**Factors Affecting the Numeracy Levels Of The Grade 6 Learners of Karikitan Integarted School: Basis for Proposed Remediation Materials**

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ABSTRACT

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| --- |
| Mathematics, out of all the learning areas in basic education, presents students with problems that arise from within or from without, which consequently affects numeracy skills. This study aims to identify the factors affecting numeracy proficiency among Grade 6 learners of Karikitan Integrated School and determine how these challenges can be addressed through effective remediation materials. Frequency and percentage, weighted mean, thematic analysis and Pearsons’s correlation was used to gather data. Findings indicate that most respondents come from low-income, farming-dependent families, with varying levels of parental education and limited financial resources. Teacher-related factors, including instructional methods and classroom discipline, significantly impact numeracy proficiency, although improvements in lesson delivery could further enhance student interest. The study highlights the role of parental education, particularly the fathers, as a crucial determinant of academic success, while financial status and occupation show minimal influence. Classroom environment, including seating arrangements and atmosphere, supports learning, but poor home study conditions pose challenges. Based on these findings, remediation strategies such as interactive learning tools, structured study programs, enhanced teacher training, and parental involvement are recommended to improve numeracy proficiency. The results underscore the importance of a well-facilitated learning environment in fostering student success. |

*Keywords: Numeracy, learners, factors, remediation*

1. INTRODUCTION

In every school across the world, students are taught and expected to learn mathematics, beginning with number recognition in kindergarten. Standards in teaching and assessment practices in the classroom are established to have objective measures for students’ progress and achievement. This is particularly vital in key subjects such as Mathematics. Aside from being one of the key areas where achievement is gauged, students generally classify Mathematics as an arduous and challenging subject in school.

Mathematics, out of all the learning areas in basic education, presents students with problems that arise from within or from without, which consequently affects numeracy skills (Dimakos et. al, 2012). Numeracy is a skill that involves confidence and the ability to deal with numbers and measurements (Barham et. al, 2019). It necessitates a working knowledge of the number system, a set of computational skills, and a desire and capacity to solve number issues in various situations (Nelson & McMaster, 2019). Numeracy also requires a practical understanding of how data is obtained by counting and measuring and then presented or depicted in graphs, diagrams, charts, and tables (Anders et. al, 2013). Additionally, numeracy refers to a person's general knowledge of numbers and fundamental Mathematical ideas (Aubrey & Godfrey, 2003).

These include abilities to count, compare, describe shapes and locations, and solve problems. It also involves perceiving and comprehending the world's mathematical functions. Numerical agreement, familiarity, and critical thinking get extremely advanced and developed as learners grow. These abilities enable students to use arithmetic to make informed decisions and solve problems effectively (Guinocor et. al, 2020).

To further elaborate, early math and numeracy are the general understanding of numbers and basic mathematical concepts like skills such as counting, comparing, describing shapes and positions and problem solving (Onoshakpokaiye, 2023). Students who are exposed to and master early math abilities at a young age are more likely to succeed in school. Students who enter kindergarten low in math skills tend to continue to perform below their peers in later grades. Math learning and intervention needs to happen before kindergarten. These students, especially at-risk students, need the opportunity to build a strong foundation at a young age (Cao Thi et. al, 2023).

One factor affecting numeracy learning can be environmental factors, it may be the social environment, which is the child’s relationship with others in school and community (Barham et. al, 2019). Emotional environment, which is how well the child’s relational needs at home said that in a school or home setting, a positive learning environment is crucial for a child (Megawati & Sutarto, 2021). Also, school or home setting, has a positive learning environment that is crucial for a child. It was found that home environment plays a vital role in developing children numeracy skills development because children undergo certain formal and informal experiences at home (Clerkin & Gilligan, 2018). Parental involvement is a huge factor in the learner’s achievement. Parents play the roles of motivators, resource suppliers, monitors, mathematics content advisers, and mathematics learning counselors, according to them (Clarke & Robbins, 2010).

The numeracy skills of children in the Philippines remain a critical concern, as assessments indicate significant gaps in mathematical proficiency (Dulay et. al, 2019). It was found that students fall below expected proficiency levels, especially in disadvantaged regions. Socioeconomic factors, disparities in educational resources, and curriculum challenges contribute to these learning gaps (Elopre & Baggay, 2020). Additionally, the lasting effects of the COVID-19 pandemic have exacerbated difficulties, with school closures and remote learning disruptions impacting students' ability to grasp fundamental math concepts (Jomuad, 2013).

Addressing these issues requires comprehensive interventions, including strengthening early childhood education, enhancing teacher training programs, and integrating technology into math instruction. Digital learning tools, interactive platforms, and community-based initiatives can make numeracy education more accessible and engaging (Elliott et. al, 2021). Encouraging parental involvement and localized support programs can further aid students in developing stronger mathematical literacy (Lukie et. al, 2014).

This study seeks to examine the various factors influencing the numeracy levels of Grade 6 learners at Karikitan Integrated School, identifying key challenges that hinder mathematical proficiency. By exploring socio-economic conditions, instructional methods, and learning resources, the research aims to provide a comprehensive understanding of the gaps in numeracy development. Recognizing the significance of early numeracy in shaping academic success, this study will also analyze existing pedagogical approaches and learner engagement strategies to determine their effectiveness in fostering mathematical skills.

The findings will serve as the foundation for the design of targeted remediation materials, ensuring that interventions are effectively tailored to the specific needs of learners. By addressing the identified challenges, this study aspires to contribute to the enhancement of numeracy education, equipping students with essential mathematical competencies for their future academic and professional endeavors.

2. STATEMENT OF THE PROBLEM

Generally, this study aims to identify the factors affecting numeracy proficiency among Grade 6 learners of Karikitan Integrated School and determine how these challenges can be addressed through effective remediation materials.

Specifically, this paper delved more into the following:

1. What is the demographic profile of respondents in terms of:
   1. Age
   2. Sex
   3. Distance of residence from the school
   4. Number of household members
   5. Monthly family income
   6. Educational attainment of the parents
   7. Occupation of the parents
2. How do these factors affect the numeracy proficiency level of Grade 6 learners at Karikitan Integrated School along:
   1. Student Factors
   2. Environmental Factors
   3. Teacher Factors
3. Is there a significant relationship between the profile of the respondents and the identified factors that influence the numeracy level of the grade 6 learners?
4. What remediation materials can be designed to help improve numeracy proficiency of the primary learners at Karikitan Integrated School?

**2.1 Hypothesis**

There is no significant relationship between the profile of the respondents and the identified factors that influence the numeracy level of the grade 6 learners.

3. CONCEPTUAL FRAMEWORK

This study aims to identify the factors affecting numeracy proficiency among primary learners of Karikitan Integrated School and determine how these challenges can be addressed through effective remediation materials. The following figure presents the research paradigm showing the relationship of input, process and output.

**OUTPUT**

**INPUT**

**PROCESS**

* Distribution and floating of questionnaires to the identified respondents
* Tabulation and analyzing of data
* Demographic profile of the respondents
* Different identified factors
* Level of academic performance of the learners in Math Subject
* Assessed the numeracy proficiency of Grade 6 learners, identify influencing factors, and provide recommendations for improving numeracy education

***Figure 1. Research Paradigm***

The **input** consists of demographic data, numeracy proficiency levels, and the key factors affecting mathematical skills. The **process** involves collecting data through surveys, assessments, and interviews, followed by statistical analysis and the identification of challenges hindering numeracy development. Based on the findings, the study develops remediation materials tailored to the learners’ needs. The **output** includes a comprehensive assessment of numeracy proficiency, an analysis of influencing factors, a correlation between demographics and numeracy levels, and proposed intervention strategies to improve mathematical literacy. This framework ensures a systematic approach to addressing numeracy gaps and enhancing learning outcomes for students.

4. RESEARCH METHODOLOGY

**4.1. Research Design**

A descriptive-correlational research design was used in this study. The descriptive aspect provided a comprehensive overview of students' numeracy levels and demographic profiles, helping to identify patterns and challenges. Meanwhile, the correlational aspect examined the relationships between learners’ demographic characteristics such as age, gender, family income, and parental education and their numeracy performance, determining whether significant connections existed.

**4.2. Locale of the Study**

This study was conducted at Karikitan Integrated School, Karikitan, Conner, Apayao.

**4.3. Respondents of the Study**

The respondents of the study consisted of Grade 6 learners enrolled at Karikitan Integrated School, as they were the target population for assessing numeracy proficiency. Additionally, their parents or guardians were included to gather demographic data and understand socioeconomic factors influencing learning. The study also involved teachers who provided insights into instructional strategies in mathematics education. Total population sampling was used.

**4.4. Research Instrument**

The research instrument for this study included an adopted survey questionnaire (Latiban & Mendez, 2023) to gather the relevant data. Part 1 elicited the demographic profile of the respondents. Part II measures the level of satisfaction out of the identified factors. Part III was intended for gathering the recommendations for the proposed remediation materials.

**4.5. Data Gathering Procedure**

This study gathered data through surveys and optional interviews to assess the mathematical skills of grade 6 learners at Karikitan Integrated School. Using total population sampling, respondents were selected to ensure balanced representation. The collected information was analyzed to identify key factors that affected numeracy proficiency, determine relationships between demographic variables and learning outcomes, and develop targeted remediation materials to enhance students’ mathematical skills.

**4.6. Statistical Analysis**

**Frequency and percentage** were used to compute for the demographic profile of the respondents.

**Weighted Mean** was utilized to analyze the numeracy proficiency levels of grade 6 learners using 5-Point Likert scale:

**Table 1. 5-Point Likert-Scale**

|  |  |  |
| --- | --- | --- |
| **SCALE** | **MEAN RANGE** | **DESCRIPTIVE INTERPRETATION** |
| 5 | 4.20 – 5.00 | Excellent |
| 4 | 3.40 – 4.19 | Very Good |
| 3 | 2.80 – 3.39 | Good |
| 2 | 1.80 - 2.79 | Average |
| 1 | 1.00 – 1.79 | Poor |

**Thematic analysis** was used for the recommendations of the respondents.

**Pearsons Correlation** was used to compare numeracy levels across different groups to identify significant variations.

5. RESults and discussion

**5.1. Part I. Profile of the Respondents**

**Table 2. Demographic profile of the respondents**

|  |  |  |
| --- | --- | --- |
|  | **Frequency** | **Percentage** |
| **Age** |  |  |
| 11 Years Old | 5 | **23.81%** |
| 12 Years Old | 14 | **61.90%** |
| 13 Years Old and above | 2 | **9.52%** |
| **Total** | **21** | **100%** |
| **Sex** |  |  |
| Male | 11 | **52.38%** |
| Female | 10 | **47.62%** |
| **Total** | **21** | **100%** |
| **Distance of residence from school** | |  |
| Less than 1km | 7 | **33.33%** |
| 1 km – 5 km | 14 | **66.67%** |
| **Total** | **21** | **100%** |
| **Number of household members** | |  |
| 1-2 members | 1 | **4.76%** |
| 3-4members | 9 | **42.86%** |
| 5-6 members | 4 | **19.05%** |
| 7 and above members | 7 | **33.33%** |
| **Total** | **21** | **100%** |
| **Parents Educational Background** | |  |
| **Mother** | |  |
| Elementary Level | 1 | **4.76%** |
| Elementary Graduate | 2 | **9.52%** |
| Highschool Level | 5 | **23.81%** |
| Highschool Graduate | 8 | **38.10%** |
| College Level | 5 | **23.81%** |
| College Graduate | 5 | **23.81%** |
| **Total** | **21** | **100%** |
| **Father** | |  |
| Elementary Level | 3 | **14.29%** |
| Elementary Graduate | 2 | **9.52%** |
| Highschool Level | 3 | **14.29%** |
| Highschool Graduate | 7 | **33.33%** |
| College Level | 3 | **14.29%** |
| College Graduate | 3 | **14.29%** |
| **Total** | **21** | **100%** |
| **Monthly Salary** | |  |
| Less than 15k | 15 | **71.43%** |
| 16k – 20k | 1 | **4.76%** |
| 21k – 25k | 4 | **19.05%** |
| 26k – 30k | 1 | **4.76%** |
| **Total** | **21** | **100%** |
| **Nature of Parents Occupation** | |  |
| **Mother** | |  |
| Farming | 11 | **52.38%** |
| Government Workers | 5 | **23.81%** |
| Others | 5 | **23.81%** |
| **Total** | **21** | **100%** |
| **Father** |  |  |
| Farming | 14 | **66.67%** |
| Public Officials | 1 | **4.76%** |
| Government Workers | 4 | **14.29%** |
| Other | 2 | **9.52%** |
| **Total** | **21** | **100%** |

Table 2 provides a demographic and socio-economic profile of a group of 21 individuals, highlighting key aspects such as age, gender, household size, parents' education, occupation, and financial standing. Most of the respondents are 12 years old (61.90%), with an almost equal gender distribution (52.38% male, 47.62% female). 66.67% live between 1 km – 5 km from school, which may affect accessibility to education. Household sizes vary, but most have 3-4 members (42.86%), while a significant portion (33.33%) live in larger households of 7 members or more. Parents' educational backgrounds show a range, with mothers generally having higher education levels than fathers; 38.10% of mothers are high school graduates, while 33.33% of fathers share the same level of education. Financially, the majority (71.43%) earn less than ₱15,000 per month, indicating economic challenges that may impact on the students' academic experiences. Farming is the primary occupation, with 52.38% of mothers and 66.67% of fathers engaged in agriculture, while a smaller percentage work in government or other fields. Overall, the data suggests that students largely come from low-income, farming-dependent families, with limited financial resources and varying levels of parental education, factors that may influence their access to education and overall opportunities.

**5.2. PART II. IDENTIFIED FACTORS**

**Table 3. Student factors towards numeracy levels of the learners**

|  |  |  |
| --- | --- | --- |
| **Student Factor** | **Mean** | **Interpretation** |
| 1. I do well in Mathematics. | 2.24 | Average |
| 2. I do extra effort to learn Mathematics. | 3.10 | Good |
| 3. I listen attentively to the lecture of my teacher. | 3.52 | Very Good |
| 4. I actively participate in the discussion, answering exercises and/or clarifying things I did not understand. | 3.24 | Good |
| 5. I am feeling sleepy and bored during Math lessons. | 2.90 | Good |
| 6. I prepare and study for quizzes and tests. | 2.62 | Average |
| 7. There are reference materials (e.g. books, internet, others) while I’m learning. | 2.38 | Average |
| **Overall Mean** | **2.86** | **Good** |

The findings of table 3 suggest that Grade 6 learners at Karikitan Integrated School exhibit a good overall engagement with mathematics, as indicated by an overall mean of 2.86. Students showed strong attentiveness during lectures (3.52 – Very Good) and actively participated in discussions (3.24 – Good), which are crucial factors in learning. However, areas such as preparation for quizzes (2.62 – Average) and access to reference materials (2.38 – Average) indicate potential gaps in study habits and resources. Notably, the perception of boredom (2.90 – Good) suggests that while students remain engaged, teaching strategies could be further enhanced to sustain interest.

The results can be corroborated with a study Golding et. al, 2023 hat highlights that student engagement and access to learning resources significantly influence mathematical proficiency. The study emphasizes that active participation, motivation, and availability of study materials contribute to better learning outcomes. Also, it reinforces the need for targeted interventions to improve study habits and resource accessibility, ensuring students achieve higher numeracy proficiency.

**Table 4. Environmental factors towards numeracy levels of the learners**

|  |  |  |
| --- | --- | --- |
| **Environmental Factor** | **Mean** | **Interpretation** |
| 1.My classroom is free from noise and disturbance. | **3.38** | Good |
| 2. I am distracted by other visual items inside the classroom. | **2.48** | Good |
| 3. The arrangement of seats in the classroom is appropriate. | **3.52** | Very Good |
| 4. The good atmosphere in the classroom motivates me as a learner. | **3.62** | Very Good |
| 5. I am pleased with my classroom physical condition. | **3.05** | Good |
| 6.My family help me in my math assignments. | **2.81** | Good |
| 7. I am comfortable in studying at home. | **1.71** | Poor |
| 8. I prefer finishing and studying my assignments first before  watching any television program. | **3.76** | Very Good |
| **Overall mean** | **3.04** | **Good** |

The findings from table 4 indicate that the classroom environment plays a significant role in shaping students' numeracy proficiency, with an overall mean of 3.04 (Good). Factors such as seat arrangement (3.52 – Very Good) and classroom atmosphere (3.62 – Very Good) positively contribute to student motivation and engagement. However, home study comfort (1.71 – Poor) suggests challenges in maintaining a conducive learning space outside school, which may affect independent learning.

A related study by Falsario et. al, 2024 that examined the relationship between classroom climate and academic performance, highlighting that a well-structured and engaging classroom environment fosters better learning outcomes. This research emphasizes that teacher leadership, student collaboration, and physical classroom conditions significantly impact academic success.

**Table 5. Teacher factors towards numeracy levels of the learners**

|  |  |  |
| --- | --- | --- |
| **Teacher Factors** | **Mean** | **Interpretation** |
| 1. Explains the lesson clearly. | **3.71** | Very Good |
| 2.My teacher uses teaching aids/devices | **3.90** | Very Good |
| 3.Imposes proper discipline. | **3.90** | Very Good |
| 4.My teacher is open to suggestions and opinions | **3.57** | Very Good |
| 5. My teacher is organized in presenting the lesson. | **3.43** | Very Good |
| 6. My teacher’s method of teaching fits my way of learning | **2.81** | Good |
| 7. Easily reach out whenever there were difficulties with the lesson. | **3.19** | Good |
| 8. My teacher provides various activities | **3.48** | Very Good |
| 9. My teacher encourages cooperation and participation | **4.00** | Very Good |
| 10. My teacher makes lessons interesting. | **2.62** | Average |
| **Overall Mean** | **3.46** | **Very Good** |

The findings in table 5 indicate that teacher-related factors significantly contribute to students' numeracy proficiency, with an overall mean of 3.46 (Very Good). Teachers excel in key areas such as explaining lessons clearly (3.71 – Very Good), utilizing teaching aids (3.90 – Very Good), maintaining classroom discipline (3.90 – Very Good), and encouraging cooperation and participation (4.00 – Very Good). These aspects foster a structured and engaging learning environment, allowing students to absorb mathematical concepts effectively. However, some areas, such as teaching methods aligning with students’ learning styles (2.81 – Good) and making lessons interesting (2.62 – Average), indicate opportunities for improvement, possibly through more interactive strategies or differentiated instruction.

A related study by Darling-Hammond, 2000 emphasizes that teacher quality plays a crucial role in student achievement, particularly in mathematics. The study suggests that effective teaching strategies, professional development, and strong classroom management are key drivers of student success.

**Table 6. Significant relationship between the profile of the respondents and the identified factors**

|  |  |  |  |
| --- | --- | --- | --- |
| **Demographic Profile** | **r - value** | **p value** | **Decision** |
| Age | 0.771 | 0.000 | Significant |
| Sex | 0.533 | 0.006 | Significant |
| Distance of residence from school | 0.791 | 0.000 | Significant |
| Number of household members | 0.590 | 0.002 | Significant |
| Parents Educational Background   1. Mother | 0.757 | 0.000 | Significant |
| 1. father | 0.816 | 0.000 | Significant |
| Monthly Salary | 0.335 | 0.069 | Not Significant |
| Nature of parents Occupation   1. Mother | 0.484 | 0.013 | Not Significant |
| 1. Father | 0.364 | 0.052 | Not Significant |

Table 6 illustrates the significant relationships between various demographic factors and the identified influences affecting respondents. Age, sex, distance from school, number of household members, and parents’ educational background show strong positive correlations, suggesting these factors play a crucial role in shaping experiences. Parental education especially the father’s, has the highest correlation, emphasizing its impact on respondents' academic and personal development. Meanwhile, monthly salary and nature of parents' occupations do not show significant relationships, indicating that financial resources and job types may not directly shape the respondents' experiences as much as educational background or household environment.

The results presented in the table align with the findings of a study by Labador et. al, 2022 emphasize the significant role of parental education, especially the father's, in shaping students' academic success. The strong correlation in both studies suggests that highly educated parents foster environments that support better learning outcomes through guidance, expectations, and intellectual engagement. Additionally, it indicates that financial status and parents' occupation have a weaker influence, implying that economic factors alone do not determine academic success. This corroboration reinforces the argument that educational background, rather than financial stability, plays a more decisive role in shaping respondents' experiences and achievements.

**Table 7. Remediation materials can be designed to help improve numeracy proficiency of the Grade 6 learners**

|  |  |  |
| --- | --- | --- |
| **Theme** | **Proposed Remediation Materials** | **Purpose** |
| **Interactive Learning** | Digital games and mobile apps focused on basic math concepts | To enhance engagement and make learning enjoyable |
| **Hands-on Activities** | Math manipulatives (blocks, counters, flashcards) | To improve conceptual understanding through visualization |
| **Problem-Solving Strategies** | Worksheets with guided problem-solving techniques | To strengthen logical reasoning and application skills |
| **Visual Learning** | Posters, infographics, and charts illustrating math concepts | To aid retention and comprehension |
| **Peer-Assisted Learning** | Group work, peer tutoring sessions | To encourage collaborative learning and confidence |
| **Parent Involvement** | Home-based math practice guides for parents | To reinforce learning outside of school |
| **Teacher Support** | Training modules for teachers on differentiated instruction | To improve teaching strategies suited to learners' needs |
| **Gamified Learning** | Math challenge boards, puzzles, and reward-based activities | To motivate students and develop problem-solving skills |
| **Contextual Learning** | Real-world math applications (budgeting exercises, measurements) | To make math relevant to daily life |
| **Technology Integration** | Interactive whiteboards, video tutorials | To provide dynamic and multi-sensory learning experiences |

Remediation materials should focus on engagement, visualization, collaboration, and contextual application. Interactive learning tools such as digital games and mobile apps can make math more enjoyable, while hands-on activities using manipulatives help students visualize concepts effectively. Problem-solving worksheets and peer-assisted learning strategies strengthen logical reasoning and confidence in tackling mathematical challenges. Additionally, visual aids like posters and charts enhance retention, while home-based practice guides encourage parental involvement in reinforcing learning outside school. Teachers can benefit from training modules on differentiated instruction, ensuring lessons align with students' diverse learning styles. Incorporating real-world applications, gamified learning activities, and technology-driven resources such as video tutorials and interactive whiteboards can provide a dynamic and multisensory learning experience. These approaches collectively create a structured yet engaging learning environment that supports students in developing strong foundational numeracy skills.

6. Conclusion

The findings suggest that multiple factors contribute to students' academic experiences and numeracy proficiency, with parental education, particularly the father's, emerging as the strongest determinant. While financial status and occupation type had minimal impact, household environment, teacher effectiveness, and classroom conditions played crucial roles in shaping student engagement and learning outcomes. Despite students demonstrating attentiveness and participation in mathematics, gaps remain in study habits, resource availability, and home learning conditions. Furthermore, while teachers provide structured and supportive learning environments, improvements in instructional methods could enhance student interest and comprehension. Overall, the study highlights the importance of educational support systems, parental involvement, and a well-facilitated learning environment in ensuring student success.

**DISCLAIMER (ARTIFICIAL INTELLIGENCE)**

I acknowledge that I have not used ChatGPT or Copilot for refining some of the sections in the document.

Consent (WHEREVER applicable)

I affirm that the respondents voluntarily agreed to participate after being fully informed about the purpose, nature, and potential implications of the study. Their responses have been collected with utmost respect for their privacy and confidentiality, in accordance with ethical research guidelines.

Ethical approval (where ever applicable)

The study was conducted with approval and in accordance with the standards of the college. No ethical approval was required, as the research followed all applicable ethical guidelines, ensuring respect for the respondents' privacy and confidentiality

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