

School Heads and Teachers' Learning Engagement: Bridging the Gap to Enhance Numeracy Skills of Students

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Abstract

The study assessed the learning engagement of school heads and teachers in improving students' numeracy skills. The respondents of the study were six school heads and 55 mathematics teachers from Daet North and South Districts, the study used a quantitative descriptive-correlational design with survey data based on DepEd Orders. Respondents were experienced, with school heads mainly Principal 2 and teachers primarily Teacher 3, most holding master's degree units. Collaboration in resource allocation, monitoring and evaluation, and feedback mechanism was effective, with strengths in staff empowerment, data-driven assessments, and feedback. Areas needing improvement included planning, mentoring peers, and professional discussions. Teachers excelled in hands-on activities and ICT use, with higher-positioned teachers demonstrating greater effectiveness. The study found significant positive relationships between teacher profiles and learning engagement strategies, as well as between collaboration and learning engagement effectiveness. The proposed intervention plan, a handbook for enhancing learning engagement to improve numeracy skills, focuses on using data, differentiated instruction, and motivating students. Recommendations include promoting career progression, cross-disciplinary education, ICT training, and participation in professional learning communities.

Keywords: Collaboration; differentiated integration; feedback mechanism; hands-on learning activities; learning engagement; monitoring and evaluation; numeracy skills; professional development; real-life application; resource allocation; technology integration

1. Introduction

In recent years, there has been a growing recognition of the pivotal role that numeracy is a foundational skill that serves as cornerstones for academic success and lifelong learning (UNESCO, 2006). Numeracy extends beyond basic arithmetic skills, encompassing mathematical reasoning and problem-solving (Gal, 1998).

At the international level, several documents underscore the importance of numeracy skills in education and emphasize the need for collaboration among educational stakeholders to enhance these skills. For instance, the UNESCO Education 2030 Agenda stresses the significance of numeracy in achieving Sustainable Development Goal 4 (Quality Education) (UNESCO, 2015). Additionally, the Program for International Student Assessment (PISA) administered by the Organization for Economic Co-operation and Development (OECD) assesses and compares the numeracy skills of 15-year-old students worldwide,

highlighting the global focus on this aspect of education (Chandir, 2022). DepEd Order No. 83, s. 2012 highlights the importance of collaborative decision-making in school governance, involving school heads, teachers, parents, and the community. This aligns with the study's focus on fostering shared responsibility and collaboration to enhance educational outcomes.

Moreover, this study is anchored on several legal frameworks, including DepEd Memorandum 008, s. 2023, which highlights the importance of performance targets, professional development, and collaboration under the Results-Based Performance Management System-Philippine Professional Standards for Teachers. DepEd Order No. 42, s. 2017 underscores the critical role of teachers in raising student achievement, while DepEd Order No. 024, s. 2020 emphasizes that quality student learning relies on effective teachers supported by competent school leaders. Republic Act No. 10533, known as the Enhanced Basic Education Act of 2013 (K to 12 Law), stresses the importance of numeracy skills as part of a learner-centred curriculum. Despite these policies, challenges such as limited collaboration, insufficient resources, and varying teaching approaches hinder effective numeracy skills development. The study assessed the extent of collaboration and learning engagement between school heads and teachers in the Daet North and South Districts to identify effective strategies for improving numeracy outcomes. By addressing gaps in engagement and collaboration, the study provides actionable insights to inform educational policy, resource allocation, and strategies for enhancing numeracy skills on a broader scale.

2. Methodology

The study employed a quantitative descriptive-correlational design to examine the profiles of school heads and teachers, their collaboration extent (resource allocation, monitoring and evaluation, and feedback mechanism), and learning engagement strategies (hands-on learning activities, real-life applications, differentiated integration, technology integration, and professional development) to improve students' numeracy skills. Descriptive design assessed respondent profiles and collaboration, while correlation design analysed relationships between respondent profiles and engagement strategies, as well as between collaboration and engagement strategies. Furthermore, the researcher sought permission from the Schools Division Superintendent to gather data from school heads and mathematics teachers in Daet North and South Districts, ensuring ethical protocols were followed to protect respondents' rights and well-being. Data was collected using a survey questionnaire. Data collection involved demographic surveys (SOP 1), Likert scale questionnaires on collaboration and learning engagement strategies (SOPs 2 and 3), and statistical analyses to examine relationships between teacher profiles, collaboration, and engagement strategies in improving numeracy skills (SOPs 4 and 5). Findings informed the development of an intervention plan to enhance collaboration and learning engagement strategies, ultimately aiming to improve students' numeracy skills (SOP 6). Moreover, the study used descriptive and correlational analyses to explore variables. Descriptive statistics (frequency, percentage, and weighted mean) summarized respondents' demographic profiles and evaluated Likert-scale responses on collaboration extent and learning engagement strategies. Correlation analyses were employed to determine relationships between teacher profiles and engagement strategies using Somers' Delta, and between collaboration and engagement strategies using Pearson's correlation coefficient. SPSS software was utilized for statistical computations, ensuring precise analysis and interpretation of descriptive and relational data.

3. Results and Discussions

3.1 Profile of the Respondents

The study highlighted a diverse professional profile among mathematics teachers and school heads in Daet North and South Districts, emphasizing the importance of position, years of service, specialization, and

educational attainment in addressing numeracy challenges.

3.1.1 Position. This refers to the role each teacher holds within the educational structure, ranging from entry-level teaching roles to senior positions with added responsibilities, such as department head, mentor, or other leadership roles.

Table 1. Profile of the Respondents in terms of Position

Position	Frequency	Percentage (%)
<i>School Heads</i>		
Principal 3	1	16.67
Principal 2	2	33.33
Head Teacher 3	1	16.67
Head Teacher 1	1	16.67
Teacher 3-OIC	1	16.67
Total	6	100.00
<i>Teachers</i>		
Master Teacher 3	1	1.8
Master Teacher 2	1	1.8
Master Teacher 1	1	1.8
Teacher 3	22	40.0
Teacher 2	18	32.7
Teacher 1	12	21.8
Total	55	100.00

Table 1 reveals that the most frequent position among school heads is Principal 2, with 33.33%, while Principal 3, Head Teacher 3, Head Teacher 1, and Teacher 3-OIC each have 1 respondent (16.67%). For teachers, the most common position is Teacher 3 at 40.0%, while Master Teacher 1, 2, and 3 each had 1 respondent (1.8%). The findings highlight a concentration of respondents in specific positions, particularly Teacher 3, suggesting a focus on experienced but non-leadership roles, while the limited representation of Master Teachers indicates a potential bottleneck in career progression. These results emphasize the need for professional development programs to support career advancement and address the underrepresentation of advanced roles, in line with the study of Gumus et al. (2024) which found that experience in leadership roles correlates with student achievement.

3.1.2 Years in Service. This term indicates the length of time a teacher has been working in the education field, representing their experience level. The range of experience among teachers is a significant asset for learning engagement strategies.

Table 2. Profile of the Respondents in terms of Years in Service

Years in Service	School Heads		Teachers	
	Frequency	Percentage (%)	Frequency	Percentage (%)
1-5			9	16.4
6-10			25	45.5
11-15			10	18.2
16 and above	6	100	11	20.0
Total	6	100	55	100.00

Table 2 reveals that all school head-respondents have 16 or more years of service (100%), highlighting their extensive leadership experience, while most teachers (45.5%) have 6-10 years of service, with 16.4% having 1-5 years. This distribution indicates that school heads have significantly more years of experience compared to teachers, who are more evenly spread across experience levels. The findings suggest

that the experienced school heads are well-equipped to mentor less experienced teachers and influence policy implementation, while the mix of teacher experience levels fosters a dynamic teaching environment. However, the relatively low number of teachers with 1-5 years of service may indicate challenges in teacher retention, highlighting the need for targeted professional development programs for both experienced school heads and early-career teachers. This was supported by the study of Johansson et al. (2024), emphasizing that teacher experience significantly influences student achievement and that teachers' qualifications and experience levels are critical in improving educational outcomes.

3.1.3 Field of Specialization. This denotes the specific area of academic or subject focus in which a teacher has received training or has expertise, such as Mathematics, Science, English, or other subjects. Teachers' specializations shape their approaches to teaching and learning engagement. Table 3 reveals that among school heads, Araling Panlipunan and Science specializations each make up 33.33%, while Mathematics and English are less represented at 16.67%. Conversely, 96.40% of teachers specialize in Mathematics, with a small portion (3.60%) in other fields like accounting. This concentration of Mathematics teachers aligns with the study's focus on numeracy, suggesting a strong emphasis on improving mathematics competencies. The variety of specializations among school heads provides diverse leadership perspectives, but given the lack of Mathematics specialization, there may be opportunities to develop numeracy-focused leadership training. This aligns with the study of Tawil et al. (2024), who noted the significant support for a mathematics teacher specialization approach in primary schools, indicating interest in such a model among teachers and administrators.

Table 3. Profile of the Respondents in terms of Field of Specialization

Field of Specialization	School Heads		Teachers	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Mathematics	1	16.67	53	96.40
Araling Panlipunan	2	33.33		
English	1	16.67		
Science	2	33.33		
Others (Accounting)			2	3.60
Total	6	100	55	100.00

3.1.4 Educational Attainment. This refers to the highest level of formal education a teacher has completed, ranging from a bachelor's degree to advanced graduate degrees like a master's or doctorate. A range of educational qualifications from bachelor's degrees to advanced degrees adds another layer of depth to the teaching community.

Table 4. Profile of the Respondents in terms of Educational Attainment

Educational Attainment	School Heads		Teachers	
	Frequency	Percentage (%)	Frequency	Percentage (%)
College Graduate			8	14.55
With MA Units	3	50.00	34	61.8
MA Graduate			12	21.8
With Doctorate Units	2	33.33	1	1.8
Doctorate Graduate	1	16.67		
Total	6	100	55	100.00

Table 4 shows that 50.00% of school heads have MA units, while only one has a doctorate degree (16.67%), indicating a focus on advanced education among leaders. Among teachers, 61.8% hold MA units,

but none have doctorate degrees, reflecting a trend toward graduate-level education, particularly in leadership roles. This emphasis on professional development suggests that advanced qualifications, especially among school heads, could improve school management and instructional leadership. Mensah et al. (2024) study support this, noting that students taught by highly qualified teachers outperform those taught by less qualified teachers, emphasizing the significant impact of teacher qualifications on students' academic performance in mathematics.

3.2 Perceived Collaboration of Teachers and School Heads in Improving Students' Numeracy Skills

Effective collaboration between teachers and school heads is vital for enhancing students' numeracy skills by ensuring the successful implementation of strategies. Key components such as resource allocation, monitoring and evaluation, and feedback mechanisms contribute to continuous improvement and sustained student success in numeracy.

3.2.1 Resource Allocation. This refers to the process of distributing resources, such as funding, materials, and personnel, to support initiatives aimed at improving numeracy skills among students. Effective resource allocation considers not only the quantity of resources available but also their strategic deployment to areas where they can make the most significant impact.

Table 5. Extent of Perceive Collaboration in Improving Student Numeracy Skills among School Heads in terms of Resource Allocation

Indicators		Weighted Mean	Interpretation
As a school head, I collaboratively...			
1.	demonstrate knowledge and understanding of policies, guidelines, and issuances in managing finances such as allocation, procurement, disbursement, and liquidation aligned with the school plan.	4.67	EC
2.	manage finances adhering to policies, guidelines, and issuances in allocation, procurement, disbursement, and liquidation aligned with the school plan.	4.67	EC
3.	exhibit efficient and effective practices in the management of finances consistently adhering to policies, guidelines, and issuances in allocation, procurement, disbursement, and liquidation aligned with the school plan.	4.67	EC
4.	create and implement a checking mechanism to sustain efficient and effective management of finances while adhering to consistently to policies, guidelines, and issuances in allocation, procurement, disbursement, and liquidation aligned with the school plan.	4.67	EC
5.	demonstrate knowledge and understanding of laws, policies, guidelines, and issuances on managing school staff.	5.0	EC
6.	manage staffing such as teaching load distribution and grade level and subject are assignment in adherence to laws, policies, guidelines, and issuances based of the need of the school.	5.0	EC
7.	engage school personnel in maintaining effective management of staff in adherence to laws, policies, guidelines, and issuances based of the need of the school.	5.0	EC
8.	empower school personnel in sustaining effective management of staff in adherence to laws, policies,	5.0	EC
9.	guidelines, and issuances based of the need of the school.		
Overall Weighted Mean		4.83	EC
Rating Scale: Descriptive Interpretation:			
4.20- 5.00		Extremely Collaborative (EC)	
3.40- 4.19		Very Collaborative (VC)	
2.60- 3.39		Somewhat Collaborative (SoC)	
1.80- 2.59		Slightly Collaborative (SIC)	
1.00- 1.79		Not Collaborative at All (NCA)	

Table 5 reveals that school heads perceive their collaboration as extremely collaborative with staffing practices (WM=5.0). The lowest-rated indicators, related to financial resource management, still received an

extremely collaborative rating (WM=4.67), reflecting strong collaboration across both areas. Thus, school heads perceive their collaboration as extremely collaborative, especially in staff management, with an overall weighted mean of 4.83. The high ratings in staffing suggest a focus on fostering a positive school culture and enhancing teacher satisfaction, while the slightly lower rating for financial management indicates potential areas for improvement. This aligns with Kruse et al. (2020) study, who emphasized that academic leaders are tasked with maintaining instructional quality despite resource constraints and that effective leadership requires collective collaboration among all stakeholders.

Table 6 indicates that teachers perceive their collaboration in resource allocation as extremely collaborative, with the highest-rated indicators (WM=4.31) reflecting strong teamwork in utilizing diverse resources to enhance classroom instruction. The lowest-rated indicators (WM=3.98) involve planning, inventory, and allocation of resources, which were rated as very collaborative but with room for improvement. Moreover, teachers are very collaborative in resource management with an overall weighted mean of 4.13. These findings suggest that teachers are committed to leveraging available resources to improve student learning, but additional support in resource planning and organization could enhance their collaborative efforts. This is consistent with Jurkowski et al. (2023), who highlighted the importance of resources and collaborative structures in inclusive education, emphasizing that effective co-teaching relies on organizational support and collective responsibility.

Table 6. Extent of Perceive Collaboration in Improving Student Numeracy Skills among Teachers in Terms of Resource Allocation

Indicators		Weighted Mean	Interpretation
As a teacher, I collaboratively...			
1.	utilize a range of resources and provide intellectually challenging stimulating activities to encourage constructive classroom interactions geared towards attainment of high standards of learning.	4.31	EC
2.	ensure that regular resource inventory is available and is used as the basis for resource allocation and mobilization.	4.00	VC
3.	ensure timely and need-based planning and resource programming and support continuous implementation of education plan.	3.98	VC
4.	support judicious, appropriate, and effective use of resources.	4.24	EC
Overall Weighted Mean		4.13	VC
Rating Scale:	Descriptive Interpretation:		
4.20- 5.00	Extremely Collaborative (EC)		
3.40- 4.19	Very Collaborative (VC)		
2.60- 3.39	Somewhat Collaborative (SoC)		
1.80- 2.59	Slightly Collaborative (SIC)		
1.00- 1.79	Not Collaborative at All (NCA)		

3.2.2 Monitoring and Evaluation. This refers to a systematic process of assessing and tracking the implementation and effectiveness of strategies aimed at improving numeracy skills among students. Table 7 shows that school heads perceive themselves as extremely collaborative in monitoring and evaluation, with all indicators rated at the highest level (WM=5.0), reflecting their high effectiveness in applying, designing, and institutionalizing evaluation tools to promote student achievement.

Furthermore, these findings suggest that school heads prioritize monitoring and evaluation as key drivers of student success, fostering a culture of accountability and continuous improvement in numeracy skills. The ability to design and implement effective monitoring tools also highlights the expertise of school heads, providing teachers with actionable insights to improve instruction. This aligns with Karimi (2020) study, who found that participatory monitoring and evaluation significantly enhances the performance of numeracy programs, emphasizing the importance of incorporating these practices in educational policy to improve outcomes.

Table 7. Extent of Perceive Collaboration in Improving Student Numeracy Skills among School Heads in terms of Monitoring and Evaluation

Indicators		Weighted Mean	Interpretation
As a school head, I collaboratively...			
1.	display knowledge and understanding of monitoring and evaluation processes and tools to promote learner achievement.	5.0	EC
2.	utilize monitoring and evaluation processes and tools to promote learner achievement.	5.0	EC
3.	design supplemental monitoring and evaluation processes and tools to promote learner achievement.	5.0	EC
4.	lead in the institutionalization of effective monitoring and evaluation processes and tools to promote learner achievement.	5.0	EC
Overall Weighted Mean		5.0	EC
Rating Scale: Descriptive Interpretation:			
4.20- 5.00		Extremely Collaborative (EC)	
3.40- 4.19		Very Collaborative (VC)	
2.60- 3.39		Somewhat Collaborative (SoC)	
1.80- 2.59		Slightly Collaborative (SLC)	
1.00- 1.79		Not Collaborative at All (NCA)	

Table 8 shows that teachers are perceived as extremely collaborative in monitoring and evaluation, with the highest rated indicators (WM=4.42) reflecting their strong use of data to assess learner progress and achievement. The lowest rated indicators (WM=4.15) relate to mentoring colleagues on the effective use of learner attainment data but still rated as very collaborative. Moreover, teachers are extremely collaborative in monitoring and evaluation for numeracy improvement with an overall weighted mean of 4.32. This implies that teachers consistently demonstrate collaboration in using assessment data to refine teaching methods and enhance student performance. Their engagement in regular feedback sessions with school heads indicates a strong alignment of goals and strategies to support learner achievement. Teachers also actively seek professional development opportunities to strengthen their skills in data-driven instruction, reinforcing their commitment to continuous improvement.

Table 8. Extent of Perceive Collaboration in Improving Student Numeracy Skills among Teachers in Terms of Monitoring and Evaluation

Indicators		Weighted Mean	Interpretation
As a teacher, I collaboratively...			
1.	demonstrate knowledge of monitoring and evaluation of learner progress and achievement using learner attainment data.	4.42	EC
2.	monitor and evaluate learner progress and achievement using learner attainment data.	4.42	EC
3.	interpret collaboratively monitoring and evaluation strategies of attainment data to support learner progress and achievement.	4.29	EC
4.	provide advice on, and mentor colleagues in the effective analysis and use of learner attainment data.	4.15	VC
Overall Weighted Mean		4.32	EC
Rating Scale: Descriptive Interpretation:			
4.20-5.00		Extremely Collaborative (EC)	
3.40- 4.19		Very Collaborative (VC)	
2.60- 3.39		Somewhat Collaborative (SoC)	
1.80- 2.59		Slightly Collaborative (SLC)	
1.00- 1.79		Not Collaborative at All (NCA)	

However, the relatively lower ratings for mentoring peers suggest that more structured programs or initiatives could be introduced to promote knowledge-sharing and best practices among educators. Building a culture of mentorship and collaboration could further empower teachers to leverage assessment data effectively, ensuring that all students benefit from targeted and informed instruction. These findings suggest that teachers are committed to using assessment data to guide instruction, although there is potential for

growth in peer mentoring. This was supported by the study of Poehner and Mathew (2024), who emphasized that assessment not only evaluates learner achievement but also tracks progress, providing a critical foundation for making informed instructional decisions.

3.2.3 Feedback Mechanism. This refers to a system or process designed to collect, analyse, and utilize feedback from various stakeholders, such as teachers and school heads, regarding the effectiveness of teaching strategies, learning activities, and overall educational practices aimed at improving numeracy skills. This mechanism provides valuable insights, enabling continuous improvement and ensuring that initiatives are aligned with the needs of students and educators.

Table 9. Extent of Perceive Collaboration in Improving Student Numeracy Skills among School Heads in terms of Feedback Mechanism

Indicators		Weighted Mean	Interpretation
As a school head, I collaboratively...			
1.	demonstrate understanding of the use of feedback obtained from learners, parents, and other stakeholders to help teachers improve their performance.	4.50	EC
2.	use validated feedback obtained from learners, parents, and other stakeholders to help teachers improve their performance.	4.17	VC
3.	validate feedback obtained from learners, parents, and other stakeholders to help teachers improve their performance.	4.17	VC
4.	exhibit exemplary skills in effectively using validated feedback obtained from learners, parents, and other stakeholders to help teachers improve their performance.	4.33	EC
Overall Weighted Mean		4.29	EC
Rating Scale:	Descriptive Interpretation:		
4.20- 5.00	Extremely Collaborative (EC)		
3.40- 4.19	Very Collaborative (VC)		
2.60- 3.39	Somewhat Collaborative (SoC)		
1.80- 2.59	Slightly Collaborative (SLC)		
1.00- 1.79	Not Collaborative at All (NCA)		

Table 9 highlights the extent of perceived collaboration among school heads in improving numeracy skills through feedback mechanisms. The highest-rated indicator (WM=4.50) reflects school heads' understanding of using stakeholder feedback to enhance teacher performance, while the lowest-rated indicators (WM=4.17) suggest room for improvement in feedback usage and validation, though still rated as very collaborative.

Furthermore, school heads are extremely collaborative in using feedback to support numeracy improvement with an overall weighted mean of 4.29. These findings emphasize the importance of structured feedback processes in fostering teacher growth, stakeholder trust, and effective numeracy instruction. This was supported by the study of Koh et al. (2023), underscore that agentic feedback loops enable schools to adapt and continuously improve their practices.

Table 10 shows that teachers are highly collaborative in utilizing feedback mechanisms, with the highest rated indicator (WM=4.44) reflecting their ability to provide timely, accurate, and constructive feedback that fosters student self-reflection and improvement. The lowest rated indicator (WM=4.11) relates to leading professional discussions and reviewing feedback, indicating a slight area for improvement. Moreover, teachers are extremely collaborative in feedback practices with an overall weighted mean of 4.23, which supports student growth in numeracy and encourages active student involvement in learning. This aligns with the study of Meng (2023), who emphasized that reflective practices are crucial for educators to continuously enhance their instructional effectiveness through self-reflection and formative assessment practices.

Table 10. Extent of Perceive Collaboration in Improving Student Numeracy Skills among Teachers in Terms of Feedback Mechanism

Indicators		Weighted Mean	Interpretation
As a teacher, I collaboratively...			
1.	seek advice concerning strategies that can enrich teaching practice.	4.29	EC
2.	participate in collegial discussions that use teacher and learner feedback to enrich teaching practice.	4.24	EC
3.	review the colleagues, teacher, and learner feedback to plan, facilitate, and enrich teaching practice.	4.11	VC
4.	lead colleagues in professional discussions to plan and implement strategies that enrich teaching practice.	4.13	VC
5.	demonstrate knowledge of providing timely, accurate, and constructive feedback to improve learner performance.	4.35	EC
6.	use strategies for providing timely, accurate and constructive feedback to improve learner performance.	4.40	EC
7.	use effective strategies for providing timely, accurate and constructive feedback to encourage learners to reflect on and improve their own learning.	4.44	EC
8.	exhibit exemplary skills and lead initiatives to support colleagues in applying strategies that effectively provide timely, accurate and constructive feedback to learners to improve learning achievement.	4.18	VC
9.	demonstrate an understanding of the role of assessment data as feedback in teaching and learning practices and programs.	4.24	EC
10.	utilize assessment data to inform the modification of teaching and learning practices and programs.	4.15	VC
11.	work collaboratively with colleagues to analyze and utilize assessment data to modify practices and programs to further support learner progress and achievement.	4.18	VC
12.	lead colleagues to explore, design, and implement effective practices and programs using information derived from assessment data.	4.13	VC
Overall Weighted Mean		4.23	EC
Rating Scale: Descriptive Interpretation:			
4.20- 5.00		Extremely Collaborative (EC)	
3.40- 4.19		Very Collaborative (VC)	
2.60- 3.39		Somewhat Collaborative (SoC)	
1.80- 2.59		Slightly Collaborative (SIC)	
1.00- 1.79		Not Collaborative at All (NCA)	

3.3 Effective Learning Engagement Strategies of School Heads and Teachers in Enhancing the Numeracy Skills of the Students

Effective learning engagement strategies play a vital role in enhancing students' numeracy skills. School heads and teachers can significantly impact student learning by using hands-on activities, real-life applications, and differentiated instruction to make numeracy concepts more engaging and accessible. Integrating technology into lessons further boosts student motivation and understanding, while professional development ensures that educators are equipped with the latest tools and strategies to support their students. These approaches create an interactive, relevant, and supportive learning environment that helps students master numeracy skills and apply them in real-world contexts.

3.3.1 Hands-on Learning Activities. This refers to educational activities or experiences where students actively engage with physical materials, manipulatives, or real-life situations to explore, understand, and apply numeracy concepts. These activities are designed to enhance students' numeracy skills by allowing them to interact directly with mathematical concepts in tangible ways, fostering deeper understanding, engagement, and retention of mathematical concepts.

Table 11 shows that school heads are extremely effective in implementing hands-on learning

activities to enhance numeracy skills, with the highest-rated indicators (WM=4.50) reflecting their ability to set challenging learning outcomes and engage the broader school community in data-based interventions. The lowest-rated indicator (WM=4.00) pertains to mentoring fellow school heads to promote accountability, though it is still seen as very effective. Overall, school heads are perceived as extremely effective (WM=4.29) in fostering numeracy improvement through strong leadership and collaboration. This aligns with the study of Lashley (2023), who highlighted that strategic planning and mentorship are crucial for school leaders, with mentoring duration being predictive of leadership success in charter schools.

Table 11. Effective Learning Engagement Strategies of School Heads in Enhancing the Numeracy Skills along Hands-on Learning Activities

Indicators		Weighted Mean	Interpretation
As a school head, I effectively...			
1.	set achievable and challenging learning outcomes to support learner achievement and the attainment of other performance indicator.	4.50	EE
2.	utilize learning outcomes in developing data-based interventions to maintain learner achievement and the attainment of other performance indicator.	4.17	VE
3.	engage the wider school community in developing data-based interventions to maintain learner achievement and the attainment of other performance indicator.	4.50	EE
4.	mentor fellow school heads in sustaining learner achievement and in attaining other performance indicators to promote accountability within and beyond school context.	4.00	VE
Overall Weighted Mean		4.29	EE
Rating Scale: Descriptive Interpretation: 4.20-5.00 Extremely Effective (EE) 3.40- 4.19 Very Effective (VE) 2.60- 3.39 Somewhat Effective (SoE) 1.80- 2.59 Slightly Effective (SIE) 1.00- 1.79 Not Effective at All (NEA)			

Table 12 shows that teachers are extremely effective in implementing hands-on learning activities to enhance numeracy skills, with the highest-rated indicator (WM=4.40) reflecting their strong ability to manage classroom structures that engage learners in meaningful exploration and discovery. The lowest-rated indicator (WM=4.20) indicates teachers' effectiveness in modelling and sharing best practices with colleagues. Moreover, teachers are perceived to be extremely effective in implementing hands-on learning activities with an overall weighted mean of 4.29. These findings suggest that teachers create engaging learning environments, fostering active student participation, which is essential for numeracy improvement. This aligns with the study of Godwin et al. (2023), who emphasized that fostering a culture of consistent learning benefits both individual educators and the overall educational system by promoting continuous professional development and reflection.

Table 12. Effective Learning Engagement Strategies of Teachers in Enhancing the Numeracy Skills along Hands-on Learning Activities

Indicators		Weighted Mean	Interpretation
As a teacher, I effectively...			
1.	demonstrate knowledge of managing classroom structure that engage learners, individually or in groups, in meaningful exploration, discovery and hands-on activities within the available physical learning environments.	4.40	EE
2.	manage classroom structure that engage learners, individually or in groups, in meaningful exploration, discovery and hands-on activities within the available physical learning environments.	4.33	EE
3.	work with colleagues to model and share effective techniques in the management of classroom structure that engage learners, individually or in groups, in meaningful exploration, discovery and hands-on activities within the available physical learning environments.	4.20	EE
4.	model exemplary practices in the management of classroom structure that engage	4.22	EE

learners, individually or in groups, in meaningful exploration, discovery and hands-on activities within the available physical learning environments.		
Overall Weighted Mean		4.29
		EE
Rating Scale:	Descriptive Interpretation:	
4.20-5.00	Extremely Effective (EE)	
3.40- 4.19	Very Effective (VE)	
2.60- 3.39	Somewhat Effective (SoE)	
1.80- 2.59	Slightly Effective (SIE)	
1.00- 1.79	Not Effective at All (NEA)	

3.3.2 Real-life Application. This refers to the intentional integration of authentic, everyday situations, problems, and examples into numeracy lessons to demonstrate the practical relevance and utility of numerical concepts. These applications aim to enhance students' ability to apply numeracy skills in real-world contexts by illustrating how mathematical concepts are utilized in everyday life situations, such as budgeting, measurement, estimation, problem-solving, and decision-making. Real-life application activities are designed to motivate students by showing the direct relevance of numeracy skills to their lives, fostering active engagement, critical thinking, and problem-solving abilities. They serve to deepen students' understanding of numeracy concepts by connecting abstract mathematical ideas to tangible, meaningful experiences and scenarios encountered in their daily lives.

Table 13 indicates that school heads are extremely effective in enhancing numeracy through real-life applications, with the highest-rated indicators (WM=4.83) reflecting their efforts to integrate career awareness and opportunities into the curriculum. The lowest-rated indicator (WM=4.50) shows that school heads are also extremely effective in demonstrating knowledge of this integration. Furthermore, school heads are perceived to be extremely effective in enhancing numeracy skills through real-life application strategies with an overall weighted mean of 4.75. These findings suggest that school heads prioritize aligning numeracy education with real-world applications, preparing students for future career opportunities. This is supported by the study of Dizon (2024), who emphasized that school administrators and educators are increasingly prioritizing creative methods to enhance the delivery of the mathematics curriculum for more accessible and rewarding learning experiences.

Table 13. Effective Learning Engagement Strategies of School Heads in Enhancing the Numeracy Skills along Real-life Application

Indicators		Weighted Mean	Interpretation
As a school head, I effectively...			
1.	demonstrate knowledge and understanding of the integration of career awareness and opportunities in the provision of learning experiences aligned with the curriculum.	4.50	EE
2.	ensure integration of career awareness and opportunities in the provision of learning experiences aligned with the curriculum.	4.83	EE
3.	undertake initiatives in integrating career awareness and opportunities in the provision of learning experiences aligned with the curriculum.	4.83	EE
4.	institutionalize integration of career awareness and opportunities into the school curriculum and all other learning experiences.	4.83	EE
Overall Weighted Mean		4.75	EE
Rating Scale:	Descriptive Interpretation:		
4.20-5.00	Extremely Effective (EE)		
3.40- 4.19	Very Effective (VE)		
2.60- 3.39	Somewhat Effective (SoE)		
1.80- 2.59	Slightly Effective (SIE)		
1.00- 1.79	Not Effective at All (NEA)		

Table 14 shows the effective learning engagement strategies of teachers in enhancing numeracy skills along real-life application. The highest-rated indicator (WM=4.45) reflects their ability to create motivating learning environments that encourage students to take responsibility for their own learning. The

lowest-rated indicator (WM=4.20) highlights the need for further enhancement in teachers' efforts to model successful strategies and support colleagues in fostering these environments. Moreover, teachers are perceived to be extremely effective in employing real-life application strategies to enhance numeracy skills, with an overall weighted mean of 4.33. These findings suggest that teachers' effectiveness in promoting self-motivation and independence in learning is crucial for numeracy development, aligning with the study of Winardi (2024), who emphasized the role of teachers in supporting self-regulated learning in a world of abundant technological resources.

Table 14. Effective Learning Engagement Strategies of Teachers in Enhancing the Numeracy Skills along Real-life Application

Indicators		Weighted Mean	Interpretation
As a teacher, I effectively...			
1.	demonstrate knowledge of learning environments that motivate learners to work productively by assuming responsibility for their own learning.	4.45	EE
2.	apply a range of successful strategies that maintain learning environments that motivate learners to work productively by assuming responsibility for their own learning.	4.42	EE
3.	model successful strategies and support colleagues in promoting learning environments that effectively motivate learners to work productively by assuming responsibility for their own learning.	4.20	EE
4.	lead and empower colleagues in promoting learning environments that effectively motivate learners to achieve quality outcomes by assuming responsibility for their own learning.	4.24	EE
Overall Weighted Mean		4.33	EE
Rating Scale:		Descriptive Interpretation:	
4.20-5.00		Extremely Effective (EE)	
3.40- 4.19		Very Effective (VE)	
2.60- 3.39		Somewhat Effective (SoE)	
1.80- 2.59		Slightly Effective (SIE)	
1.00- 1.79		Not Effective at All (NEA)	

3.3.3 Differentiated Integration. This refers to the deliberate and systematic approach of tailoring instruction, learning activities, and support strategies to meet the diverse needs, abilities, interests, and learning styles of individual students within a numeracy classroom. This approach recognizes that students have varying levels of readiness, prior knowledge, strengths, and areas for improvement in numeracy skills.

Table 15. Effective Learning Engagement Strategies of School Heads in Enhancing the Numeracy Skills along Differentiated Integration

Indicators		Weighted Mean	Interpretation
As a school head, I effectively...			
1.	identify emerging opportunities and challenges in addressing the needs of learners, school personnel and other stakeholders.	4.50	EE
2.	manage emerging opportunities and challenges to encourage equality and equity in addressing the needs of learners, school personnel and other stakeholders.	4.50	EE
3.	capacitate school personnel in managing emerging opportunities and challenges to promote equality and equity in addressing the needs of learners, school personnel and other stakeholders.	4.50	EE
4.	empower school personnel in managing emerging opportunities and challenges to ensure equality and equity in addressing the needs of learners, school personnel and other stakeholders.	4.50	EE
Overall Weighted Mean		4.50	EE
Rating Scale:		Descriptive Interpretation:	
4.20-5.00		Extremely Effective (EE)	
3.40- 4.19		Very Effective (VE)	
2.60- 3.39		Somewhat Effective (SoE)	
1.80- 2.59		Slightly Effective (SIE)	
1.00- 1.79		Not Effective at All (NEA)	

Table 15 shows the effective learning engagement strategies of school heads in enhancing numeracy skills along differentiated integration. All indicators scored consistently high (WM=4.50), reflecting a strong ability to identify, manage, and empower personnel to address challenges while ensuring equity and equality for all stakeholders. Thus, school heads are perceived to be extremely effective with an overall weighted mean of 4.50 in employing differentiated integration strategies to enhance numeracy skills. These findings suggest school heads' commitment to fostering inclusive learning environments by adapting numeracy instruction to diverse student needs. This aligns with the study of Sharp et al. (2020), which emphasized the role of school leaders in supporting professional development and embracing inclusive teaching methodologies to address the increasing diversity of learners.

Table 16 shows the effective learning engagement strategies of teachers in enhancing numeracy skills along differentiated integration. The highest rated indicator (WM=4.33) reflects their proficiency in tailoring instruction to suit the diverse needs, interests, and strengths of students. However, collaboration with colleagues in evaluating and sharing differentiated strategies scored slightly lower (WM=4.13), indicating an opportunity for improvement in leadership and teamwork. Furthermore, teachers are perceived to be extremely effective in using differentiated integration strategies to enhance numeracy skills with an overall weighted mean of 4.21. It underscores the critical role of differentiated integration strategies in addressing the diverse learning needs of students and enhancing their numeracy skills. Teachers' ability to tailor instruction effectively suggests that professional development efforts in this area have been beneficial.

Table 16. Effective Learning Engagement Strategies of Teachers in Enhancing the Numeracy Skills along Differentiated Integration

Indicators		Weighted Mean	Interpretation
As a teacher, I effectively...			
1.	demonstrate knowledge and understanding of differentiated teaching to suit the learners' gender, needs, strengths, interests, and experiences.	4.33	EE
2.	use differentiated, developmentally appropriate learning experiences to address learners' gender, needs, strengths, interests, and experiences.	4.24	EE
3.	work with colleagues to share differentiated, developmentally appropriate opportunities to address learners' differences in gender needs, strengths, interests, and experiences.	4.16	VE
4.	lead colleagues to evaluate differentiated strategies to enrich teaching practices that address learners' differences in gender needs, strengths, interests, and experiences.	4.13	VE
Overall Weighted Mean		4.21	EE
Rating Scale:	Descriptive Interpretation:		
4.20-5.00	Extremely Effective (EE)		
3.40- 4.19	Very Effective (VE)		
2.60- 3.39	Somewhat Effective (SoE)		
1.80- 2.59	Slightly Effective (SIE)		
1.00- 1.79	Not Effective at All (NEA)		

However, the slightly lower ratings for collaboration imply that schools may need to implement structured platforms for sharing best practices and fostering teamwork among educators. Strengthening collaboration could enhance the consistency and quality of differentiated strategies across classrooms, leading to more equitable and effective learning outcomes. Establishing regular professional learning communities or workshops could provide teachers with opportunities to exchange successful strategies and receive feedback from colleagues. This collaborative approach would not only improve individual teaching practices but also contribute to a more cohesive and supportive learning environment for students. These findings align with the study of Ginja and Chen (2020), which highlighted the importance of differentiated education for diverse classrooms, noting both the successes in learner motivation and achievement gaps, and challenges such as lack of qualified educators and professional development opportunities.

3.3.4 Technology Integration. This refers to the purposeful and systematic incorporation of digital

tools, resources, and platforms into numeracy instruction to enhance teaching and learning experiences. This approach leverages various technologies to support and enhance students' engagement, motivation, practice, exploration, and understanding of numeracy concepts.

Table 17 shows the effective learning engagement strategies of school heads in enhancing numeracy skills along technology integration. The highest rated indicators (WM=4.50) reflect their proficiency in using ICT tools and managing school operations. The only indicator that scored slightly lower (WM=4.17) is the exhibition of best practices in using technology for school data management, suggesting room for improvement in sharing exemplary methods. Furthermore, school heads are perceived as extremely effective in integrating technology for managing school data, with an overall weighted mean of 4.42. Moreover, school heads' strong capacity to leverage technology in managing school operations, which is crucial for streamlining administrative processes and improving decision-making. Their proficiency with ICT tools demonstrates the effectiveness of ongoing training and their adaptability to technological advancements. However, the slightly lower rating for showcasing best practices suggests a need for initiatives that encourage the dissemination of successful methods among peers. This could involve professional learning communities or workshops where school heads share innovative approaches to data management. Enhancing this aspect could foster a culture of excellence and innovation, benefiting the broader educational community. These findings align with the study of Tulowitzki et al. (2022), which highlighted the growing impact of ICT in schools, emphasizing the role of school administrators as innovators in integrating technology for management and leadership tasks.

Table 17. Effective Learning Engagement Strategies of School Heads in Enhancing the Numeracy Skills along Technology Integration

Indicators		Weighted Mean	Interpretation
As a school head, I effectively...			
1.	demonstrate skills in managing school data and information using technology, including ICT.	4.50	EE
2.	manage school data and information using technology, including ICT, to ensure efficient and effective school operations.	4.50	EE
3.	capacitate school personnel in managing school data and information using technology, including ICT, to ensure efficient and effective school operations.	4.50	EE
4.	exhibit best practice in managing school data and information using technology, including ICT, to ensure efficient and effective school operations.	4.17	VE
Overall Weighted Mean		4.42	EE
Rating Scale:			
Descriptive Interpretation:			
4.20-5.00		Extremely Effective (EE)	
3.40- 4.19		Very Effective (VE)	
2.60- 3.39		Somewhat Effective (SoE)	
1.80- 2.59		Slightly Effective (SIE)	
1.00- 1.79		Not Effective at All (NEA)	

Table 18 shows the effective learning engagement strategies of teachers in enhancing the numeracy skills along technology integration. The highest rated indicator (WM=4.31) reflects their strong proficiency in selecting and using ICT-based resources to address learning goals. However, the ability to model exemplary skills and lead colleagues in technology integration received a slightly lower score (WM=4.09), suggesting room for improvement in collaboration. Furthermore, teachers are perceived as extremely effective in integrating technology to enhance numeracy skills, with an overall weighted mean of 4.21. Teachers' strong capability in utilizing technology to support numeracy skills development, reflecting the effectiveness of their ICT integration practices. Their ability to align technology use with learning goals highlights their commitment to enhancing student engagement and achievement through innovative resources.

However, the slightly lower rating for modelling skills and leading colleagues suggests a need for targeted professional development to strengthen peer collaboration and mentorship in technology integration.

Encouraging a culture of shared learning and leadership could help disseminate best practices more effectively across teaching teams. This aligns with the broader need for continuous ICT competency development to keep pace with evolving educational technologies. These findings align with the study of Rubach and Lazarides (2021), who emphasized that teachers' ICT competencies, including information literacy and problem-solving, are crucial for effectively implementing technology in the classroom. It also highlighted that fostering a collaborative environment among educators can further enhance the effective integration of ICT tools, benefiting both teaching practices and student outcomes.

Table 18. Effective Learning Engagement Strategies of Teachers in Enhancing the Numeracy Skills along Technology Integration

Indicators		Weighted Mean	Interpretation
As a teacher, I effectively...			
1.	show skills in the selection, development, and use of a variety of teaching and learning resources, including ICT to address learning goals.	4.31	EE
2.	select, develop, organize, and use appropriate teaching and learning resources, including ICT, to address learning goals.	4.24	EE
3.	advise and guide colleagues in the selection, organization, development, and use of appropriate teaching and learning resources including ICT, to address specific learning goals.	4.22	EE
4.	model exemplary skills and lead colleagues in the development and evaluation of teaching and learning resources, including ICT, for use within and beyond the school.	4.09	VE
Overall Weighted Mean		4.21	EE
Rating Scale: Descriptive Interpretation: 4.20-5.00 Extremely Effective (EE) 3.40- 4.19 Very Effective (VE) 2.60- 3.39 Somewhat Effective (SoE) 1.80- 2.59 Slightly Effective (SIE) 1.00- 1.79 Not Effective at All (NEA)			

3.3.5 Professional Development. This refers to structured and intentional learning experiences designed to enhance educators' knowledge, skills, competencies, and effectiveness in teaching and supervising numeracy skills. These experiences encompass a range of activities, programs, and opportunities aimed at supporting teachers' continuous growth and improvement in facilitating numeracy learning experiences for students.

Table 19 shows the effective learning engagement strategies of school heads in enhancing the numeracy skills along professional development. The highest rated indicators (WM=4.83) reflect their commitment to self-assessment, goal setting, and engaging in professional networks. However, the lowest rated indicators (WM=4.17) suggest there is room for improvement in their role as learning resources and in organizing professional networks. Moreover, school heads are perceived as extremely effective in utilizing professional development strategies to enhance numeracy skills, with an overall weighted mean of 4.50. Their high ratings for self-assessment and engagement in professional networks suggest that they are proactive in their personal and professional development, setting a positive example for their staff.

However, the lower ratings for serving as learning resources and organizing networks indicate an opportunity to strengthen their role as facilitators of collective growth. By enhancing their capacity to build and sustain professional networks, school heads can promote collaborative learning environments, enabling teachers to share best practices and innovative strategies for numeracy enhancement. Additionally, investing in leadership development programs tailored to contextual challenges could further empower school heads to drive school-wide improvements in numeracy outcomes. These findings align with the study of Mendoza and Callo (2024), who highlighted that contextual leadership skills are a strong predictor of teachers' performance and suggested that further development in leadership and professional networks can enhance numeracy.

Table 19. Effective Learning Engagement Strategies of School Heads in Enhancing the Numeracy Skills along Professional Development

Indicators		Weighted Mean	Interpretation
As a school head, I effectively...			
1.	conduct self-assessment of personal and professional development needs using the Philippine Professional Standards for School Head.	4.50	EE
2.	set personal and professional goals based on self-assessment aligned with the Philippine Professional Standards for School Head.	4.50	EE
3.	reflect on the attainment of personal and professional development goals and objectives based on the Philippine Professional Standards for School Head.	4.83	EE
4.	serve as a learning resource to fellow school heads in upgrading personal and professional competencies aligned with the Philippine Professional Standards for School Head.	4.17	VE
5.	seek opportunities to improve one's practice as a school leader through professional networks.	4.50	EE
6.	participate in professional networks to upgrade knowledge and skills and to enhance practice.	4.83	EE
7.	engage actively in professional networks within and across schools to advance knowledge, skills, and practice.	4.50	EE
8.	lead in organizing professional networks to provide colleagues opportunities to maximize their potential and enhance their practice.	4.17	VE
Overall Weighted Mean		4.50	EE
Rating Scale: Descriptive Interpretation:			
4.20-5.00		Extremely Effective (EE)	
3.40- 4.19		Very Effective (VE)	
2.60- 3.39		Somewhat Effective (SoE)	
1.80- 2.59		Slightly Effective (SIE)	
1.00- 1.79		Not Effective at All (NEA)	

Table 20 shows the effective learning engagement strategies of teachers in enhancing the numeracy skills along professional development. The highest rated indicator (WM=4.29) emphasizes setting professional development goals aligned with the Philippine Professional Standard for Teachers, while the lowest rated indicator (WM=3.98) highlights the need for teachers to take leadership roles in supporting colleagues' professional networks. Furthermore, teachers are perceived to be very effective in enhancing numeracy skills through professional development, with an overall weighted mean of 4.19. These findings suggest that teachers are committed to continuous learning, but expanding leadership roles in professional development could enhance collective growth. This aligns with the study of Taculog and Santos (2024), who emphasized that quality teaching practices, including professional development, significantly impact student learning outcomes and that teachers should continue to focus on both personal growth and enhancing their instructional practices.

Table 20. Effective Learning Engagement Strategies of Teachers in Enhancing the Numeracy Skills along Professional Development

Indicators		Weighted Mean	Interpretation
As a teacher, I effectively...			
1.	seek opportunities to establish professional links with colleagues.	4.27	EE
2.	participate in professional networks to share knowledge and enhance practice.	4.25	EE
3.	contribute actively to professional networks within and between schools to improve knowledge and to enhance practice.	4.16	VE
4.	take a leadership role in supporting colleagues' engagement with professional networks within and across schools to advance knowledge and practice in identified areas of need.	3.98	VE
5.	demonstrate motivation to realize professional development goals based on the Philippine Professional Standard for Teachers.	4.16	VE
6.	set professional development goals based on the Philippine Professional Standard for Teachers.	4.29	EE
7.	reflect on the PPST to plan personal professional development goals and assist	4.24	EE

8.	colleagues in planning and achieving their own goals. lead reforms in enhancing professional development programs based on in-depth knowledge and understanding of the Philippine Professional Standard for Teachers.	4.13	VE
Overall Weighted Mean		4.19	VE
Rating Scale:			
Descriptive Interpretation:			
4.20-5.00	Extremely Effective (EE)		
3.40- 4.19	Very Effective (VE)		
2.60- 3.39	Somewhat Effective (SoE)		
1.80- 2.59	Slightly Effective (SLE)		
1.00- 1.79	Not Effective at All (NEA)		

3.4 Relationship between the Profile of the Teacher-Respondents and their Effective Learning Engagement Strategies

Table 21 shows that there is a significant relationship between the position of teachers and the level of engagement strategies used to improve numeracy skills, particularly in hands-on learning activities ($d=.211$, $p=.019$) and professional development ($d=.201$, $p=.025$). A positive correlation was found, suggesting that teachers in higher positions tend to implement more effective strategies, such as hands-on learning and professional development, which enhances numeracy skills. Teachers in positions like Teacher 3 are better equipped to use hands-on activities and set professional development goals aligned with the Philippine Professional Standards for Teachers, improving their instructional practices.

However, no significant relationship was found between years in service or educational attainment and the engagement strategies used, indicating that experience and education alone may not directly enhance numeracy instruction. These findings align with the study of Cordova et al. (2024), who emphasize the importance of a holistic approach to numeracy education, integrating skills across the curriculum and prioritizing professional development to improve numeracy instruction and create a positive numerate school culture.

Table 21. Test for Significant Relationship between the Profile of the Teachers and their Effective Learning Engagement Strategies

Level of Engagement Strategies	Position		Profile Years in Service		Educational Attainment	
	<i>d</i>	<i>p-value</i>	<i>d</i>	<i>p-value</i>	<i>d</i>	<i>p-value</i>
Hands-on Learning Activities	.211*	.019	.001	.993	.055	.609
Real Life Application	.020	.847	.047	.648	-.015	.894
Differentiated Integration	.047	.645	.033	.745	.100	.347
Technology Integration	-.108	.296	-.024	.818	-.044	.691
Professional Development	.201*	.025	.026	.790	.073	.373

*Correlation is Significant @ 0.05 level

3.5 Relationship between the Extent of Collaboration and the Learning Engagement Strategies

Table 22 reveals a significant positive relationship between the extent of collaboration (in resource allocation, monitoring and evaluation, and feedback mechanism) and the level of engagement strategies used by school heads and teachers to improve numeracy skills, with correlation values ranging from .578 to .875, indicating a moderate to strong correlation. Moreover, this suggests that as collaboration increases, the effectiveness of engagement strategies also improves, particularly in hands-on learning, real-life application, differentiated integration, technology integration, and professional development. The collaboration in managing resources, assessing student progress, and sharing feedback mechanisms enables better-targeted strategies and improvements in numeracy skills. Additionally, collaboration and resource allocation play a key role in integrating technology and supporting professional development goals aligned with the Philippine

Professional Standards for School Heads and Teachers. This is supported by the study of Blomeke et al. (2021), who found that increased teacher collaboration in innovative schools leads to enhanced classroom practices, teacher satisfaction, and improved student outcomes through collaborative exchanges and innovative teaching strategies.

Table 22. Test for Significant Relationship between the Extent of Collaboration and the Learning Engagement Strategies

Level of Engagement Strategies	Resource Allocation		Extent of Collaboration Monitoring and Evaluation		Feedback Mechanism	
	<i>r</i>	<i>p-value</i>	<i>r</i>	<i>p-value</i>	<i>r</i>	<i>p-value</i>
Hands-on Learning Activities	.650**	.000	.590**	.000	.785**	.000
Real Life Application	.780**	.000	.746**	.000	.795**	.000
Differentiated Integration	.761**	.000	.673**	.000	.875**	.000
Technology Integration	.729**	.000	.578**	.000	.821**	.000
Professional Development	.758**	.000	.648**	.000	.797**	.000

**Correlation is Significant @ 0.01 level

3.6 Intervention Plan to Enhance Learning Engagement and Improve Numeracy Skills

The “Handbook for Enhancing Learning Engagement to Improve Numeracy Skills” addresses key challenges educators face, such as timely planning, resource programming, and supporting continuous implementation of education plans, alongside gaps in modelling exemplary practices. It emphasizes the importance of school leaders, who, as former teachers, bring valuable insights to improve numeracy skills through collaborative efforts and feedback-driven practices. Key objectives of the handbook include promoting inclusivity, enhancing teaching practices, supporting differentiation, and fostering professional growth. Upon approval, the handbook will be distributed during LAC Sessions to ensure educators are equipped with tools to meet diverse student needs and foster a culture of collaboration and excellence.

4. Conclusions and Recommendations

The study highlights the importance of diverse backgrounds, collaboration, career progression, and professional development in improving numeracy skills, with a proposed intervention plan focused on strengthening evidence-based practices, leadership, and continuous improvement in numeracy education. Thus, the study recommended that school heads and teachers may promote career progression and professional development through structured training and advanced degrees, supporting cross-disciplinary numeracy education, enhancing ICT integration with technology training and peer mentorship, and participating in professional learning communities, workshops, and seminars to stay updated on best practices. Thus, the proposed intervention plan was also recommended to address the areas that needs improvement in enhancing learning engagement to improve numeracy skills.

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