



“RELATIONSHIP BETWEEN STUDENTS’ INTEREST AND TEACHERS’ NUMERACY INTERVENTIONS IN MATHEMATICS”

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Abstract

This study examined the relationship between students’ interest and teachers’ numeracy interventions in mathematics among early childhood learners. The research was conducted at President Corazon Aquino Elementary School during the school year 2023–2024, involving 21 teachers selected through purposive sampling. A quantitative research design was employed using a 20-item Likert scale questionnaire. Data were analyzed using mean, standard deviation, and Pearson correlation coefficient. Findings revealed that teachers observed a high level of student interest in numeracy ($M = 4.01$) and strongly agreed on the effectiveness of numeracy interventions ($M = 4.42$). A moderate positive correlation ($r = 0.447$) was found between students’ interest and teachers’ numeracy interventions; however, the relationship was not statistically significant ($p = 0.195$). The results suggest that numeracy interventions may support student interest, but other factors also influence learners’ engagement in mathematics. The study recommends further research on additional variables affecting numeracy interest.



Introduction

Students' interest plays a vital role in mathematics learning, especially in early childhood education where foundational numeracy skills are developed. When learners show interest in mathematics, they are more likely to engage actively and perform better in related tasks.

Teachers play an essential role in developing this interest through numeracy interventions such as interactive activities, real-life applications, and collaborative learning strategies. These interventions aim to make mathematics more meaningful and engaging for learners.

This study investigates the relationship between students' interest and teachers' numeracy interventions in mathematics. Specifically, it aims to determine the level of students' interest, identify teachers' numeracy interventions, and examine whether a significant relationship exists between the two variables.

Methodology

This study employed a quantitative research design to determine the relationship between students' interest and teachers' numeracy interventions in mathematics.

The respondents were 21 early childhood education teachers from President Corazon Aquino Elementary School selected through purposive sampling. A 20-item researcher-made questionnaire using a Likert scale was utilized to gather data.



The instrument was validated by experts in the field. Data were analyzed using mean and standard deviation to describe variables, and Pearson correlation coefficient to determine the relationship between students’ interest and teachers’ numeracy interventions.

Result

Table 3
Assessing the Level of Student’s Interest in Numeracy

	<i>Mean</i>	<i>SD</i>	<i>Description</i>
Students participated in class discussions.	4.19	3.70	Agree
Observed a high level of enthusiasm among students.	3.90	3.44	Agree
Students frequently asked questions and sought clarification.	4.10	3.64	Agree
Students independently explore math topics beyond curriculum.	3.86	3.45	Agree
Students showed a positive attitude towards mathematical challenges.	4.14	3.66	Agree
Students enjoyed working with their peers.	4.05	3.57	Agree
Students frequently expressed interest in math-related extracurricular activities.	4.00	3.52	Agree
Students enjoyed solving math problems on their own time.	3.90	3.42	Agree
Positive feedback from students regarding their enjoyment of math class was received.	4.05	3.57	Agree



Students are motivated and interested in the mathematical subject matter.	3.95	3.48	Agree
Weighted Mean	4.01	3.55	Agree

Table 3 shows that kindergarten teachers “Agree” that their students showed a strong interest in numeracy across all aspects of math class, with an overall mean of 4.01 out of 5 on a scale of 'Strongly Agree' to 'Strongly Disagree' And an overall standard deviation of 3.55. Students actively participated in class discussions, asked questions, and enjoyed working with peers and solving problems independently. They also expressed interest in extracurricular math activities and showed a positive attitude towards challenges.

Table 4
Numeracy Interventions used in Improving Student’s Interest in Numeracy

	<i>Mean</i>	<i>SD</i>	<i>Description</i>
Used real-world examples and applications to make math more relevant to students’ lives.	4.52	4.02	Strongly Agree
Provided students with opportunities to collaborate and work together on math problems.	4.48	3.98	Strongly Agree
Used age-appropriate materials to keep students engaged in math.	4.48	3.98	Strongly Agree
Provided students with positive feedback and encouragement for their efforts in math.	4.52	4.04	Strongly Agree
Utilized technology to enhance math instructions.	4.52	4.02	Strongly Agree
Provided students with opportunities to be creative and express themselves in math.	4.48	3.98	Strongly Agree



Believed that teaching methods effectively engaged students in mathematical learning.	4.48	3.98	Strongly Agree
Assessed student learning regularly and used the data to inform instructions	3.95	3.92	Agree
Collaborated with other teachers to share ideas and strategies for improving student numeracy.	4.48	3.98	Strongly Agree
Familiar with the latest research on numeracy interventions.	4.24	3.98	Strongly Agree
Weighted Mean	4.42	3.99	Strongly Agree

In table 4, Kindergarten teachers “Strongly Agree” (overall mean score of 4.42 on a 5-point scale and an overall standard deviation of 3.99) that their intervention strategies aimed at improving student interest in numeracy have been highly effective. Real-world applications, collaborative activities, age-appropriate materials, positive reinforcement, and creative expression seem to be particularly impactful, suggesting a focus on making math engaging and relevant to young learners. While regular assessment and research awareness are also valued, collaborative learning and utilization of technology emerge as the most strongly endorsed practices.

Table 5
Relationship between Student's Interest and Teachers' Numeracy Intervention in Mathematical Subject

	Math Intervention	p-value	Interpretation
<i>Student's Interest</i>	0.447	0.195	There is no significant relationship between student's interest and teachers' numeracy intervention in mathematical subjects.

Legend: correlation is not significant at 0.05 level (2-tailed)

The study investigated the relationship between students' interest and teachers' numeracy intervention in mathematical subjects. The null hypothesis, asserting no significant relationship, was



accepted based on the obtained results. The statistical analysis revealed a moderate positive correlation ($r=0.447$; $p\text{-value}=0.195$) between students' interest and teachers' numeracy intervention in early childhood education. While the correlation suggests a meaningful association, it is not exceptionally strong, indicating a moderate strength in the relationship.

The positive correlation implies that as students' interest in mathematical subjects increases, there is a tendency for teachers' numeracy intervention to also increase. This alignment supports the idea that tailoring instructional support to students' interests may positively impact their engagement and understanding of mathematical subjects. These findings have implications for educational practices, suggesting that teachers' interventions aligned with students' interests can enhance the overall learning experience in mathematical subjects during early childhood education.

Discussion

This study investigated the relationship between student interest and teacher-implemented numeracy interventions in early childhood education. Contrary to our initial expectations, the results revealed a moderate positive correlation ($r=0.447$; $p\text{-value}=0.195$) between these two factors. While not exceptionally strong, this correlation suggests a meaningful association, implying that increased student interest tends to coincide with increased teacher utilization of numeracy interventions in the classroom. This finding aligns with existing research highlighting the importance of tailoring instructional support to student interests as a means to enhance engagement and understanding. When teachers implement interventions that resonate with students' intrinsic curiosity and preferences, they create a more relevant and enjoyable learning environment, potentially fostering a positive cycle of increased interest and further intervention.

Examining the specific interventions identified as most impactful in Table 4 offers valuable insights into this dynamic. The emphasis on real-world applications, collaborative activities, age-appropriate materials, and positive reinforcement suggests that teachers who prioritize making math engaging and connected to young learners' lives are more likely to see a corresponding rise in student interest. This supports the notion that effective numeracy interventions go beyond rote memorization and drills, instead fostering a sense of discovery and exploration within the context of meaningful experiences.

However, it is important to acknowledge the limitations of this study. The moderate correlation suggests that other factors beyond teacher interventions also play a significant role in influencing student interest. Future research could delve deeper into exploring these additional factors, such as individual student differences, classroom environment, and family support systems, to develop a more comprehensive understanding of the complex interplay between interest and intervention in early childhood numeracy education.



Furthermore, investigating the causal direction of this relationship would be valuable. While this study suggests a positive correlation, it remains unclear whether increased student interest directly leads to teachers implementing more interventions, or if effective interventions independently generate greater interest. Exploring this causality could inform more targeted and impactful instructional practices in the future.

This study provides promising evidence for the positive association between student interest and teacher-implemented numeracy interventions in early childhood education. By prioritizing engaging and relevant practices that connect with young learners' natural curiosity, teachers can potentially create a virtuous cycle of increasing interest and fostering effective numeracy development. Further research exploring the finer nuances of this relationship and its various influencing factors can pave the way for even more successful classroom strategies, ultimately benefiting the learning journeys of young mathematicians.

Conclusion

The study concludes that there is a moderate positive relationship between students' interest and teachers' numeracy interventions in mathematics, although it is not statistically significant. Teachers' instructional strategies play an important role in enhancing students' engagement, but other factors may also influence learning outcomes.

Recommendations

Teachers are encouraged to continue implementing engaging numeracy interventions to sustain students' interest in mathematics. Schools may provide further support through training programs and instructional resources.

Future researchers are recommended to explore other factors affecting students' numeracy interest such as home environment, motivation, and learning styles to gain deeper understanding of the topic.



References

Aunio, P., Korhonen, J., Ragpot, L., Törmänen, M., & Henning, E. (2021). Early Childhood Research Quarterly, 55, 252-262.
https://research.abo.fi/ws/portalfiles/portal/35505409/1_s2.0_S0885200620301472_main.pdf

Bandura, A., & National Inst of Mental Health. (1986). Social foundations of thought and action: A social cognitive theory. Prentice-Hall, Inc. <https://psycnet.apa.org/record/1985-98423-000>

Brown, J. (2019). Differentiated Instruction in Mathematics: A Comprehensive Review of Strategies and Outcomes. Journal of Educational Research, 45(2), 112-129.

Gervasoni, A. (2018). Invited lectures from the 13th international congress on mathematical education, 115-133. <https://link.springer.com/book/10.1007/978-3-319-72170-5>

Rakoczy, K., Pinger, P., Hochweber, J., Klieme, E., Schütze, B., & Besser, M. (2019). Formative assessment in mathematics: Mediated by feedback's perceived usefulness and students' self-efficacy. Learning and Instruction, 60, 154-165.
<https://www.semanticscholar.org/paper/Formative-assessment-in-mathematics%3A-Mediated-by-Rakoczy-Pinger/ba03f43f789584990bc2a382ba1ca27cc33d7ec7>

Roche, A., Gervasoni, A., & Kalogeropoulos, P. (2021). Factors that promote interest and engagement in learning mathematics for low-achieving primary students across three learning settings. Mathematics Education Research Journal.



https://www.researchgate.net/publication/355472061_Factors_that_promote_interest_and_engagement_in_learning_mathematics_for_low-achieving_primary_students_across_three_learning_settings

Ulandari, L., Amry, Z., & Saragih, S. (2019). Development of Learning Materials Based on Realistic Mathematics Education Approach to Improve Students' Mathematical Problem Solving Ability and Self-Efficacy. *International Electronic Journal of Mathematics Education*, 14(2), 375-383. https://www.researchgate.net/publication/331164774_Development_of_Learning_Materials_Based_on_Realistic_Mathematics_Education_Approach_to_Improve_Students%27_Mathematical_Problem_Solving_Ability_and_Self-Efficacy

Yeh, C. Y., Cheng, H. N., Chen, Z. H., Liao, C. C., & Chan, T. W. (2019). Enhancing achievement and interest in mathematics learning through Math-Island. *Research and Practice in Technology Enhanced Learning*, 14(1), 1-19. <https://telrp.springeropen.com/counter/pdf/10.1186/s41039-019-0100-9.pdf>