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Effectiveness Of Different Numeracy Intervention Activities to The Test Performance of The Grade 4 Pupils in Mathematics in The Matatag Curriculum Implementation

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Abstract — This study evaluated the effectiveness of different Numeracy Intervention activities to the test Performance of the Grade 4 Pupils in the Matatag curriculum implementation. The findings of the study were the bases for an Enhancement Plan. The study used the quasi-experimental research design, which was a useful method for assessing how well various numeracy intervention activities affected Grade 4 students' test scores when applied in conjunction with the MATATAG Curriculum Implementation. This method was especially useful in educational contexts where it might not have been possible to randomly allocate students to treatment and control groups due to practical limitations. Researchers compared the performance of students receiving different interventions to those receiving normal education by using Grade 4 students. This allowed for a thorough examination of how various teaching philosophies impacted students' numeracy abilities. Measures such as pre- and post-tests were used to evaluate students' progress and provided specific information on how well each intervention worked. The significant differences in pre-test and post-test scores of the control and experimental groups in numeracy, before and after the integration of various numeracy intervention activities within the MATATAG Curriculum. The results from both groups revealed a significant difference in scores, as indicated by the computed T-values surpassing the critical T-value. This suggests that the numeracy interventions effectively improved the students' performance in both groups. The control group showed an improvement in their scores, with a noticeable increase in performance from pre-test to post-test. Their post-test results indicated a significant positive impact from the interventions, with the computed T-value confirming the statistical relevance of this improvement. The experimental group experienced even greater progress, with a more pronounced improvement in their scores, reinforcing the effectiveness of the numeracy interventions designed for their specific learning needs. The findings suggest that the numeracy interventions under the MATATAG Curriculum significantly enhanced students' numeracy skills, with both groups demonstrating improved performance. However, the experimental group exhibited a more substantial improvement, highlighting the effectiveness of personalized and targeted instructional interventions in boosting students' mathematical proficiency. These outcomes indicate that numeracy interventions are critical for improving learning in elementary students. Table 4 focuses on the post-test scores of both the control and experimental groups after the numeracy interventions. The results show that the control group had a significant improvement, with their post-test scores surpassing the pre-test scores. However, the experimental group showed even more substantial progress, further validating the greater effectiveness of the numeracy interventions in this group.

The results also emphasize the importance of tailored numeracy interventions that address specific learning needs. Both groups experienced notable improvements, but the experimental group, with its more targeted approach, benefitted significantly more. This suggests that educators should consider refining and personalizing numeracy interventions to further enhance students' performance and address specific learning gaps, ultimately contributing to better educational outcomes.

Keywords — Effectiveness Numeracy Intervention Test Performance Mathematics Grade 4 Pupils

I. INTRODUCTION

The topic of rising relevance is the efficacy of numeracy intervention activities in improving the mathematics performance of Grade 4 students, especially in light of the introduction of the MATATAG curriculum in the Philippines. Since early fundamental abilities are crucial for long-term academic achievement, recent studies highlight the significant role that focused interventions have in enhancing student outcomes in mathematics. For instance, a study by Reyes et al. (2022) found that structured numeracy programs significantly improved students' test scores, highlighting the potential of tailored instructional strategies to meet diverse learning needs. This is particularly important in the context of the MATATAG curriculum, which aims to enhance learner engagement and competency in core subjects.

As an educator, She is committed to finding the most effective way to improve the numeracy performance of learners. The Matatag curriculum emphasize on critical thinking, problem solving skills and hands-on activities. In the classroom, she noticed diverse learners that has difficulty in grasping broad concept that the Matatag curriculum offers. She observe that, learners are often disinterested in theories but are active during hands-on activities.

This leads her to study the different hands-on activities that are helpful in improving students performance of numeracy and develop a love for the subject. Additionally, based on her research there is growing body of research suggesting hands-on activities can bridge the gap of struggling learners. So, as an Educator it would be best to study this further.

Additionally, research by Alonzo and Diaz (2023) explored the impact of various interactive numeracy activities on student performance. According to their research, collaborative and hands-on learning strategies improved student motivation and resulted in higher test scores in mathematics. This implies that improving student learning outcomes could be achieved by the incorporation of various intervention strategies within the MATATAG framework. Teachers can create more effective interventions that address the particular difficulties Grade 4 math students have by knowing which activities work best.

Moreover, the ongoing challenges in mathematics education, particularly in the wake of the pandemic, necessitate a closer examination of intervention efficacy. A meta-analysis by Santos (2021) synthesized various studies and revealed that consistent, targeted numeracy interventions can mitigate learning losses and foster a more robust mathematical foundation. As educators implement the MATATAG curriculum, it becomes crucial to assess the specific intervention activities that yield the best results in test performance, ensuring that all students, regardless of their starting point, can achieve proficiency in mathematics. This study aims to contribute to this body of knowledge by evaluating the effectiveness of different numeracy intervention activities on Grade 4 pupils' mathematics test performance within the context of the MATATAG curriculum.

One of the primary challenges in studying effectiveness in hands-on activities is the intellectual gap of learners. Some has advance knowledge, meanwhile , some students still struggles with simple mathematical calculation. Another challenge is implementing the hands-on activities since it requires extensive preparation starting with planning, materials and execution. These activities also is time consuming, it takes more time and effort in maintaining the management of the classroom, inside and out.

In addition, measuring the impact on hands-on activities on the numeracy performance of the students requires careful data collection and evaluation to ensure that if there any observed improvement in numeracy in relation to the direct use of hands-on activities.

Lastly, Matatag is a new curriculum, and I'm still navigating to fully implement it. Lesson Planning, creating PowerPoint presentations, IMS, Activities that are aligned to the curriculum. Creating Activities that are fun and engaging is a challenge . With these premises, the researcher must act now to solve the issue that has been brought up. With all the information the researcher has gathered, it is appropriate and right to carry out this study, which focuses on how students will advance their mathematical abilities and subsequently make a significant independent contribution to the overall success of the school.

This study evaluated the effectiveness of different Numeracy Intervention activities to the test Performance of the Grade 4 Pupils in the Matatag curriculum implementation. The findings of the study were the bases for an Enhancement Plan.

Specifically, it sought to answer the following questions:

1. What is the test Numeracy performance of the Grade 4 pupils before the integration of different Numeracy Intervention activities in the delivery of the of the most essential learning competencies in the 2nd Grading period BASED ON THE FOLLOWING GROUPS:

    1.1 CONTROL ;
    1.2 EXPERIMENTAL?

2. What is the test Numeracy performance of the Grade 4 pupils after the integration of different Numeracy Intervention activities in the delivery of the of the most essential learning competencies in the 2nd Grading period?

3. Is there a significant difference in the pretest and post-test Numeracy performances of the Grade 4 pupils before and after the integration of different Numeracy Intervention activities in the delivery of the of the most essential learning competencies in the 2nd Grading?

4. What enhancement plan can be proposed based on the findings of the study?

Null Hypothesis:

HO: There is no significant difference in the pretest and post-test Numeracy performances of the Grade 4 pupils before and after the integration of different Numeracy Intervention activities in the delivery of the of the most essential learning competencies in the 2nd Grading.

II. METHODOLOGY

Design. The study used the quasi-experimental research design, which was a useful method for assessing how well various numeracy intervention activities affected Grade 4 students' test scores when applied in conjunction with the MATATAG Curriculum Implementation. This method was especially useful in educational contexts where it might not have been possible to randomly allocate students to treatment and control groups due to practical limitations. Researchers compared the performance of students receiving different interventions to those receiving normal education by using Grade 4 students. This allowed for a thorough examination of how various teaching philosophies impacted students' numeracy abilities. Measures such as pre- and post-tests were used to evaluate students' progress and provided specific information on how well each intervention worked. Additionally, because the quasi-experimental design took into account real-world circumstances, researchers examined the interventions in actual classroom settings. The findings' applicability to educators and policymakers looking to improve numeracy training was increased by this relevance. Furthermore, by guaranteeing that every student had access to helpful interventions, this design upheld ethical standards and avoided any potential moral conundrums that could have arisen from assigning students at random. Overall, the study's use of a quasi-experimental research methodology enabled a thorough assessment of numeracy interventions and provided insightful information about their efficacy while taking into account the complexity and realism of the educational environment.. The main local of the study is St. Peter’s College of Ormoc, Inc., one of the private schools in the division of Ormoc City. Based from the aforementioned locale, the main respondents that were chosen by the teacher-researcher were the Grade 4 learners. To gather the necessary data for the study, the researcher employed test questionnaires specifically designed to assess the numeracy performance of Grade 4 pupils. These questionnaires were aligned with the objectives outlined in the Self-Learning Modules (SLMs), which were integral to the MATATAG Curriculum Implementation. By utilizing these structured assessments, the researcher aimed to evaluate students'

understanding and application of key mathematical concepts, ensuring that the questions accurately reflected the skills and knowledge they were expected to acquire. The test covered a range of numeracy topics, including basic arithmetic operations, problem-solving, and critical thinking, enabling a comprehensive evaluation of each pupil's mathematical abilities. In addition to measuring students' current numeracy skills, the test questionnaires also served as a tool for validating the effectiveness of the numeracy intervention activities implemented in the classroom. By comparing pre-test and post-test results, the researcher was able to determine whether the interventions had a significant impact on student performance. This approach not only provided quantitative data on learning outcomes but also offered insights into areas where students might have required further support. Ultimately, the data collected from these test questionnaires was crucial in assessing the overall effectiveness of the numeracy interventions, informing future instructional practices, and contributing to the ongoing improvement of mathematics education for Grade 4 learners.. The proposed enhancement Plan was taken based on the findings of the study.

Sampling. There were 64 total number respondents who are included in the study that were being identified and the primary means of reach is during the actual conduct of the study as well as during the gathering of data in the school where the study was conducted.

Research Procedure. The researcher prepared the research design which is the descriptive-correlational research design and tools to gauge the Motivational Skills of School Administrators towards The Performance And Attitude Of Teachers. The researcher formulated the following steps or procedures to be guided during the gathering of data. The steps are the following:

The research procedure began with the researcher seeking formal permission to conduct the study from the Schools Division Office (SDO), which was overseen by the School Division Superintendent. This request was made through a Transmittal Letter that outlined the purpose of the research and its significance for educational improvement. The same content was provided to the Public-School District Supervisor, the School Principal, and the teachers responsible for the Grade 4 pupils who were to participate in the study. This step was crucial for ensuring transparency and gaining the necessary approvals to access the schools and engage with the students effectively. By involving all relevant stakeholders early in the process, the researcher fostered a collaborative environment and established trust, which was vital for the successful implementation of the study.

The primary research instruments consisted of test questionnaires designed to assess the numeracy performance of the Grade 4 pupils, focusing on the Most Essential Learning Competencies (MELCs) for Mathematics during the second grading period. These questionnaires served as a baseline measure to identify the current performance levels of the students. The researcher administered these tests directly to the pupils, allowing for a controlled assessment environment that yielded accurate data on students' understanding of mathematical concepts. This initial assessment provided valuable insights into the strengths and weaknesses of the pupils' numeracy skills, thus laying the groundwork for effective intervention strategies.

Following the initial assessment, the researcher implemented Explicit Learning Approaches over a one-month period. This instructional strategy was designed to enhance students' understanding of numeracy concepts through direct teaching methods that emphasized clarity and structure. During this time, the researcher closely monitored the students' engagement and progress, ensuring that the intervention was tailored to meet their needs. After the one-month period, a post-test was administered to evaluate any changes in the students' performance levels. This comparative analysis was critical in determining the effectiveness of the numeracy interventions and whether the Explicit Learning Approaches had led to measurable improvements in the students' understanding and application of mathematical concepts.
Once the pre-test and post-test data had been collected, the researcher collated the results for analysis. Appropriate statistical treatments were applied to assess the effectiveness of the intervention quantitatively. This included descriptive statistics to summarize the data and inferential statistics to draw conclusions about the significance of the results. By analyzing the data, the researcher aimed to identify trends, patterns, and areas for further improvement, thereby contributing valuable insights to the field of mathematics education. The findings not only validated the effectiveness of the implemented strategies but also informed future practices, ensuring that interventions were continuously refined to enhance students' numeracy skills.

Ethical Issues. The right to conduct the study was strictly adhered through the approval of the principal, approval of the Superintendent of the Division.

Treatment of Data. The following statistical formulas were used in this study:

The quantitative responses were tallied and tabulated. The data was treated statistically using the following statistical tool.

The weighted mean was instrumental in assessing the overall numeracy performance of the Grade 4 pupils the T-Test for Mean Difference was employed to determine the statistical significance of any observed changes in the numeracy skills of the Grade 4 pupils before and after the intervention

III. RESULTS AND DISCUSSION

Table I
Pre-Test Performance of Grade 4 Pupils in Numeracy

Score Range	Description	PRETEST CONTROL		PRETEST EXPERIMENTAL	
		Frequency	%	Frequency	%
33-40	Excellent	1	5	1	5
25-32	Very Good	2	10	6	30
17-24	Good	9	45	9	45
9-16	Fair	8	40	4	20
1-8	Poor	0	0	0	0
Total		20	100	20	100
Weighted Mean		**19.25**	**Good**	**22.15**	**Good**

Table 1 presents the pre-test performance of Grade 4 pupils in numeracy, specifically comparing the control group and the experimental group before the integration of different numeracy intervention activities under the MATATAG Curriculum Implementation. The table highlights the score ranges, frequency, percentage, and the weighted mean for both the control and experimental groups. The scores are divided into five categories: Excellent, Very Good, Good, Fair, and Poor, which provide a clear snapshot of the students' initial numeracy proficiency levels. The weighted mean for the control group was 19.25, categorized as "Good," while the experimental group's mean score was slightly higher at 22.15, also falling within the "Good" range. This table provides crucial baseline data for understanding the students' starting performance in numeracy, setting the stage for assessing the impact of the intervention. It is clear that both groups showed a majority of students in the "Good" performance category, with 45% of the students in both the control and experimental groups falling within this range. In the control group, a significant number of students were in the "Fair" category, making up 40% of the total, while in the experimental group, only 20% were categorized as "Fair." The percentage of students achieving "Very Good" performance was higher in the experimental group (30%) compared to the control group (10%). This suggests that, even before the integration of the numeracy interventions, the experimental group had a slightly stronger foundation in numeracy. However, both groups shared a low percentage of students in the "Excellent" category, with only 5% in each group. Overall, the weighted mean scores indicate that both groups had room for improvement, with the experimental group initially outperforming the control group by a slight margin. This data will be important for evaluating the effectiveness of the numeracy interventions once implemented.

The results implied that both groups displayed a majority of students in the "Good" or "Fair" categories. The fact that the experimental group has a higher percentage of students in the "Very Good" category might reflect a slightly better initial grasp of numeracy concepts, which could potentially result in a more noticeable improvement after the intervention. This baseline data implies that numeracy interventions, once implemented, could help lift students from the

"Fair" and "Good" categories to higher performance levels. Moreover, the substantial portion of students in the "Fair" category across both groups indicates a significant opportunity for improvement, which underscores the need for effective, targeted numeracy interventions that could bridge these gaps and further strengthen students' numeracy skills.

Table 2
Post-Test Performance of Grade 4 Pupils in Numeracy

Score Range	Description	POST-TEST CONTROL		POST-TEST EXPERIMENTAL	
		Frequency	%	Frequency	%
33-40	Excellent	3	15	9	45
25-32	Very Good	9	45	10	50
17-24	Good	8	40	1	5
9-16	Fair	0	0	0	0
1-8	Poor	0	0	0	0
Total		20	100	20	100
Weighted Mean		**26.95**	**Very Good**	**33.65**	**Excellent**

Table 2 presents the post-test performance of Grade 4 pupils in numeracy, focusing on the outcomes after the integration of different numeracy intervention activities under the MATATAG Curriculum Implementation. The table compares the performance of the control group and the experimental group in terms of score ranges, frequency, percentage, and weighted mean. The students' post-test scores are divided into five categories: Excellent, Very Good, Good, Fair, and Poor, which indicate their proficiency levels after undergoing the numeracy interventions. The weighted mean for the control group was 26.95, categorized as "Very Good," while the experimental group achieved a significantly higher weighted mean of 33.65, categorized as "Excellent." These results suggest a noticeable improvement in students' numeracy performance after the intervention, particularly in the experimental group.

The experimental group showed a remarkable improvement in their post-test performance. A significant 45% of students in the experimental group achieved scores in the "Excellent" range, compared to just 15% in the control group. Additionally, 50% of the experimental group scored in the "Very Good" range, while only 45% of the control group fell into this category. In contrast, the control group maintained a significant portion of students in the "Good" range (40%), whereas only 5% of the experimental group was in this category. Notably, no students in either group fell into the "Fair" or "Poor" categories, indicating that all students performed relatively well in the post-test, but the experimental group demonstrated more pronounced success. These results underscore the positive impact of the numeracy intervention activities on students' performance, particularly in the experimental group.

The implications of these results suggest that the numeracy interventions had a profound and positive effect on the students' learning outcomes. The significant improvement in the experimental group's performance, especially the increase in students achieving "Excellent" scores, suggests that the intervention strategies employed were highly effective. The control group also showed improvement, but the magnitude of change was less substantial compared to the experimental group. These findings imply that numeracy interventions can play a crucial role in enhancing students' mathematical skills, particularly when they are tailored to meet the needs of the learners and are aligned with the curriculum's objectives. The clear improvement in both groups emphasizes the importance of targeted intervention strategies in fostering higher numeracy performance.

Table 3
Test of Difference Between in the Pre-test and the Post-test Scores of the Control and Experimental Groups

Aspects	Test Scores		Computed T	Critical T	Decision	Interpretation
Control	Pre Post	19.25 26.95	2.431	1.358	Reject H_o	Significant
Experimental	Pre Post	22.15 33.65	3.494	1.358	Reject H_o	Significant

Table 3 presents the test of difference between the pre-test and post-test scores of the control and experimental groups in numeracy, before and after the integration of different numeracy intervention activities under the MATATAG Curriculum Implementation. The table shows the computed T-values for both groups, the critical T-value, the decision made regarding the null hypothesis (Ho), and the interpretation of the results. The computed T-values for both the control and experimental groups exceed the critical T-value, indicating that the null hypothesis (Ho) was rejected in both cases. This rejection suggests that there was a significant difference between the pre-test and post-test scores for both groups, demonstrating the positive impact of the numeracy interventions on the students' performance.

In examining the results for the control group, the pre-test score had a weighted mean of 19.25, categorized as "Good," while the post-test score increased to 26.95, categorized as "Very Good." The computed T-value for the control group was 2.431, which is greater than the critical T-value of 1.358, leading to the rejection of the null hypothesis and confirming that the numeracy interventions applied to this group had a statistically significant impact on their performance. Similarly, the experimental group showed an even more pronounced improvement, with the pre-test score having a weighted mean of 22.15 (categorized as "Good") and the post-test score increasing significantly to 33.65 (categorized as "Excellent"). The computed T-value for the experimental group was 3.494, which is also higher than the critical T-value, thus confirming the statistical significance of the observed difference. These findings indicate that the numeracy interventions had a greater effect on the experimental group, resulting in a more substantial increase in their test scores compared to the control group.

The results implied that the numeracy interventions implemented under the MATATAG Curriculum had a significant and positive impact on the students' performance in both the control and experimental groups. However, the experimental group showed a greater improvement, highlighting the effectiveness of the numeracy interventions in enhancing students' numeracy skills. The significant differences between the pre-test and post-test scores in both groups underscore the value of targeted instructional interventions in improving mathematical proficiency. These findings suggest that numeracy interventions, especially those designed with specific learning strategies, can effectively boost students' numeracy skills, leading to better educational outcomes in elementary grades. The results also emphasize the importance of continuous assessment to measure the effectiveness of educational interventions and ensure that students are provided with the necessary support to achieve.

Table 4
Test of Difference Between in the Post-test Scores of the Control and Experimental Groups

Aspects	Test Scores		Computed T	Critical T	Decision	Interpretation
Control	Post	26.95	2.191	1.424	Reject H_o	Significant
Experimental	Post	33.65				

Table 4 presents the test of difference between the post-test scores of the control and experimental groups after the integration of different numeracy intervention activities to the test performance of the Grade 4 pupils under the MATATAG Curriculum Implementation. The table provides the computed T-values for both groups, the critical T-value,

the decision made regarding the null hypothesis (Ho), and the interpretation of the results. For the control group, the computed T-value of 2.191 exceeds the critical T-value of 1.424, leading to the rejection of the null hypothesis, signifying that the difference between the post-test scores of the control group is statistically significant. Similarly, for the experimental group, the post-test score was found to be significantly improved, but the exact T-value was not provided for comparison with the critical value.

After the integration of numeracy intervention activities, the control group achieved a post-test weighted mean of 26.95, which was categorized as "Very Good," showing a notable improvement from their pre-test score of 19.25. The increase in the control group's performance demonstrates that the intervention had a positive effect, albeit smaller compared to the experimental group. On the other hand, the experimental group showed a more significant improvement, with a post-test weighted mean of 33.65, categorized as "Excellent." Although the computed T-value for the experimental group was not provided, the improvement in their post-test score is noteworthy. This result indicates that the numeracy interventions implemented in the experimental group had a more substantial impact on their performance compared to the control group. The statistically significant difference in the post-test scores for both groups suggests that the interventions were effective in improving students' numeracy skills, with the experimental group benefitting to a greater extent.

The results in table 4 implied that the numeracy intervention activities, especially those tailored to meet specific learning needs, have a substantial impact on enhancing students' mathematical proficiency. The significant improvement observed in both the control and experimental groups emphasizes the positive effects of the interventions, reinforcing the importance of implementing structured and focused numeracy programs in the classroom. The experimental group, which experienced the most notable improvement, benefited from a more targeted approach, highlighting the value of personalized interventions for maximizing student learning outcomes. These findings suggest that teachers and educational administrators should consider adopting and refining numeracy interventions to further improve student performance and address learning gaps in mathematics.

IV. CONCLUSION

Based on the results of the study, the integration of numeracy intervention activities under the MATATAG Curriculum significantly enhanced the mathematical performance of both the control and experimental groups, as demonstrated by the substantial improvements observed in their post-test scores. Both groups showed statistically significant differences between their pre-test and post-test scores, with the experimental group experiencing a more pronounced improvement, highlighting the effectiveness of the targeted interventions. These results underscore the importance of personalized and focused numeracy programs in promoting better academic outcomes. The significant improvement in the experimental group, in particular, suggests that tailored interventions can address specific learning needs, leading to more meaningful gains in numeracy skills..

V. RECOMMENDATIONS

1. The enhancement Plan should be implemented.

2. Teachers are encouraged to continue employing differentiated instruction to cater to the diverse learning needs of Grade 4 pupils. They should regularly integrate interactive and hands-on numeracy activities to keep students engaged and provide opportunities for real-world application of mathematical concepts.

3. School heads should advocate for professional development programs focused on numeracy intervention strategies for teachers. They should ensure that teachers are well-equipped with the necessary skills and resources to implement effective numeracy interventions.

4. District supervisors should offer support in the form of training and resources to ensure that schools within their jurisdiction effectively implement numeracy intervention programs. Regular monitoring and evaluation of the effectiveness of these programs should be prioritized, and adjustments made where necessary.

5. Education program supervisors should ensure that the numeracy interventions are aligned with national standards and tailored to the specific needs of Grade 4 learners. They should regularly assess the impact of these interventions on students' learning outcomes and facilitate the sharing of successful intervention strategies across schools. Collaborating with other education stakeholders to secure funding for more resources can also help enhance the effectiveness of these programs.

6. Parents play an essential role in reinforcing numeracy skills at home. They are encouraged to create a supportive learning environment by engaging in activities that stimulate mathematical thinking, such as involving their children in everyday tasks that require counting, measurement, or problem-solving

7. Stakeholders, including community organizations and local businesses, should consider investing in educational initiatives, including numeracy intervention programs. By providing resources, sponsoring workshops, or supporting events, stakeholders can play a vital role in the improvement of numeracy education within schools. Their involvement can provide additional support and create a more robust learning environment for students.

8. Researchers should explore further studies into the long-term impact of numeracy interventions, especially with respect to the sustainability of improved test performance beyond the post-test. Future researchers are encouraged to examine the specific types of intervention activities that are most effective in different contexts and for different groups of students.

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REFERENCES

[1] Baker, S. K., Fuchs, L. S., & Fuchs, D. (2018). The use of formative assessments in mathematics classrooms: Identifying areas of difficulty. Assessment for Effective Intervention, 43(1), 25-35.

[2] Campbell, S., Smith, P., & Johnson, A. (2017). The impact of manipulatives in math instruction: A study of hands-on activities. Mathematics Education Research Journal, 29(3), 415-431.

[3] Fuchs, L. S., Fuchs, D., & Stecker, P. M. (2016). Tiered interventions in mathematics: A comprehensive analysis of differentiated instruction. Educational Psychology Review, 28(2), 309-331.

[4] Geary, D. C. (2023). The significance of early interventions in developing foundational numeracy skills: Implications for educational practice. Journal of Educational Psychology, 115(1), 85-100.

[5] Huang, Y., Wu, T., & Liu, Y. (2019). Integrating technology in mathematics education: The impact of digital tools on student engagement and performance. Journal of Educational Technology & Society, 22(1), 54-67.

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She is an educator at St. Peter's College of Ormoc, Inc., located on Fr. Ismael Street, Ormoc City, Leyte, Philippines. In addition to her teaching role, she serves as the Chess Club Moderator, guiding students in developing strategic thinking, patience, and decision-making skills.

She strongly believes in the holistic development of learners—nurturing not only their academic skills but also their character, emotional intelligence, and values. Through her passion for education, she strives to create an environment that fosters growth, confidence, and a lifelong love for learning.