

Teachers' instructional practices in teaching numeracy skills of kindergarten learners

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ABSTRACT

The study examined the relationship between teachers' instructional practices and numeracy skills of kindergarten learners. Utilizing a quantitative descriptive-correlational research design, the study was conducted at Maguikay Elementary School in Mandaue City, Cebu, Philippines, during the school year 2025–2026. Respondents consisted of 100 kindergarten learners, selected through stratified random sampling. Data were collected using validated and reliable instruments. These instruments were pilot-tested, and the results indicated that they were valid and reliable for use in the study. The study included the profile of teachers and kindergarten learners, the extent of teachers' instructional practices, the level of learners' numeracy skills, and the relationship between the variables. Statistical tools included frequency count, percentage distribution, weighted mean, standard deviation, and Pearson's *r* correlation coefficient. Results indicated that teachers' instructional practices were interpreted as "Always," indicating a very high extent of instructional practices in teaching numeracy among kindergarten learners. Additionally, the combined level of numeracy skills of kindergarten learners was interpreted as "Expert," meaning the learners consistently demonstrated numeracy skills independently and accurately. Although the results of each variable were at an excellent level, indicating that each variable was utilized effectively, statistical analysis revealed a negligible negative correlation between teachers' instructional practices and numeracy skills of kindergarten learners, which was not significant, leading to the acceptance of the null hypothesis. This suggests that instructional practices alone do not substantially influence the acquisition of numeracy skills. The findings further suggest that numeracy development may also be influenced by parental support, learner motivation, home learning experiences, and exposure to number-related activities. Thus, the study proposed PROJECT N.U.M.B.E.R.S. (Nurturing Understanding through Manipulatives, Best-practices and Early Readiness Skills) to provide holistic support in strengthening numeracy development among kindergarten learners.

Keywords: Early childhood education, educational games, numeracy skills, descriptive-correlation, intervention plan, Mandaue City, Cebu, Philippines.

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INTRODUCTION

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Numeracy was one of the essential skills that helped learners to develop a foundational understanding of basic mathematical concepts needed in everyday life (Ünal & Kaya, 2024). Among these competencies, numeracy plays an important role as it serves as a strong predictor of future academic success, particularly in mathematics which allows learners to understand numbers, patterns, solve problems and apply mathematical concepts in everyday life (Maghfirah et al., 2025; Elfiky, 2021). However, gaps in early numeracy skills remain a widespread concern across multiple countries, including the United Kingdom, Turkey, Canada, Northern Ireland, and Malaysia, where young learners experienced difficulties in number recognition, counting, and numerical reasoning (Singh et al., 2021; Yuniria et al., 2025). These ongoing challenges highlight the need for effective and engaging instructional strategies to strengthen early mathematical foundations (Ali et al., 2022).

Globally, educational games and digital game-based learning have emerged as promising instructional practices for improving numeracy skills among young learners (Afrianti & Maryatun, 2025). These practices align with the characteristics of Generation Alpha, who are highly receptive to digital and interactive forms of learning (Asqia et al., 2025). Research indicates that game-based learning enhances motivation, engagement, and problem-solving abilities while supporting cognitive, social, and emotional development (Maryana et al., 2024; Kim & Kim, 2024; Alotaibi, 2024). Moreover, educational games help make abstract mathematical concepts more accessible, thereby improving mathematical cognition and performance (Al-Hassan et al., 2025; Wardat et al., 2022; Buray & Alferez, 2025). The effectiveness of these approaches is further influenced by the home learning environment, which interacts with formal instruction in shaping early numeracy development (Gottardo & Restiglian, 2022). This integration of formal and informal learning contexts highlights the potential of educational games as flexible and innovative instructional tools (Balala et al., 2021).

In the Philippines, the issue of low mathematics performance remains a pressing concern. National and international assessments, such as the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA), consistently reveal that Filipino learners perform below expected proficiency levels in mathematics (Capinding & Salazar, 2023; Lasala, 2023; Copioso & Lapada, 2024). A substantial proportion of learners demonstrate only basic mathematical skills, with minimal improvement across assessment cycles (Garcia et al., 2024; Vergara & Balquedra, 2024). Despite increasing integration of technology in education, these challenges persist, indicating that instructional practices such as game-based learning have not yet fully achieved their intended impact (Godoy, 2022; Sulpico et al., 2025). Additionally, the effectiveness of these approaches in improving numeracy outcomes remains underexplored (Abenes et al., 2023; Anggraeni et al., 2024; Chavez, 2024).

Locally, the kindergarten learners of Maguikay Elementary School often exhibit difficulties in mastering foundational numeracy skills, such as number recognition, cardinality, and basic operations, which are essential for future mathematical learning (Darnon & Fayol, 2021). These challenges necessitate the implementation of targeted, developmentally appropriate, and engaging instructional interventions. Instructional practices such as game-based learning or the educational games, when effectively designed and implemented, have the potential to address these learning gaps by providing interactive and meaningful learning experiences enhancing their knowledge and understanding of mathematical concepts. (Wang, 2025; Muhtarom et al., 2022). Difficulties in early numeracy development highlight the need for effective and engaging teaching approaches. Teachers' instructional practices play a crucial role in developing foundational numeracy skills among kindergarten learners. When

implemented appropriately, these practices can enhance learning, promote engagement, and support meaningful mathematical understanding.

Overall, this study aimed to determine the relationship between teachers' instructional practices and kindergarten learners' numeracy skills during the school year 2025–2026 as a basis for the development of an output. Specifically, it seeks to examine how teachers' instructional practices influence learners' foundational mathematical competencies, and to assess teachers' effectiveness as instructional approaches. The expected output of this study is a structured and context-responsive action plan based on the result of the study and was designed to enhance numeracy instruction by strengthening teachers' instructional practices and integrating appropriate and engaging strategies such as educational games.

Statement of the problem

This study determined the use of educational games in improving numeracy skills among kindergarten learners at Maguikay Elementary School, Mandaue City, Cebu during the school year 2025–2026 as a basis for an intervention plan. Specifically, this study seeks to answer the following questions:

1. What is the profile of the teacher respondents in terms of age, sex at birth, highest educational attainment, years of teaching experience, and EdTech trainings attended, and of the kindergarten learners in terms of age, gender, parents' highest educational attainment, number of siblings, birth order, and combined monthly income?
2. What is the extent of the teachers' utilization of educational games in teaching numeracy skills among kindergarten learners?
3. What is the level of numeracy skills of kindergarten learners in terms of foundational skills, patterns, time, and measurement, number sense and operations, and applied numeracy?
4. Is there a significant relationship between the identified profile of the respondents and the numeracy skills of the kindergarten learners?
5. Based on the findings of the study, what intervention plan may be proposed to enhance the use of educational games in improving numeracy skills among kindergarten learners?

METHODOLOGY

This research utilized a descriptive-correlational design with a quantitative methodology. This design was considered suitable as it corresponded with the primary aims of the study, which were to elucidate the existing instructional practices in teaching numeracy and to ascertain whether a significant correlation existed between the teachers' instructional practices and the numeracy skills of kindergarten students.

The descriptive component of the design systematically provided and analyzed the current state of the important variables included in the investigation. This design was deemed most appropriate as it allowed the researcher to: (1) describe the profile of teacher-respondents and kindergarten learners, (2) determine the extent of teachers' instructional practices, (3) assess the level of numeracy skills of kindergarten learners, (4) investigate the relationship between learner profiles and numeracy skills, and (5) propose an action plan based on the findings. The descriptive component provided a systematic depiction of the characteristics and current conditions of the respondents, while the correlational component examined whether significant relationships existed between identified profile variables and learners' numeracy skills.

The correlational component was employed to examine the relationship between teachers' instructional practices (independent variable) and kindergarten learners' numeracy

skills (dependent variable). This determined whether a significant relationship existed between the two variables without manipulation, making it suitable for a natural classroom setting.

The respondents of this study were the kindergarten learners at Maguikay Elementary School, Mandaue City, during the school year 2025–2026. While the teacher-respondents provided data on their profile and the extent of teachers instructional practices, the primary focus of the study in terms of numeracy skill assessment was the kindergarten learners. The choice of kindergarten learners as the main respondents for numeracy assessment was justified by the study's primary objective, which was to determine the level of numeracy skills among kindergarten learners and how these skills related to the teachers instructional practices. Kindergarten learners were at a critical developmental stage where foundational numeracy skills such as counting, number recognition, patterning, and basic operations were being established. Assessing their numeracy skills provided direct evidence of the effectiveness of instructional strategies.

Teacher-Respondents. All five (5) kindergarten teachers at Maguikay Elementary School served as respondents for the teacher profile and instructional practices questionnaire. Total enumeration or universal sampling was employed for the teacher-respondents due to the manageable and finite size of the population ($N=5$). This non-probability sampling technique involved selecting the entire population of kindergarten teachers as respondents, ensuring that every teacher in the kindergarten department participated in the study.

Learner-Respondents. A total of 100 kindergarten learners from Maguikay Elementary School participated as respondents for the numeracy skills assessment. The learners were drawn from the 5 kindergarten sections, with the 20 learners per section. The distribution ensured proportional representation across all classes taught by the 5 kindergarten teacher-respondents. The sample size of 100 was determined using stratified random sampling. The choice of 100 learners was also justified by the need for sufficient statistical power for correlational analysis (Problem 4) while remaining feasible within the time constraints of the school year 2025–2026.

The research instruments used in this study were carefully developed to gather data that would answer the specific problems raised in the statement of the problem. Three main instruments were utilized: a questionnaire for teachers, an individual learner's numeracy skills assessment tool, and a survey questionnaire for parents. All instruments were subjected to content validation by experts in early childhood education, research methodology, and numeracy instruction to ensure their appropriateness, clarity, and relevance to the study's objectives.

Questionnaire for Teachers. The teacher questionnaire was divided into two parts. Part I gathered the demographic profile of the teacher-respondents, including their age (with response options ranging from 21–25 to 51 and above), sex at birth (female or male), highest educational attainment (Bachelor's Degree, Master's Units, Master's Degree, Doctorate Units, or Doctorate Degree), years of teaching experience (ranging from less than 2 years to 11 years and above), and relevant training on educational technology or educational games (Yes or No). The name of the teacher-respondent was made optional to maintain anonymity. Part II assessed the extent of the teachers' instructional practices in teaching numeracy skills. Ten types of instructional practices were listed: role-playing activities, shape hunting games, block building activities, board games, hopscotch games, mathematics mobile applications, card matching games, puzzle assembly activities, dice rolling games, and songs and dance activities. Teachers rated each game type using a five-point Likert scale where 5 meant "Always," 4 meant "Often," 3 meant "Sometimes," 2 meant "Rarely," and 1 meant "Never." This instrument was designed to directly address Problem 2 of the study, which sought to determine the extent of teachers' instructional practices in teaching numeracy skills.

Individual Learner's Numeracy Skills Assessment. This instrument was completed by the kindergarten teachers based on their classroom observations of each learner-respondent. The assessment was organized into four domains that directly corresponded to Problem 3 of the study. Part A assessed foundational skills using four indicators: identifies basic colors and shapes, sorts and classifies objects, compares objects, and arranges objects by size or order. Part B assessed patterns, time, and measurement using four indicators: recognizes and completes patterns, identifies time of day and tells time, names days of the week and months, and uses simple tools to measure. Part C assessed number sense and operations using four indicators: counts and recognizes numbers (0–10), matches numbers to objects, orders numbers and identifies position, and solves simple addition and subtraction using objects. Part D assessed applied numeracy using three indicators: groups objects into equal sets, identifies simple fractions (half), and recognizes coins and bills (up to ₱20). Each indicator was rated using a four-point scale where 4 meant "Always Demonstrated," 3 meant "Often Demonstrated," 2 meant "Sometimes Demonstrated," and 1 meant "Not Yet Demonstrated." The total of 15 indicators across four domains provided a comprehensive profile of each learner's numeracy skills, allowing for the computation of domain-specific means and an overall grand mean.

Survey Questionnaire for Parents. The parent questionnaire was designed to gather the learner profile data required for Problem 1.2 of the study. The first section asked for the learner's name (optional), age, and gender (Male or Female). The second section gathered the parents' highest educational attainment, with separate columns for mother and father. Response options included Doctorate Graduate, With Doctorate Units, Master's Graduate, College Graduate, College Level, High School Graduate, High School Level, Elementary Graduate, Elementary Level, and No Formal Education. The third section asked for the number of siblings, with response options of 5 and above, 3–4, 1–2, or None. The fourth section asked for birth order, with response options of Eldest, Second, Middle, Youngest, or Only Child. The fifth section asked for the combined family monthly income, with response options ranging from "Above P30,000" down to "P10,000 and below," including intermediate brackets of P25,001–P30,000, P20,001–P25,000, P15,001–P20,000, and P10,001–P15,000.

All three instruments were subjected to content validation by a panel of three experts: a master teacher in early childhood education, a mathematics education specialist, and a research methodology professor. The experts evaluated the instruments for clarity, relevance, comprehensiveness, and alignment with the study's research questions. Based on their feedback, minor revisions were made to the wording of several indicators to ensure age-appropriateness for kindergarten learners and clarity for parent-respondents. A pilot test of the instruments was conducted with five kindergarten teachers and ten parents from a non-participating school.

The process of collecting data for this study were carried out in three stages: the Preliminary Stage, Data Gathering Stage, and Post–Data Gathering Stage. Each stage will be systematically implemented to ensure the accuracy, reliability, and ethical integrity of the research process.

Preliminary Stage. In this initial phase, the researcher first secured permission to conduct the study by drafting a transmittal letter addressed to the Schools Division Superintendent of the Department of Education, Division of Mandaue City, requesting approval to conduct research at MaguikayElementary School. Upon approval from the division office, the researcher then sought permission from the school principal of MaguikayElementary School to administer the questionnaires to the kindergarten teachers and to assess the numeracy skills of the kindergarten learners. Before any data collection occurred, the researcher secured

informed consent from all participants. For the teacher-respondents, written informed consent was obtained after explaining the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any time when they no longer felt comfortable with the process. For the learner-respondents, parental informed consent was secured through a letter sent to the parents or guardians, which explained the study's purpose, assured them of the confidentiality of their children's data, and informed them of their right to withdraw their child from the study at any time without penalty. Only learners whose parents provided written consent were included in the study. The researcher also assured all respondents that their responses would be kept strictly confidential and would be used solely for research purposes.

Data Gathering Stage. Following the approval and validation of the instrument, the researcher personally distributed the questionnaires to the five (5) kindergarten teacher-respondents at Maguikay Elementary School. Before administration, the researcher explained the purpose and significance of the study, provided clear instructions on how to accomplish each part of the questionnaire, and assured the respondents again of the confidentiality of their responses. The teachers were given ample time to accomplish the questionnaire, which included Part I (demographic profile), Part II (teachers instructional practices), and the Individual Learner's Numeracy Skills Assessment for each of their assigned learners. The parent survey questionnaires were distributed to the parents or guardians of the 100 learner-respondents through the homeroom teachers. The researcher provided clear instructions to parents on how to accomplish the questionnaire, emphasizing that participation was voluntary and that they could withdraw their consent at any time. The researcher also remained available to answer any questions or clarifications from the respondents. To ensure a high retrieval rate, the researcher set a specific date for collection and maintained communication with the teachers and parents for follow-ups as necessary.

Post-Data Gathering Stage. Once all distributed questionnaires and assessment forms had been retrieved, the researcher manually checked, sorted, and encoded the gathered data. The responses were tabulated and organized in a master sheet using a spreadsheet program such as Microsoft Excel to facilitate analysis. The encoded data were then subjected to the appropriate statistical treatments, including frequency counts and percentages for profile variables, weighted means and standard deviations for the extent of teacher's instructional practices and level of numeracy skills, and chi-square tests for the significance of relationships between learner profiles and numeracy skills. Additionally, Pearson correlation will be used to test the relationship between teacher's instructional practices and numeracy skills of kindergarten learners. Upon completion of the statistical analysis, the results were interpreted and analyzed in relation to the specific research questions posed in the study. The findings derived from this stage served as the basis for developing the proposed action plan aimed at enhancing teachers' instructional practices and their relationship to the numeracy skills of kindergarten learners at Maguikay Elementary School.

RESULTS AND DISCUSSION

This study considered the teachers' age and sex at birth, highest educational attainment, years of teaching experience and EdTech training attended. In addition, this study also considered the kindergarten learners' age, gender, parents' highest educational attainment, no. of siblings, birth order and combined monthly income. These data were gathered through questionnaires answered by 5 teachers with 100 kindergarten learners.

Age and sex at birth of the teachers

Age and sex are fundamental demographic variables that influence the teachers' practices and students' numeracy skills. These variables provide essential context in understanding teachers' role in kindergarten numeracy skills Table 2 presents the distribution of the respondents according to age and gender.

Table 2 presents the profile of teacher respondents in terms of its age and sex at birth. The results showed that all respondents were female with 5 responses (100%) while no male kindergarten teachers were recorded in the data. In terms of age distribution, the majority of the teachers were within the 41-50 age bracket with 60% while 40% of them were aged 36-40. Overall, this indicates that the teaching workforce is composed entirely of female educators who are in their mid-career stage.

The findings indicated that teaching in kindergarten is female-dominated and composed of equipped teachers. The absence of male respondents suggested a gender imbalance in the profession particularly at kindergarten level. This result may be attributed to long-standing social and cultural norms that most of the teachers in kindergarten level are female and there are few or possibly no male kindergarten teachers. This finding is supported by Ingersoll & Merrill (2017), their study found that the teaching profession continues to be largely female dominated particularly in early and elementary education settings.

In terms of age distribution, the higher percentage of teachers within the 41-45 age group (60%) indicates that most respondents are already experienced and equipped in the profession. This is due to teacher retention and long-term teaching experience allowing teachers to accumulate years of teaching practices. Additionally, the smaller portion was in the ages 36-40 (40%) suggesting that few kindergarten teachers were presented in the study. In the study of Kini and Podolsky (2016), the more teachers aged in teaching their teaching experiences will also increase which developed better teaching practices that helped kindergarten learners to understand numeracy.

Overall, the result showed that the teaching profession particularly in kindergarten level is predominantly composed of female educators due to social and cultural influences. Moreover, the teaching experience associated with this aged group is connected to the increased instructional practices that led to better student performance.

Teachers' highest educational attainment

Teachers' highest educational attainment was among the important demographic profile of kindergarten teachers as it gave valuable information that helped the study to be successful. It reflected the academic qualifications and level of professional development which is an important factor that influences reaching competence and instructional quality. Table 3 presented the kindergarten teacher's highest educational attainment.

Table 3 presented the kindergarten teacher's highest educational attainment. The result showed that among the 5 kindergarten teachers there are 3 currently with Master's Units (60%) followed by Bachelor's Degree and Master's Degree with only 1 respondent (20%). These figures indicated that the majority of the respondents were pursuing graduate-level education.

These findings indicated that most of the respondents were engaged in continuing their professional developments through graduate studies. The predominance of kindergarten teachers with Masters Units suggested that while many teachers had not yet completed in developing their rank they were in the process of working toward advancing the academic qualification for the betterment of their learners. This may be attributed to the factors such as

financial limitations, time constraints and workload demands that make it challenging to finish graduate studies. Despite these factors, their presence in the graduate programs reflected their perseverance and motivation to enhance their teaching competence, particularly in teaching numeracy. This result was supported by Darling-Hammond et al. (2017), where the researcher emphasized that kindergarten teachers who engaged in continuous professional development are better equipped to improve their instructional practices for the betterment of their learners.

Additionally, the smaller percentage (20%) of teachers who have already completed a Master's degree indicates that though many teachers were in the process of professional development only few have advanced to the qualifications. This may be because of the demanding nature of graduate studies or limited access to higher education opportunities that hinder the process. Furthermore, the other small percentage (20%) was about the teachers with only a Bachelor's degree, this may represent those who are either newly hired kindergarten teachers or have not yet pursued graduate studies. These findings were supported by Borko (2004), their study highlighted that increasing professional degree was important as it helped in enhancing teachers' knowledge and effectiveness, highlighting the importance of encouraging teachers to continue their education and continue learning.

Overall, the findings showed that the majority of kindergarten teachers are academically engaged and committed in improving their professional qualifications. However, other teachers do not yet get the graduate studies degree. This is because of other factors such as financial limitations, time constraints, workload demands or newly hired kindergarten teachers that make it challenging to finish graduate studies.

Teachers' years of teaching experience

Teachers' years of experience was important as it shows the professional expertise level of kindergarten teachers which can influence their teaching effectiveness and develop instructional practices that would greatly help kindergarten learners to learn, particularly in numeracy. Table 4 presented the kindergarten teachers years of teaching experience.

Table 4 presented the kindergarten teachers years of teaching experience. The result showed that the majority of the teachers have 11 years and above (40%) of teaching experience. Meanwhile, another 20% of respondents fall under the following categories: 9-10, 7-8 and 3-4 years of teaching experience. However, no respondents were recorded in the 5-6 years of teaching experience category. This indicates a varied distribution of the data, with greater concentration to the highest percentage of highly experienced kindergarten teachers.

The finding showed that the highest percentage of respondents are experienced teachers with 2 kindergarten teachers having 11 years and above teaching experience. This suggested that the respondents have had long-term exposure to classroom teachings, allowing them to develop effective instructional practices and understanding of learners' needs, particularly in numeracy. This finding is supported by Kini and Podolsky (2016), who found that teaching experience significantly enhances teaching effectiveness particularly after more than decade of teaching experience which possibly possessed a good quality of teaching that would help kindergarten learners develop numeracy skills. On the other hand, the other portion has 20% with only 1 respondent in each category such as: 9-10, 7-8 and 3-4 years of teaching experience indicates balanced representation of mid-career education. However, the absence of the respondent in the 5-6 years teaching experience category indicates a gap in the distribution possibly due to career transitions or other professional factors affecting teaching retention at this stage. According to Rice (2010), kindergarten teachers at different experience levels significantly contributed to the learning environment, as these levels helped each other to develop new knowledge and practices that would help learners develop and strengthen their numeracy skills.

Overall, the findings showed that kindergarten teachers' workforce was composed of experienced and equipped teachers which can positively influence the quality of instruction practices and learners' outcomes, particularly in numeracy. However, maintaining balanced distribution across experience levels was important to ensure a sustained professional growth with the school.

Teachers' attendance to EdTech trainings

Teachers' attendance to EdTech training was important as it enhances the kindergarten teacher's ability to integrate technology effectively into the teaching and learning process. This training equipped teachers with necessary digital skills and instructional practices to improve kindergarten learners' engagement and learning outcomes, particularly in numeracy.

Table 5 presented the kindergarten teachers' attendance to EdTech (Educational Technology) training. The result showed that all 5 respondents (100%) had attended EdTech training, while none of the respondents (0%) reported not attending. This result indicated that kindergarten teachers gave their full participation in technology-related professional development activities to ensure the learning of their learners.

The findings showed that all teachers are actively engaged in professional development related to educational technology. The 100% attendance rate showed strong institutional support and encouragement for teachers to participate in training. Since today's generation already uses technology in teaching and learning, this may be attributed to the increasing demand for digital competence in teachings, especially in response to modern educational needs and integration of technology in the learning process. This finding supported by Darling-Hammond et al. (2017), their study emphasized that continuous professional development, particularly in education technology related training enhances teachers' instructional practices and improves students' engagement and learning outcomes.

Moreover, since no respondents reported not attending EdTech training, it showed that access to EdTech training opportunities is not a major issue within the school. This also suggested that teachers recognized the importance of technology in enhancing teaching effectiveness, particularly in teaching numeracy. Additionally, while attendance is high, it does not necessarily guarantee effective implementation of learned practices in teachings. According to Tondeur et al. (2017), the success of technology integration depends not only on training participation but also on continuous support, encouragement and practice, aligning with the teaching goals.

Overall, the findings showed that kindergarten teachers are highly exposed to EdTech training, which is a positive indicator of their readiness to integrate technology in teaching. However, there is a need to ensure that learnings from training are translated and applied into the actual practices.

Kindergarten learners

This section presents the profile of the kindergarten learner-respondents who participated in the study. The learners' characteristics were described in terms of their age, gender, parents' highest educational attainment, number of siblings, birth order, and combined monthly family income. These demographic variables were examined to determine their potential influence on the numeracy skills of kindergarten pupils. Understanding the learners' profile provided a contextual foundation for analyzing the relationship between learner characteristics and their numeracy performance, as well as for developing a responsive

intervention plan. The following tables present the frequency and percentage distribution of the kindergarten learners according to each variable.

Age of the learners

Age of the learners was an important variable as it influenced the development, readiness to learn and ability to acquire numeracy skills. It provides essential information in understanding how learners process mathematical concepts and respondents to teachers instructional practices. Table 6 presented the age of the kindergarten learners.

Table 6 presented the age of the kindergarten learners. The result showed that the majority of the learners were 6 years old, with 57 respondents (57%), while 43 respondents (43%) were five years old. These figures showed that most of the learners were within the expected age range for kindergarten.

The findings indicated that the respondents belonged to a narrow age range, with 6-year-old learners slightly dominating the data. This suggested that the learners were developmentally appropriate for kindergarten and were at a stage where they were already learning some basic concepts of mathematics. Age was important in shaping learners' numeracy skills as it helped them to understand basic mathematical concepts. The concentration of learners within the 5 to 6 years old range showed that the study focused on the critical stage for numeracy development. At this stage, learners began to develop number sense, counting skills, and problem-solving skills, which were crucial for this stage. The slight predominance of 6-year-old learners contributed to better numeracy performance due to increased maturity and exposure to learning experiences.

Overall, this study showed that early numeracy skills significantly developed between ages 5 and 6 years old as kindergarten learners began to understand numbers, patterns, and simple operations. This finding implied that educators and curriculum designers should recognize the developmental readiness of learners within this age range when planning instructional practices. Since most learners were at an appropriate developmental stage, teachers could effectively implement targeted numeracy interventions and age-appropriate teaching strategies, thereby maximizing the potential for numeracy skill acquisition in the kindergarten classroom.

The finding that early numeracy skills significantly develop between ages 5 and 6 supported the current study by confirming that the age of kindergarten learners was appropriate for examining numeracy skills in relation to teachers' instructional practices (Clements & Sarama, 2020). Furthermore, the observation that a slight predominance of 6-year-old learners contributed to better numeracy performance due to increased maturity and exposure to learning experiences was consistent with the work of Rajagopal et al. (2022).

Gender of the learners

Gender of the Kindergarten learners was important because it helped to determine whether the differences between numeracy skills may be associated with gender-related developmental patterns. It provides data on examining how learners respond to the teacher's instructional practices and whether both male and female kindergarten learners are equally supported. The table 7 presented the gender of the kindergarten learners

Table 7 presented the gender of the kindergarten learners. The result showed that 52 respondents (52%) were female, while 48 respondents (48%) were male. These figures indicated a relatively balanced gender distribution with slightly higher numbers of female kindergarten learners.

The findings showed that both male and female kindergarten respondents were adequately represented in the study. The slight predominance of female kindergarten respondents suggested minimal gender imbalance, allowing for a fair comparison regarding numeracy skills development. Additionally, the relatively balanced gender distribution implied that differences in numeracy skills were less likely to be influenced by gender bias. Therefore, this strengthened the validity of the study, as both groups were almost equally represented in examining the relationship between instructional practices and numeracy outcomes.

The balanced gender distribution implied that any observed differences in numeracy skills between male and female learners could be more confidently attributed to instructional practices rather than to gender-based disparities. For kindergarten teachers, this finding suggested that differentiated instruction based on gender was unnecessary; instead, educators should focus on providing developmentally appropriate, high-quality numeracy instruction that benefits all learners equally. Furthermore, curriculum planners and policymakers should ensure that teaching strategies and learning materials remain gender-inclusive, thereby promoting equitable numeracy development in the early years.

This finding supported the study by indicating that gender did not significantly affect the numeracy outcomes of the study, consistent with research showing that gender differences in early numeracy are minimal and that both male and female learners are capable of achieving similar mathematical competencies when provided with proper and effective instruction (Hyde, 2005). Similarly, Brandlistuen et al. (2020) affirmed that a balanced gender distribution reduces the likelihood that numeracy skill differences are influenced by gender bias, thereby reinforcing the validity of investigations into instructional practices and numeracy development.

Parents' highest educational attainment

Parents' highest educational attainment was an important demographic profile that may influence the level of learning support provided at home and kindergarten learners' exposure to basic numeracy experiences. It provides insights into the home learning environment and the guidance learners received in developing the numeracy skills. This variable helps in understanding how parental background may complement teachers' instructional practices in shaping the numeracy development of kindergarten learners. The table 8 presented the parents' highest educational attainment.

Table 8 presented the parents' highest educational attainment. The result showed that most mothers were college graduates (41%), followed by those at the college level (33%) and high school graduates (20%). Similarly, most fathers were college graduates (37%), followed by college level (31%) and high school graduates (22%). Only a small percentage of parents had a master's degree, high school level, or elementary-level education.

The findings indicated that the majority of parents had attained at least a college-level education. This suggested that learners were likely exposed to a home environment that supported learning and academic development, including numeracy skills. The concentration of parents within the college-level categories implied that they may have been more capable of assisting their children in early mathematical learning, such as number recognition, counting, patterns, and problem-solving activities. Parental support was important as it significantly affected the learning process of kindergarten learners at home, reinforcing numeracy skills they had learned from school.

The high educational attainment of parents implied that kindergarten teachers could leverage this by establishing stronger home-school partnerships. Teachers might consider providing parents with specific guidance or take-home activities to maximize their ability to

support numeracy development at home. Conversely, for the small percentage of learners whose parents had lower educational attainment, schools should consider targeted interventions or additional in-class support to ensure equitable numeracy outcomes. Recognizing the influence of the home environment, school administrators could also organize parent workshops on effective strategies for reinforcing early mathematical concepts, thereby enhancing the continuity of learning between school and home.

This finding was consistent with research showing that parents' educational attainment positively affects children's academic performance, including early numeracy development, as educated parents tend to provide more learning support and resources at home (Davis-Kean, 2005). Furthermore, Ceulemans et al. (2017) affirmed that parental support significantly affected the learning process of kindergarten learners at home, reinforcing numeracy skills they had learned from school, which supported the current findings by emphasizing the influence of the home environment on learners' numeracy skills.

Number of siblings of the learners

The number of siblings of the kindergarten learners in a household was an important family-related factor that may influence the learner's social interactions and cognitive development including the development of numeracy skills. The attention and support given from their siblings also significantly affects their learning process at home, which can shape children's early mathematical experiences. The table 9 presented the number of siblings of the kindergarten learners in a household.

Table 9 presented the number of siblings of the kindergarten learners in a household. The result showed that the majority of the learners had 1-2 siblings, with 36 respondents (36%), followed by 3-4 siblings, with 35 respondents (35%). Meanwhile, 15 respondents (15%) had 5 or more siblings, and another 14 respondents (14%) had no siblings.

The findings indicated that most learners came from small to medium-sized families. The higher percentage of learners with 1-2 siblings suggested that family size was relatively moderate, which allowed parental attention to be focused on their 1-2 children, thereby providing support and attention. The presence of learners with larger families, however, indicated diversity in family structure. The distribution of siblings implied that family dynamics played an important role in the development of numeracy skills. Kindergarten learners with siblings often had more opportunities to develop numeracy skills as the presence of other people taught and helped them to learn basic mathematical concepts, while those without siblings may have received more individualized attention from parents.

The diversity in sibling distribution implied that kindergarten teachers should adopt flexible strategies that acknowledge varying levels of home support. For learners with 1-2 siblings, teachers could encourage collaborative home-based activities where siblings assist in numeracy practice. For only children, teachers might focus on maximizing classroom-based peer interactions to compensate for the absence of sibling-led learning at home. For learners from larger families with 5 or more siblings, schools should consider providing additional resources or extended support, as these learners might face challenges related to divided parental attention and limited household resources. Early intervention programs could also be designed to ensure that all learners, regardless of sibling structure, receive adequate numeracy development opportunities.

These findings were supported by Dai and Heckman (2013), who suggested that kindergarten learners with siblings often had more opportunities to develop numeracy skills through the presence of other people who taught and helped them learn basic mathematical concepts, while those without siblings may have received more individualized attention from parents. Additionally, Downey (2001) found that learners with fewer siblings tended to develop

stronger numeracy skills through constant interaction with their siblings, whereas Blake (1981) noted that learners from larger families may receive fewer opportunities, resources, and less parental attention, thereby explaining how sibling structure can influence the learning process of kindergarten learners in mathematical concepts.

Birth order of the learners

The birth order of the kindergarten learners was important as it may influence their acquisition of numeracy skills. It provides data into how family dynamics and roles within the household may affect the learner's exposure to early mathematical experiences and how they respond to the teacher's instructional practices. Table 10 presented the birth order of the kindergarten learners.

Table 10 presented the birth order of the kindergarten learners. The result showed that the highest percentage of learners were in the middle position, with 29 respondents (29%), followed by the youngest position, with 28 respondents (28%). Meanwhile, 19 respondents (19%) were the eldest, while 14 respondents (14%) were only children. The lowest percentage was recorded among the second-born children, with 10 respondents (10%).

The findings indicated a varied distribution of learners across different birth order categories, with a greater concentration among the middle and youngest children. This suggested that most learners came from families with more than one child, which may have influenced their interaction and exposure to shared knowledge at home about mathematical concepts. The distribution implied that birth order significantly helped learners in the development of numeracy skills. Middle and younger children may have benefited from interaction with other siblings who could assist or teach them in basic mathematics, including counting and problem-solving tasks. On the other hand, eldest and only children may have received more direct parental attention, which could have supported learning mathematical concepts.

The varied birth order distribution implied that kindergarten teachers should recognize that learners may enter the classroom with different home-based learning experiences shaped by their position in the family. For middle and youngest children, teachers could leverage their experience with sibling interaction by incorporating peer-assisted learning activities in the classroom, such as buddy systems or small-group numeracy games. For eldest and only children, who may be accustomed to more direct adult guidance, teachers might provide structured one-on-one support or clear modeling of tasks before independent practice. Understanding these birth order dynamics could help educators tailor their instructional approaches and communicate more effectively with parents, encouraging them to use birth order-specific strategies—such as involving older siblings as tutors or ensuring only children have peer playdates focused on counting and problem-solving.

These findings were consistent with Nanit (2020), who found that middle and younger children may benefit from interaction with other siblings who could assist or teach them in basic mathematics, including counting and problem-solving tasks, while eldest and only children may receive more direct parental attention to support learning mathematical concepts. Furthermore, Black et al. (2004) demonstrated that birth order can influence learners' development of numeracy skills and other academic outcomes, as family roles and parental expectations varied among siblings, thereby supporting the current study by explaining how birth order may affect learners' numeracy development.

Combined monthly income

Learners combined monthly income was an important factor that may influence access to learning resources, educational support and other opportunities for developing numeracy skills. It provides data into the home environment and availability of materials that can support learners in developing numeracy skills. The table 11 presented the learners' combined monthly income.

Table 11 presented the learners' combined monthly family income. The result showed that the highest percentage of learners belonged to families earning 15,001-20,000 pesos, with 37 respondents (37%). This was followed by 10,000 and below, with 31 respondents (31%). Twenty-one respondents (21%) belonged to the 20,001-25,001-income bracket, while only a small percentage were in the higher income groups, including 25,001-30,000 (4%) and above 30,000 (6%). Only one respondent (1%) fell under the 10,001-15,000-income bracket.

The findings indicated that the majority of learners came from low to middle-income families. This suggested that access to educational resources such as books, learning materials, and digital tools may have varied among respondents. The distribution implied that family income may have influenced the development of numeracy skills, as learners from higher-income households may have had greater means for educational support. Conversely, learners from lower-income families may have relied more heavily on school-based instruction, highlighting the importance of effective teachers' instructional practices in supporting numeracy development.

The predominance of learners from low to middle-income families implied that kindergarten teachers and school administrators should recognize that many learners may have limited access to supplementary learning materials at home. Therefore, schools should ensure that high-quality numeracy instruction and resources are provided primarily within the classroom setting to promote equity. Teachers might consider designing low-cost, home-based numeracy activities using readily available household items, thereby reducing the resource gap between income groups. Additionally, school administrators could explore partnerships with local government or non-governmental organizations to provide learning kits, books, or digital access for families in the lowest income brackets. Professional development for teachers should also emphasize effective instructional strategies that maximize learning outcomes regardless of students' economic backgrounds, ensuring that school-based instruction serves as a great equalizer.

These findings were consistent with Best (2020), who found that learners from lower-income families may rely more on school-based instruction, highlighting the importance of effective teachers' instructional practices in supporting numeracy development. Furthermore, Sirin (2005) demonstrated that socioeconomic status significantly affects learners' numeracy skills, as it influences access to learning materials and educational opportunities, thereby supporting the current study by emphasizing the role of economic background in shaping learners' numeracy skills.

Extent of the teachers' instructional practices in teaching numeracy in kindergarten learners

The extent of teacher's instructional practices in teaching numeracy reflects how frequently and effectively teachers implement strategies that support the development of early mathematical skills among kindergarten learners. Examining this variable helps determine how instructional practices influence learners' numeracy skills, including counting, number of recognitions, patterns measurements and problem-solving. Understanding these practices provides information into whether instruction was developmentally effective, appropriate and aligned with learners needs. Additionally, the quality of guidance, support and encouragement

provided by teachers during numeracy enhances learners' outcomes. Effective and consistent instructional practices may strengthen learners' literacy skills, while limited or less structured approaches may hinder their mathematical development.

Table 12 presented the extent of the teachers' instructional practices in teaching numeracy in kindergarten learners. The results showed that all indicators were interpreted as "Always" with the weighted means ranging from 4.40 to 5.00. The highest weighted mean of 5.00 was obtained by indicator number 4 boardgames that encourage number sequencing and indicator number 5 hopscotch games that use number lines and physical counting. Meanwhile, the lowest weighted mean of 4.40 was the indicator number 1 role-playing activities (e.g., store play for counting money or objects), number 7 card matching games involving number pairs, odd and even numbers and number 9 dice rolling games that involve counting and simple probability. The overall aggregate mean was 4.70 with a standard deviation of 0.50, interpreted as "Always", indicating a very high extent of instructional practices in teaching numeracy in kindergarten learners.

The findings indicated that teachers consistently implement a wide range of developmentally appropriate and engaging instructional practices in teaching numeracy. The high weighted mean across all indicators suggested that teachers regularly integrate interactive, play-based and experiential learning instructional practices such as games, puzzles and movement-based tasks to support numeracy development.

Additionally, the findings showed that teachers emphasized active learning strategies that promote learners' participation and understanding of mathematical concepts. Activities such as board games and hopscotch, which obtained highest weighted means, highlighted the importance of hands-on and physical engagement in learning numbers and sequences (Medina, 2025). On the other hand, slightly lower weighted means in role-playing, card matching games and dice games suggested that while these practices are still frequently used, they can be less emphasized compared to other practices.

Several studies supported that interactive instructional strategies significantly enhance early numeracy development, as they promote engagement and understanding among young learners (Miller, 2018). Additionally, incorporating games and hands-on activities has been shown to improve learners' mathematical thinking and motivation to learn (Fisher et al., 2010).

Overall, the very high aggregate mean indicates that teachers demonstrate strong and consistent instructional practices in teaching numeracy, as this data was supported by studies by emphasizing the effectiveness of consistent and engaging instructional practices in developing numeracy skills among the kindergarten learners. This suggested that learners are regularly exposed to varied and meaningful learning experiences that support the development of numeracy skills.

Level of numeracy skills of kindergarten learners

Numeracy skills are one of the important developmental competencies that enable learners to understand and apply basic mathematical concepts in their daily lives. These include foundational skills such as recognizing numbers, shapes and symbols, understanding patterns, time, and measurement, developing number sense and operations, and applied numeracy in real-life situations. These skills serve as the foundation for more advanced mathematical learning and are essential in supporting learners numeracy development and problem-solving abilities.

Foundational skills

Numeracy skills begin with the foundational abilities that enable learners to recognize, classify and organize objects. These skills are essential in developing early mathematical understanding and serve as the basis for more complex numeracy concepts. Assessing foundational skills helps kindergarten learners' readiness to engage in structured numeracy instruction. Table 13 presents the level of numeracy skills of kindergarten learners in terms of foundational skills.

Table 13 presented the level of numeracy skills of kindergarten learners in terms of foundational skills. The results showed that all the indicators were described as "Expert" with weighted means ranging from 3.66 to 3.85. The highest weighted was observed in indicator 1 identifying basic colors and shapes with the weighted mean of 3.85, while the lowest was in indicator 4 arranging objects by size or order with the weighted mean of 3.66. The overall aggregate mean was 3.78 with a standard deviation of 0.43, interpreted as "Expert" meaning the learner consistently demonstrates the numeracy skill independently and accurately. The findings indicated that learners demonstrate a high level of competence in foundational numeracy skills. The consistently high rating suggests that the learner consistently demonstrates the numeracy skill independently and accurately such as identifying, classifying and comparing objects which are essential for understanding mathematical concepts.

The findings showed that strong foundational skills may be attributed to effective instructional practices that emphasize hands-on and visual learning activities. These skills supported the development of logical thinking and problem-solving abilities among kindergarten learners.

Additionally, studies showed that early foundational skills such as classification and comparison are critical predictors of later mathematical achievement (Clements & Sarama, 2020). Overall, this supports the present findings by emphasizing the importance of foundational competencies in early numeracy development.

Patterns, time, and measurement

Patterns, time and measure are important components of numeracy that help kindergarten learners to understand relationships, sequences and real-world application of mathematics. These skills enable learners to recognize order, interpret time concepts and use measurement tools in everyday situations. Table 14 presents the level of numeracy skills of kindergarten learners in terms of patterns, time and measure.

Table 14 presents the level of numeracy skills of kindergarten learners in terms of patterns, time and measure. The result showed that all indicators were interpreted as "Expert" with weighted mean ranging from 3.62 to 3.73. The highest weighted mean was observed in indicator 4 using simple tools to measure with the weighted mean of 3.73, while the lowest was the indicator 3 naming days of week and months with the weighted mean of 3.62. The overall aggregate mean was 3.67 with a standard deviation of 0.55, interpreted as "Expert" meaning the learner consistently demonstrates the numeracy skill independently and accurately. The findings indicated that learners have a strong understanding of patterns, time and measurement concepts. The high rating suggested that learners can recognize sequences, identify time and apply measurement skills in practical context.

The findings showed that instructional practices that incorporate real-life applications and interactive activities contribute to learners mastery of these skills. Slightly lower performance in naming days and months may indicate the need for more reinforcement in time-related concepts.

Additionally, studies have shown that integrating real-life world contexts in teaching measurement enhances learners' conceptual understanding and retention (Cross, 2009). Overall, this supports the current study by highlighting the effectiveness of applied learning strategies.

Number sense and operations

Number sense and operations are core components of numeracy that involve understanding numbers, their relationships and basic mathematical operations. These skills are essential for developing problem-solving abilities and mathematical reasoning among kindergarten learners. The table 15 presented the level of numeracy skills of kindergarten learners in terms of number sense and operations.

Table 15 presented the level of numeracy skills of kindergarten learners in terms of number sense and operations. The results showed that all indicators were described as “Expert” with weighted means ranging from 3.67 to 3.77. The highest weighted mean was observed in indicator 2 matching numbers to objects with the weighted mean of 3.77, while the lowest was in indicator ordering numbers and identifying position with the weighted mean of 3.67. The overall aggregate mean was 3.71 with the standard deviation of 0.53, interpreted as “Expert” meaning the learner consistently demonstrates the numeracy skill independently and accurately. The findings indicated that learners possess a strong grasp of basic number concepts and operation. The high rating suggested that learners can count, recognize numbers and perform simple addition and subtraction using objects.

The findings showed that consistent exposure to structured numeracy instruction and hands-on activities contributed to learners competence in number sense. These skills are essential for progressing to more complex mathematical tasks.

Additionally, studies have emphasized that number sense was a key foundation for later mathematical achievement and was strongly influenced by early instructional practices (Jordan et al., 2009). This supported the current findings by confirming the importance of early numeracy instruction.

Applied numeracy

Applied numeracy referees to the ability of learners to use mathematical concepts in real-life situations. It involves practical skills such as grouping objects, understanding fractions and recognizing money or bills. The table 16 presents the level of numeracy skills of kindergarten learners in terms of applied numeracy.

The table 16 presented the level of numeracy skills of kindergarten learners in terms of applied numeracy. The result showed that all the indicators were interpreted as “Expert” with the weighted means ranging from 3.70 to 3.75. The highest weighted mean was observed in the indicator 2 identifies simple fractions with the weighted mean of 3.75, while the lowest was the indicator 1 grouping objects into equal sets with the weighted mean of 3.70. The overall aggregate mean was 3.73 with a standard deviation of 0.50 and interpreted as “Expert” meaning the learner consistently demonstrates the numeracy skill independently and accurately. The findings indicated that learners are capable of applying mathematical concepts in practical situations. The high ratings suggested that learners can relate numeracy skills to everyday experiences such as handling money and grouping objects.

The findings showed that teaching strategies that connect mathematical concepts to real-life contexts enhanced learners' understanding and retention of numeracy skills. Applied

numeracy reflects the practical use of mathematical concepts and knowledge which was essential for lifelong learning.

Additionally, studies showed that contextualized learning improves learners ability to apply mathematical concepts in real-life situations (Simms, 2016). This supported the current findings by emphasizing the importance of meaningful and relevant learning experiences.

Summary on the level of numeracy skills of kindergarten learners

Numeracy skills are essential competencies that reflect kindergarten learners' ability to understand and apply mathematical concepts across different domains. Summarizing these components provides a comprehensive view of learners' overall numeracy development. This allows for identifying strengths and areas for further instructional support. The table 17 presents the summary on the level of numeracy skills of kindergarten learners.

Table 17 presented the summary on the level of numeracy skills of kindergarten learners. The result showed that all components were described as "Expert" with the weighted means ranging from 3.67 to 3.78. The Foundational Skills obtained the highest weighted mean of 3.78, followed by applied numeracy with the weighted mean of 3.73, number sense and operations with the weighted mean of 3.71 and patterns, time and measurement with the weighted mean of 3.67. The overall mean was 3.72 with a standard deviation of 0.50 and interpreted as "Expert" meaning the learner consistently demonstrates the numeracy skill independently and accurately. The findings indicated learners demonstrate a consistent high level of numeracy skills across all domains. The slightly higher performance in foundational skills suggested that learners have a strong base in basic mathematical concepts, which support their understanding of more complex skills.

The findings showed that effective instructional practices contribute to the balanced development of numeracy competencies. Although all areas were rated as expert, the slightly lower mean in patterns, time and measurement indicated a potential area for reinforcement. Studies supported that early numeracy skills were developed holistically when foundational competencies are well established and reinforced through instruction (Clements & Sarama, 2020). Additionally, Duncan et al. (2007) emphasized that early numeracy skills are strong predictors of later academic achievement. Furthermore, the Cross (2009) highlighted that comprehensive numeracy development requires integration of multiple mathematical domains, supporting the present findings.

Overall, the results showed that kindergarten learners demonstrated a consistently high level of numeracy skills across all components, with all areas interpreted as "Expert". This indicates that kindergarten learners possess strong foundational knowledge with the competencies mentioned. These findings highlighted the well-implemented instructional practices that contribute significantly to learners' mastery of essential numeracy skills at an early age.

Test of significance of the relationship between the identified profile and the numeracy skills of the learners

This helped in identifying whether differences in numeracy performance are connected with demographic characteristics.

Table 18 presented the test of significance of the relationship between the identified profile variables and the numeracy skills of the learners. The result showed that all computed p-values were greater than 0.05, including age ($p = 0.289$), gender ($p = 0.180$), mother's educational attainment ($p = 0.768$), father's educational attainment ($p = 0.419$), number of siblings ($p = 0.107$), birth order ($p = 0.108$), and combined monthly income ($p = 0.554$). As a

result, the null hypothesis was not rejected for all variables, indicating that there was no significant relationship between the identified profile variables and numeracy skills.

The findings indicated that demographic factors did not significantly influence the numeracy skills of the learners in this study. This suggested that learners tended to achieve a similar level of numeracy regardless of differences in their demographic profiles. The lack of significant relationship also suggested that other factors, particularly teachers' instructional practices, may have played a more significant role in shaping learners' numeracy development. Furthermore, the absence of a significant relationship implied that the learning environment in school provided equitable opportunities for numeracy skill development among kindergarten learners, potentially mitigating the effects of demographic disparities.

The finding that no significant relationship existed between the identified profile variables and numeracy skills carried important implications for educators and policymakers. Since demographic factors such as age, gender, parental education, sibling structure, birth order, and family income did not significantly influence numeracy outcomes, kindergarten teachers should focus their efforts on improving instructional practices and classroom environments rather than on demographic-based differentiation. This result implied that high-quality teaching could serve as an equalizer, enabling learners from diverse backgrounds to achieve comparable numeracy skills. Schools should therefore invest in professional development programs that enhance teachers' competencies in numeracy instruction, as well as ensure consistent access to developmentally appropriate learning materials. Administrators might also consider implementing school-based interventions that prioritize instructional quality over targeted programs based on demographic characteristics, thereby promoting equity and ensuring that all kindergarten learners, regardless of background, have the opportunity to develop strong foundational numeracy skills.

These findings were supported by Hattie (2009), who found that classroom instruction and teacher quality had a stronger impact on student learning outcomes than demographic profile alone. Similarly, Jordan et al. (2009) demonstrated that early numeracy development was more influenced by instructional exposure than background characteristics. Additionally, Sirin (2005) highlighted that while socioeconomic status could influence achievement, its effects might be minimized in a supportive and well-structured learning environment, thereby reinforcing the current finding that factors such as age, gender, parental educational attainment, number of siblings, birth order, and family income did not significantly influence kindergarten learners' numeracy performance.

CONCLUSION

This study concluded that while teachers at Maguikay Elementary School consistently implement high-quality instructional practices and kindergarten learners demonstrate expert-level numeracy skills across all domains, there is no significant relationship between these two variables. This counterintuitive finding, excellent performance on both variables without a significant correlation suggests that numeracy development among kindergarten learners is shaped by a complex interplay of factors that extend beyond formal classroom instruction. These factors may include the learners' level of interest in mathematics, availability of learning support at home, exposure to number-related activities in daily life, the learners' own pace of understanding mathematical concepts, and broader environmental influences. The findings underscore that improving learners' numeracy skills requires not only effective instructional practices but also holistic support that involves parents, school programs focused on student-centered activities, and recognition of the diverse pathways through which young children

develop mathematical understanding. The proposed PROJECT N.U.M.B.E.R.S. action plan provides a structured approach to addressing these multiple influences and strengthening numeracy development among kindergarten learners.

Based on the findings of the study, it is recommended that PROJECT N.U.M.B.E.R.S. (Nurturing Understanding through Manipulatives, Best-practices and Early Readiness Skills) be fully implemented at Maguikay Elementary School to provide holistic support for kindergarten learners' numeracy development. The action plan should be adopted as a school-wide initiative that integrates targeted activities for patterns, time, and measurement—the domain with the lowest result—while strengthening home-school partnerships through structured parental engagement and low-cost, non-digital numeracy activities.

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