 6.50 mean score, relatively higher than those with many siblings who only had 5.31 as a mean score. It was interpreted as very satisfactory, but it explains further that when a child has only a few siblings, they will be given enough time to interact with parents or siblings in Mathematics lessons at home. This contradicts the findings of Tanghal and Tanghal (2022), who explain that family size has a negatively high significance on academic performance, where the bigger the family size, the lower the numeracy level.

In patterns and algebra, the few siblings' category also had a higher mean score of 6.94 than the 6.45 of the many siblings category. This result contributes to the understanding that respondents with few siblings have better numeracy skills in patterns and algebra, given that more time for engagement will be given to the children as to home numeracy activities. Juguilon (2023) recommended that parents support their children's early education at home and active involvement and participation in school.

In geometry, the learners with few siblings had a higher mean score of 4.06 than the 3.95 learners with many siblings. The learners boldly showed a greater understanding of comparison and distinguishing simple 2-dimensional shapes under the few siblings' category. This means that when a child has only a few siblings, he or she can experience concrete objects and shapes found at home that correspond to the lessons taught in school first-hand. It leads to a better understanding of lessons when taught indecisively at home with parents and siblings. Furthermore, the study of Cayang and Ursabia (2024) suggests focusing on where the learners come from and what kind of life they live and considering what the schools and teachers offer for them to acquire quality numeracy skills.

For measurement, a mean score of 4.02 was obtained by respondents under the few siblings category, while those under the many siblings category obtained 3.59. This implies that Grade 1 learners with few siblings have better chances of acquiring skills in measuring lengths and distances using non-standard units and solving problems associated with measuring than those with many siblings. This result suggests that when a child has six (6) or more siblings at home, the attention of parents and family members is likely not focused on the child alone. Physical and emotional support may be rare due to the many responsibilities of the whole family, especially in fostering home numeracy activities and better-quality education of children. Results of the study of Juguilon in 2023 revealed varied effects on the academic performance of the family support system. Learners who received quality family support performed better academically than those who received less.

Table 5

Difference in the Level of Numeracy Skills of Grade 1 Learners According to Number and Number Sense When Grouped According to Sex, Parents' Highest Educational Attainment and Number of Siblings

Variable	**Category**	**N**	**Mean**	***t*-value**	***p*-value**	***Sig. level***	**Interpretation**
Sex	Male	99	5.55	-.749	.455	0.05	Not Significant
	Female	118	5.76				
Parents' Highest Educational Attainment	Lower Educational Attainment	97	5.69	.170	.865		Not Significant

	Higher Educational Attainment	120	5.64				
Number of Siblings	Few Siblings	64	6.50	3.852	.000		Significant
	Many Siblings	153	5.31				

Table 5 reveals the difference in the level of numeracy skills of Grade 1 learners in number and number sense when grouped and compared according to the aforementioned variables. The Independent T-test results were interpreted as insignificant for sex and parents' highest educational attainment. At the same time, the number of siblings was significant.

Regarding sex, the mean score of the male group was 5.55, while that of the female group was 5.76, obtaining a test value of -.749 with a p-value of 0.455. Regarding parents' highest educational attainment, the mean score of the lower category was 5.69, while the higher category was 5.64, obtaining a test value of .170 and a p-value of 0.865. Regarding the number of siblings, the mean score of the few siblings' category was 6.50 while the many siblings' category was 5.31, obtaining a t-value of 3.852 and a p-value of 0.000. With the p-values for both sex and parents' highest educational attainment greater than the significant level of 0.05, the null hypothesis that the significant difference in the level of numeracy skills of Grade 1 learners when grouped and compared according to sex and parents' highest educational attainment was not rejected. However, for the third variable, whose p-value was less than the significant level of 0.05, the null hypothesis that the significant difference in the level of numeracy skills of Grade 1 learners when grouped and compared according to the number of siblings was rejected.

This result implies that the numeracy level of Grade 1 learners in number and number sense is neither gender-biased nor advantageous for parents with higher educational backgrounds. This confirms the result of Maung et al. (2023) that the difference in early numeracy skills development is not necessarily due to gender. The difference could be due to individual developmental needs. This result is opposed to Silinskas et al. (2020), who found maternal education to be related to children's arithmetic skills rather than home numeracy activities.

On the other hand, it can also be inferred that the numeracy level in number and number sense depends greatly on the number of siblings the learners have. The higher the number of siblings, the less interaction between parents and the child or siblings for support and guidance in home numeracy activities. This confirms the study of Juguilon (2023) that learners who received quality family support performed better academically than those who received less. However, this was contradicted by Tanghal and Tanghal (2022), who explain that family size has a negative high significance on academic performance, where the bigger the family size, the lower the numeracy level.

Table 6

Difference in the Level of Numeracy Skills of Grade 1 Learners According to Patterns and Algebra When Grouped According to Sex, Parents' Highest Educational Attainment, and Number of Siblings

Variable	**Category**	**N**	**Mean**	***t*-value**	***p*-value**	***Sig. level***	**Interpretation**
Sex	Male	99	6.65	.329	.742		Not Significant
	Female	118	6.55				
Parents' Highest Educational Attainment	Lower Educational Attainment	97	7.16	3.748	.000	0.05	Significant
	Higher Educational Attainment	120	6.13				
Number of Siblings	Few Siblings	64	6.94	1.521	.131		Not Significant
	Many Siblings	153	6.45				

Table 6 reveals the difference in the level of numeracy skills of Grade 1 learners in patterns and algebra when grouped and compared according to the aforementioned variables. The Independent T-test results were interpreted

as insignificant for sex and number of siblings. At the same time, it was significant regarding the parents' highest educational attainment.

Regarding sex, the mean score of the male group was 6.65, while that of the female group was 6.55, obtaining a test value of .329 with a p-value of .742. Regarding parents' highest educational attainment, the mean score of the lower category was 7.16, while the higher category was 6.13, obtaining a test value of 3.748 and a p-value of 0.000. Regarding the number of siblings, the mean score of the few siblings' category was 6.94, while the many siblings' category was 6.45, obtaining a t-value of 1.521 and a p-value of .131. With the p-values for both sex and number of siblings greater than the significant level of 0.05, the null hypothesis that the significant difference in the level of numeracy skills of Grade 1 learners when grouped and compared according to sex and number of siblings was not rejected. Nevertheless, for the second variable, whose p-value was less than the significant level of 0.05, the null hypothesis that the significant difference in the level of numeracy skills of Grade 1 learners when grouped and compared according to parents' highest educational attainment was rejected.

This vividly explains that the numeracy level of Grade 1 learners in patterns and algebra is not interconnected to gender and the number of siblings they have. The study conducted by Barham et al. (2019) contradicts this as they demonstrate significant differences between male and female first-grade students, with male students having better literacy and numeracy skills than female students. However, a study shows that Mother tongue strategy enhanced pupils' literacy and numerical skills in a state's primary schools, regardless of gender (Alimi et al., 2020). Accordingly, family size had a negative high significance on academic performance (Tanghal & Tanghal, 2022), which opposes the results of this study.

On the other hand, it can also be explained that the numeracy level of Grade 1 learners in patterns and algebra depends on the parents' educational attainment. As the saying goes, "You cannot give what you do not have," which means that a parent cannot teach his or her child the numeracy skills that he or she did not learn or understand. However, contacting parents, especially those with higher educational backgrounds, requires ample time. Quality time with kids is a must. This confirms the study of Girard (2021) that parents who provide home numeracy education for their children remain related to math skills when children are in elementary school. In general, a study by Yustitita and Abadi (2021) states that arithmetic needs to be a topic of attention to improve mathematics learning achievement in the future.

Table 7

Difference in the Level of Numeracy Skills of Grade 1 Learners According to Geometry When Grouped According to Sex, Parents' Highest Educational Attainment, and Number of Siblings

Variable	Category	N	Mean	*t*-value	*p*-value	*Sig. level*	Interpretation
Sex	Male	99	4.00	.177	.860		Not Significant
	Female	118	3.97				
Parents' Highest Educational Attainment	Lower Educational Attainment	97	4.14	1.544	.124	0.05	Not Significant
	Higher Educational Attainment	120	3.85				
Number of Siblings	Few Siblings	64	4.06	.540	.590		Not Significant
	Many Siblings	153	3.95				

Table 7 reveals the difference in the level of numeracy skills of Grade 1 learners in geometry when grouped and compared according to the aforementioned variables. The results using the Independent T-test were interpreted as not significant.

Regarding sex, the mean score of the male group was 4.00, while that of the female group was 3.97, obtaining a test value of .177 with a p-value of .860. Regarding parents' highest educational attainment, the mean score of the lower category was 4.14, while the higher category was 3.85, obtaining a test value of 1.544 and a p-value of 0.124. Regarding the number of siblings, the mean score of the few siblings' category was 4.06, while the many

siblings' category was 3.95, obtaining a test value of .540 and a p-value of .590. With the p-values all greater than the significant level of 0.05, the null hypothesis that the significant difference in the level of numeracy skills of Grade 1 learners in the area of geometry when grouped and compared according to the aforementioned variables was not rejected.

This implies that all these variables mentioned are not dependable as to the level of understanding a child has in geometry. The study conducted by Maung et al. (2023) affirms that there was no general pattern based on gender. Also, in contrast, parents who reported the most frequent numeracy activities at home tend to have the highest academic expectations for their child (Girard, 2021)—further opposed in a study that it was also important to note that at this important developmental stage, the associations between the growing child and his or her home environment were reciprocal and not limited to within-domain effects (Salminen et al., 2021). Data also found a more pressing challenge for stakeholders to revive: the waning interest in students learning Mathematics and getting motivated once more to attend their classes (Vilog et al., 2023).

Table 8

Difference in the Level of Numeracy Skills of Grade 1 Learners According to Measurement When Grouped According to Sex, Parents' Highest Educational Attainment and Number of Siblings

Variable	**Category**	**N**	**Mean**	***t*-value**	***p*-value**	***Sig. level***	**Interpretation**
Sex	Male	99	3.56	-1.267	.206		Not Significant
	Female	118	3.85				
Parents' Highest Educational Attainment	Lower Educational Attainment	97	4.18	3.714	.000	0.05	Significant
	Higher Educational Attainment	120	3.34				
Number of Siblings	Few Siblings	64	4.02	1.671	.097		Not Significant
	Many Siblings	153	3.59				

Table 8 reveals the difference in the level of numeracy skills of Grade 1 learners in measurement when grouped and compared according to the aforementioned variables. The Independent T-test results were interpreted as insignificant for sex and number of siblings. At the same time, it was significant regarding the parents' highest educational attainment.

Regarding sex, the mean score of the male group was 3.56, while that of the female group was 3.85, obtaining a test value of -.1.267 with a p-value of .206. In terms of parents' highest educational attainment, the mean score of the lower category was 4.18 while, the higher category was 3.34, obtaining a test value of 3.714 and a p-value of .000. In terms of the number of siblings, the mean score of the few siblings' category was 4.02 while the many siblings' category was 3.59, obtaining a t-value of 1.671 and a p-value of .097. With the p-values for both sex and number of siblings greater than the significant level of 0.05, the null hypothesis that the significant difference in the level of numeracy skills of Grade 1 learners when grouped and compared according to sex and number of siblings was not rejected. However, for the parents' highest educational attainment, whose p-value was less than the significant level of 0.05, the null hypothesis that the significant difference in the level of numeracy skills of Grade 1 learners when grouped and compared according to this variable was rejected.

This implies that the numeracy level of Grade 1 learners in measurement is not related to the gender nor to the number of siblings they have. The study conducted by Barham et al. (2019) contradicts this as they demonstrate significant differences between male and female first-grade students, with male students having better literacy and numeracy skills than female students. However, a study shows that Mother tongue strategy enhanced pupils' literacy and numerical skills in a state's primary schools, regardless of gender (Alimi et al., 2020). Also, family size had a negative high significance on academic performance (Tanghal & Tanghal, 2022), which opposes the results of this study.

On the other hand, it can also be concluded that the numeracy level of Grade 1 learners in measurement is relative to the parent's educational attainment. One cannot give what he does not have. This implies that in learning to measure lengths and distances, the help of parents is beneficial and an advantage to the learners who have frequent home numeracy activities with their parents. This confirms the study of Girard (2021) that parents who provide home numeracy education for their children remain related to math skills when children are in elementary school. In general, a study by Yustitita and Abadi (2021) states that arithmetic needs to be a topic of attention to improve mathematics learning achievement in the future.

Conclusions

The study found that most respondents were female, with parents having higher educational attainment and many siblings. The Grade 1 learners exhibited satisfactory numeracy skills, with both male and female students achieving very satisfactory results in number sense and patterns, but satisfactory scores in geometry and measurement. Learners with parents of varying educational backgrounds performed similarly, excelling in number sense and patterns but scoring lower in geometry and measurement. Significant differences in numeracy skills were observed based on the number of siblings, particularly in number sense, patterns, and algebra, and measurement based on parents' education level. Female learners performed better in number sense and measurement, while male learners excelled in patterns, algebra, and geometry. Learners with parents who have elementary education tend to have better numeracy, as these parents frequently help with homework. Smaller families (less than six siblings) were associated with better numeracy skills, likely due to more parental attention. Parental education level was particularly important for performance in geometry and measurement. Based on these conclusions, recommendations include quarterly "Fun Learning with Numbers" LAC sessions for teachers, "Panagtigum" teacher-parent conferences to strengthen home-school connections, "The Geometry Fundamentals" workshops for Key Stage 1 teachers to improve geometry teaching, and biannual "Pamilyang Nagkahugop" family days to engage families in measurement-based activities for teamwork and communication.

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