



Factors Affecting the Learner's Numeracy Skills in the Blended Learning Modality

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ABSTRACT

This study explored the degree to which instructional strategies and methods, learning environment, and parental support influence learners' numeracy skills in the blended learning modality within North Mandaue City public schools during School Year 2022-2023. Utilizing total numeration, 179 teachers were surveyed and grouped according to age, relevant trainings attended, and highest educational attainment. Data collection employed descriptive methods with statistical tools including frequency count, simple percentage, weighted mean, and Mann-Whitney U-Test. Findings revealed that younger teachers (50.70%) and older teachers (49.30%) equally rated instructional strategies and methods with a very high degree of influence, while both groups rated the learning environment as having a high degree of influence. Notably, younger teachers rated parental support with high degree, in contrast to older teachers who rated it with high degree. Despite these variations, statistical analysis showed no significant difference across the factors when grouped by the aforementioned variables, as all p-values exceed the alpha level. The results suggest a consistent perception among teachers regarding the critical role of these factors in enhancing numeracy skills, emphasizing the need for sustained focus on instructional quality, supportive learning environments, and strengthening parental involvement regardless of teacher demographics.

Keywords: Blended Learning and Numeracy Development, Instructional and Environmental Support, Parental Involvement in Learning

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INTRODUCTION

Education serves as a powerful tool, enabling individuals to pursue meaningful learning paths, with foundational subjects offering new perspectives. Among these, mathematics often emerges as a challenging area that significantly affects students' numeracy skills (Education Scotland, 2019). Numeracy, as defined by the United Nations Relief and Works Agency (2018), encompasses the confidence and ability to work with numbers, measurements, and data, requiring a solid grasp of computation and problem-solving in real-world scenarios. Furthermore, Ofsted (2018) emphasizes the critical role of early math instruction in shaping academic success, underscoring the importance of prioritizing numeracy in educational planning.

Despite this, numerous studies reveal that students around the world continue to struggle with numeracy. For instance, 86% of junior high school students in Nigeria were found to be below the basic numeracy level, and globally, between 32% to 76% of adults in low-to middle-income countries lack fundamental numeracy skills. In the Philippines, only 17% of primary learners met the minimum standards in mathematics by the end of elementary school. These statistics highlight a global crisis. However, while many studies acknowledge the impact of instructional strategies, learning environment, and parental support on numeracy, there remains a clear research gap particularly in localized settings like the blended learning context of North Mandaue City. Few investigations delve into how variables such as teacher demographics, training, and parental involvement specifically affect these factors.

Considering this gap, the present study is driven by the researcher's genuine desire to understand and respond to the challenges teachers face in improving numeracy skills under blended learning. By gathering relevant data and assessing the actual degree to which these factors influence numeracy, the study aims to craft a strategic intervention plan. This plan seeks not only to address current challenges but also to provide sustainable support for educators both locally and as reflection of broader national concerns.

OBJECTIVES OF THE STUDY

This study aimed to determine the degree of the factors affecting learners' numeracy skills within the Blended Learning Modality in a district belonging to a medium-sized Schools Division in a highly urbanized city during the 2022–2023 school year as a basis for an intervention plan. Specifically, it sought to assess the degree of factors affecting learners' numeracy skills in terms of instructional strategies and methods, learning environment, and parental support. It also examined the degree of these factors when respondents were grouped according to the identified variables and determined whether significant differences existed in the factors affecting learners' numeracy skills across the different respondent groups.

LITERATURE REVIEW

Numeracy skills are fundamental to learners' academic success and their ability to solve problems encountered in everyday life. Despite their importance, many learners continue to experience challenges in developing adequate numeracy competence. Research indicates that early mathematical exposure serves as a strong foundation for later numeracy achievement. According to Parsons and Bynner (2019), children who have limited opportunities to engage in mathematical activities during their formative years are more likely to demonstrate lower levels of numeracy proficiency as they progress through school. This highlights the importance of providing meaningful and developmentally appropriate mathematical experiences from an early age.

Effective instructional strategies and methods are among the most important factors influencing learners' numeracy development in blended learning environments. Studies have shown that differentiated instruction, flipped classrooms, inquiry-based learning, and the use of digital tools enhance mathematical understanding by allowing learners to progress at their own pace and engage actively in the learning process (Wei et al., 2020; Wong & Moorhouse, 2021; Yaseen et al., 2025). Likewise, Schmid et al. (2023) emphasized that clear learning objectives, scaffolded lessons, and formative assessments contribute significantly to improved mathematics achievement. These findings suggest that well-designed instructional approaches are essential for developing learners' numeracy skills.

International assessments further demonstrate the importance of instructional quality in mathematics education. The Trends in International Mathematics and Science Study (TIMSS, 2018) reported that many learners struggle with numeracy tasks requiring



higher-order thinking and real-life application, indicating a disconnect between classroom instruction and practical problem-solving. Similarly, assessment results from various educational systems reveal persistent difficulties in basic arithmetic operations and mathematical reasoning, highlighting the need for responsive curricula and targeted interventions that address learners' specific learning gaps.

The learning environment also plays a critical role in numeracy development within blended learning modalities. Baten et al. (2023) found that learners who study in quiet and structured home environments tend to achieve better academic outcomes than those exposed to distractions and inadequate learning resources. Likewise, Rapanta et al. (2020) identified weak internet connectivity, lack of digital devices, and limited teacher interaction as major barriers to effective learning. Noor et al. (2022) further reported that well-organized digital platforms and strong teacher presence contribute positively to learners' numeracy performance. These findings emphasize the importance of creating supportive learning environments that facilitate meaningful engagement with mathematical concepts.

Parental support has likewise been identified as a significant contributor to learners' numeracy achievement. Studies indicate that parents who actively monitor learning activities, communicate with teachers, and provide academic and emotional support help foster greater confidence and motivation among learners (Garbe et al., 2020; He et al., 2023). Moreover, Baten et al. (2023) found that active parental guidance during online learning sessions was associated with improved mathematics outcomes, while Zhou and Wang (2022) reported that positive parental attitudes toward mathematics promote persistence and self-confidence among learners. These findings demonstrate the crucial role of parental involvement in supporting numeracy development.

In the Philippine context, several studies have reinforced the importance of instructional practices, learning environments, and parental support in enhancing numeracy skills. Oclarit Jr. et al. (2024) found that the Indigenized-Blended Learning Approach significantly improved numeracy performance by integrating culturally relevant materials into instruction. Samson et al. (2023) highlighted the importance of parental involvement, teacher support, and learner self-efficacy in achieving successful blended learning outcomes, while Anabo (2023) identified teaching strategies as the most influential factor affecting numeracy performance. Collectively, local and international studies affirm that effective instruction, conducive learning environments, and strong parental support work together to promote numeracy development and improve learners' academic success in blended learning settings.

METHODOLOGY

This section presents the discussion of the research methodology used, the subjects and respondents of the study, the research instruments used, the validity and reliability of the instruments, the procedure for data gathering, and the statistical tools and procedure for data analysis.

Research Design

This study used the descriptive research design in determining the degree of the factors affecting the learner's numeracy skills in the Blended Learning Modality in a District, in a medium sized Schools Division, in a highly urbanized City during the school year 2022-2023 as basis for an intervention plan. Descriptive method of research according to Loeb (2017), seeks to determine the relationship between variables, explore causes of phenomena, hypotheses, and develops generalization, principles, and theories based on the findings. The nature of this study determined the condition of things in their present state. It determined differences between variables that were considered in the study. Based on the above premise, the researcher considered it most appropriate to use the descriptive research design.

Study Respondents

The respondents of the study comprised 138 teachers selected from a total population of 213 teachers in the identified schools within the North District. The sample size was determined using Cochran's formula at a 0.05 level of significance, a widely accepted method for calculating representative samples in educational research (Singh & Masuku, 2021). To ensure proportional representation of all schools, stratified random sampling was employed, wherein the population was grouped into homogeneous strata and respondents were randomly selected from each group. This approach guaranteed that every teacher had an equal opportunity to participate while enhancing the validity, reliability, and representativeness of the study. Of the 138 respondents, 43 (30.99%) were from School A, 25 (18.31%) from School B, 21 (15.49%) from School C, 17 (12.21%) from School D, and 32 (23.00%) from School E.



Instruments

Data were gathered through a survey questionnaire administered to teachers in the North District. The instrument consisted of two parts: Part I collected respondents' profile information, including sex, age, relevant training attended, and highest educational attainment, while Part II contained 30 items measuring factors affecting numeracy skills in blended learning across three components, namely instructional strategies and methods, learning environment, and parental support. Responses were rated using a five-point Likert scale ranging from 1 (Almost Never) to 5 (Always). To establish content validity, the instrument was evaluated by three experts in educational management and instructional leadership using the Carter Good and Douglas Scates criteria, yielding a mean validity score of 4.74, interpreted as Excellent. Reliability was determined through Cronbach's alpha, resulting in a coefficient of 0.870, which indicates high reliability and strong internal consistency, confirming the instrument's suitability for the study (Taherdoost, 2018; Carlson, 2019; Bluman, 2018).

Data Gathering Procedure

Permission from the Schools Division Superintendent was secured for the conduct of the study. The Public Schools District Supervisor and School Heads noted and approved the distribution schedule of the questionnaires to the respondents. After the approval of the heads, the researcher presented the purpose of the study to the faculty and the respondents. The researcher then administered the survey questionnaires to the identified respondents using google forms. After the test was conducted on the respondents, the data was retrieved immediately by exporting it into excel format from google drive; data was organized, tabulated, analyzed, and interpreted.

Data Analysis and Statistical Treatment

This study employed two analytical schemes the descriptive and comparative in analyzing the data in relation to the research objectives presented in Chapter 1. For Objective No. 1, which aimed to determine the degree of factors affecting learners' numeracy skills in the Blended Learning Modality in terms of instructional strategies, learning resources, assessment methods, and learner motivation, a descriptive analytical scheme using the mean was applied. For Objective No. 2, which sought to examine the degree of these factors when grouped according to the teacher-respondents' profile variables, a comparative analytical scheme using the mean was utilized. Meanwhile, for Objective No. 3, which determined whether there was a significant difference in the degree of factors affecting learners' numeracy skills when grouped according to profile variables, an inferential statistical scheme using the Mann-Whitney U test was employed.

Ethical Consideration

Participants in this study, who were public school teachers, were informed that participation was voluntary and that their decision would not affect their professional standing or relationship with the researcher or their school. Prior to data collection, written informed consent was obtained after explaining the study's purpose, procedures, confidentiality measures, and their right to withdraw at any time without penalty; since only adult respondents were involved, no parental consent or learner assent was required. All gathered data were treated with strict confidentiality, with no personal identifiers disclosed; responses were coded and aggregated to ensure anonymity and used solely for academic purposes, with secure data storage to prevent unauthorized access. The study also ensured that participation posed no physical or psychological harm, with participants informed of minimal risks such as possible discomfort in answering survey items and allowed to skip any questions they were uncomfortable with, while appropriate measures were in place to address any concerns. Overall, the research adhered to ethical standards in educational research, safeguarding the rights, dignity, and well-being of all participants throughout the study.

RESULTS AND DISCUSSION

This section deals with the presentation, analysis and interpretation of data gathered to carry out the objectives of this study. All these were made possible by following certain appropriate procedures so as to give the exact data and solution to each specific problem.

Factors Affecting the Learner's Numeracy Skills in the Blended Learning Modality in the Area of Instructional Strategies and Methods, Learning Environment, and Parental Support



Table 1

Factors Affecting the Learner's Numeracy Skills in the Blended Learning Modality in the Area of Instructional Strategies and Methods

Item	Mean	Interpretation
1. Incorporating the problem-solving method, delivering lectures, asking questions, and encouraging discovery in teaching mathematics.	4.53	Very High Degree
2. Listening actively to learners and clearly explaining concepts through efficient communication skills.	4.60	Very High Degree
3. Managing the classroom efficiently and imposing routines during learning activities.	4.67	Very High Degree
4. Prioritizing content mastery and aiming for children to develop a deep understanding of concepts, rather than simply memorizing key ideas.	4.61	Very High Degree
5. Enhancing teaching by incorporating the use of ICT and other technological devices and applications.	4.57	Very High Degree
6. Catering to various learning modalities through utilizing differentiated instruction.	4.51	Very High Degree
7. Making oneself available to clarify any difficulties learners may encounter during teaching learning processes.	4.62	Very High Degree
8. Strengthening the link between early learning and future success through providing ample developmental numeracy activities for children to practice their mathematics skills.	4.37	High Degree
9. Involving learners actively in the learning process through cooperative learning activities.	4.80	Very High Degree
10. Igniting learners' attention through using games to teach numeracy.	4.38	High Degree
Overall Mean	4.57	Very High Degree

Table 1 discusses the factors affecting the learner's numeracy skills in the blended learning modality in the area of instructional strategies and methods. The overall mean is 4.57 or an equivalent very high degree. It also recorded the lowest mean on item number 8 or an e "strengthening the link between early learning and future success through providing ample developmental numeracy activities for children to practice their mathematical skills" with a mean rating of 4.37 or equivalent high degree. Moreover, it is noted the highest mean on item number 9 "involving learners actively in the learning process through cooperative learning activities" with a mean rating of 4.80 or equivalent very high degree.

It is indicative that involving learners actively in the learning process through cooperative learning activities. Not all learners may work well together in a group setting. Conflicts, personality clashes, or unequal participation can arise, leading to ineffective collaboration and potential frustration among learners. This claim is akin to the statement of Jolliffe (2017) who stated that providing cooperative learning opportunities for learners in pairs and small groups can ensure that learners talk meaningfully and in relation the task.

Table 2

Factors Affecting the Learner's Numeracy Skills in the Blended Learning Modality in the Area of Learning Environment

Item	Mean	Interpretation
1. Ensuring that the classroom environment is free from noise and disturbance can minimize danger and distractions that may affect learners' numeracy skills in the blended learning modality.	4.49	High Degree
2. Listing clear daily learning objectives and explaining expectations for the day's learning can help learners understand what they need to achieve, facilitating their progress in numeracy skills.	4.54	Very High Degree



3. Creating a flexible classroom setup that allows learners to work with the teacher or a partner playing games can promote collaborative and interactive learning, which can positively impact numeracy skills.	4.50	Very High Degree
4. Fostering an inviting and motivational classroom atmosphere can cultivate learners' sense of belonging, perceived competence, and autonomy, which can enhance their motivation and engagement in numeracy activities.	4.52	Very High Degree
5. Arranging the classroom environment in a comfortable and personalized manner can create a positive and conducive learning environment, which can lead to improved numeracy skills.	4.62	Very High Degree
6. Establishing clear areas for submitting assignments, picking up homework, and starting math assignments upon entering the classroom can help learners stay organized and focused, boosting their numeracy skills.	4.38	High Degree
7. Incorporating tried and true strategies for studying at home, such as creating a dedicated study space and minimizing distractions, can help learners maintain focus and improve their numeracy skills.	4.23	High Degree
8. Prioritizing the completion of assignments and studying before watching television programs can help learners develop a stronger work ethic and increase their numeracy skills.	4.28	High Degree
9. Avoiding giving learners household chores that conflict with their learning activities leading to create more time and focus for numeracy activities, improving their numeracy skills.	4.14	High Degree
10. Encouraging family support and involvement in learners' numeracy activities, such as answering their questions and providing assistance with related activities, can create a supportive learning environment and enhance their numeracy skills.	4.47	High Degree
Overall Mean	4.42	High Degree

Table 2 presents factors affecting the learner's numeracy skills in the blended learning modality in the area of learning environment. As indicated in table 4, the overall mean is 4.42 or an equivalent of high degree. It also obtained the lowest mean on item number 9 "Avoiding giving learners household chores that conflict with their learning activities leading to create more time and focus for numeracy activities, improving their numeracy skills." Moreover, it recorded the highest mean on item number 6 "arranging the classroom environment in a comfortable and personalized manner can create a positive and conducive learning environment, which can lead to improved numeracy skills" with a rating of 4.62 or an equivalent very high degree.

This is an indication that the classroom environment is a critical factor in children's development and learning. A positive, supportive, and stimulating classroom environment can have a significant impact on children's academic social, emotional, and physical well-being. Therefore, it is essential for educators and caregivers to create and maintain a conducive environment that meets the needs of all children. This is confirmed by the finding of Footprints (2022) said that the classroom should be a dynamic and engaging place to be for the learners. Hannah (2018) said that if there is too much structure set in place it can stifle creativity, and if there is enough structure can lead to distraction and little focus. On the contrary, a classroom with fresh, warm air can create an atmosphere conducive to learning. However, without an organized classroom, even a generously sized room can diminish students' sense of ease and autonomy and limit their learning.

Table 3

Factors Affecting the Learner's Numeracy Skills in the Blended Learning Modality in the Area of Parental Support

Item	Mean	Interpretation
1. Providing learners with sufficient learning support to help them complete their work on time, stay engaged in their learning, and have more free time to pursue other activities.	4.52	Very High Degree
2. Guiding and assisting learners in completing assignments and encouraging them to use the library to facilitate their learning and expand their resources.	4.40	High Degree



3. Establishing a regular tutoring schedule for learners and ensuring that it is conducted with care to help learners receive the support they need to improve their numeracy skills.	4.43	High Degree
4. Guiding learners consistently in accomplishing their outputs to achieve learning objectives can help them stay on track and develop a deeper understanding of numeracy concepts.	4.54	Very High Degree
5. Monitoring learners' progress in numeracy skills using several ways, such as through regular assessments and observations, to ensure that they are making meaningful progress.	4.54	Very High Degree
6. Allowing sufficient time for learners to master difficult competencies can enhance their confidence and proficiency in numeracy skills.	4.43	High Degree
7. Monitoring learner output submissions regularly and performance can provide valuable insights into their progress and identify areas for improvement.	4.61	Very High Degree
8. Providing support to schools to acquire the necessary resources for quality instruction to improve the overall learning experience for learners in the blended learning modality.	4.36	High Degree
9. Clarifying teachers' instructions to help learners understand content and resolve confusion to improve their comprehension and engagement in numeracy activities.	4.43	High Degree
10. Monitoring learners' achievement and progress over time to help parents and educators track their development and provide targeted support as needed.	4.62	Very High Degree
Overall Mean	4.49	High Degree

Table 3 shows the discussion of factors affecting the learner's numeracy skills in the blended learning modality in the Area of Parental Support. It could be gleaned that the overall mean 4.49 or an equivalent high degree. It recorded the least mean on item number 8 "providing support to school to acquire the necessary resources for quality instruction to improve the overall learning experience for learners in the blended modality. A cursory look at the table reveals highest mean 4.62 or equivalent very high degree in item number 10 "monitoring learner's achievement and educators track their development and provide targeted support as needed.

Convincing parents to have enough time to help his/her child is the most dominant concern which rated 4.62 or an equivalent very high degree. It means that parents have difficulty in tutoring his/her child due to lack of patience as well as lack of technical competence in teaching and some lessons are complicated and no one is better to teach than the teacher. This implies the unwillingness of some parents to cooperate with the school. This supports the findings of Agaton and Cueto (2021) who stated that upon discovering that parents have difficulty in tutoring his/her child has poor mastery of the learning competencies, underdeveloped levels of comprehension, and has persistent problems in both numeracy and literacy. Parents and teachers should be aware of their roles and responsibilities in teaching pupils so them to learn efficiently and effectively.

Comparative Analysis in the Factors Affecting the Learner's Numeracy Skills in the Blended Learning Modality in the Area of Instructional Strategies and Methods, Learning Environment, and Parental Support when grouped according to Variables Age, Relevant Trainings Attended, and Highest Educational Attainment

Table 4

Difference Between Instructional Strategies and Methods When Grouped and Compared According to the Aforementioned Variables

Variable	Category	N	Mean Rank	Mann Whitney U	P-value	Sig. level	Interpretation
Age	Younger	70	77.24	1838.50	.018	0.05	Significant
	Older	68	61.54				
Relevant Trainings Attended	Lower	74	72.14	2172.50	.390		Not Significant



	Higher	64	66.45			
	Lower	85	65.96			
Highest Educational Attainment				1951.50	.175	Not Significant
	Higher	53	75.18			

Table 4 showed that the comparison of instructional strategies and methods when grouped according to the aforementioned variables revealed that age obtained a p-value less than the 0.05 level of significance, indicating a significant difference between younger and older respondents. In contrast, relevant trainings attended and highest educational attainment yielded p-values greater than 0.05, indicating no significant difference across these groupings. This implies that age influences instructional strategies and methods, while trainings and educational attainment do not significantly affect the application of these strategies in blended learning contexts.

The significant difference in age suggests that younger teachers may be more adaptive to blended learning strategies, possibly due to greater familiarity with digital tools and flexible teaching approaches. On the other hand, the absence of significant differences in terms of trainings and educational attainment indicates that these factors alone are not sufficient determinants of effective instructional strategies. This supports the idea that practical experience, adaptability, and exposure to real classroom challenges may play a more critical role than formal qualifications or number of trainings attended. Consequently, a parallel action plan may be recommended for respondents regardless of training background and educational attainment.

This finding is supported by existing literature which emphasizes that effective instructional strategies in blended learning depend on adaptability, structured lesson design, and the integration of digital tools rather than solely on formal training credentials. Studies by Yaseen et al. (2025), Wei et al. (2020), and Schmid et al. (2023) highlighted that differentiated instruction, scaffolded learning, and the use of interactive platforms significantly enhance numeracy skills. Furthermore, findings from Anabo (2023) revealed that teaching strategies significantly influence learners' numeracy performance, while demographic variables such as educational attainment may not have a significant effect. Similarly, related studies on learning environment and parental support (Baten et al., 2023; Noor et al., 2022; Garbe et al., 2020) suggest that instructional effectiveness is shaped by multiple interacting factors, reinforcing the need for comprehensive and inclusive instructional planning in blended learning environments.

Table 5

Difference Between Learning Environment When Grouped and Compared According to the Aforementioned Variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Age	Younger	70	75.28	1975.50	.080		Not Significant
	Older	68	63.55				
Relevant Trainings Attended	Lower	74	72.70	2131.50	.305	0.05	Not Significant
	Higher	64	65.80				
Highest Educational Attainment	Lower	85	67.33	2068.00	.412		Not Significant
	Higher	53	72.98				

Table 5 showed that the comparison of factors affecting learners' numeracy skills in the area of learning environment, when grouped according to age, relevant trainings attended, and highest educational attainment, yielded p-values greater than the 0.05 level of significance. This indicates that there is no significant difference across all variables. Hence, the null hypothesis is



accepted, suggesting that the learning environment experienced by respondents does not significantly vary based on their profile characteristics.

The absence of significant differences implies that the learning environment is a shared condition among respondents regardless of their age, training exposure, or educational attainment. This suggests that external factors such as availability of resources, home conditions, and access to technology may have a more uniform effect across groups rather than being influenced by individual teacher characteristics. Consequently, there is not enough statistical evidence to support the claim that the learning environment differs across the identified variables, thereby justifying the recommendation of a parallel action plan applicable to all respondents.

This finding is supported by existing literature which emphasizes that the effectiveness of the learning environment in blended learning is influenced more by structural and contextual factors than by demographic variables. Studies by Baten et al. (2023) revealed that students in organized and supportive home environments perform better, while Rapanta et al. (2020) identified barriers such as limited access to devices and unstable internet connectivity. Similarly, Noor et al. (2022) and Friedman (2019) highlighted that structured routines and strong teacher presence significantly contribute to improved numeracy outcomes. Local studies by Jasmin and Ongcoy (2024) and Balasabas (2024) further confirmed that environmental conditions such as home distractions, connectivity, and consistent teacher support play a crucial role, reinforcing that these factors are broadly experienced across respondents regardless of profile differences.

Table 6

Difference Between Parental Support When Grouped and Compared According to the Aforementioned Variables

Variable	Category	N	Mean Rank	Mann Whitney U	p-value	Sig. level	Interpretation
Age	Younger	70	77.22	1839.50	.020	0.05	Significant
	Older	68	61.55				
Relevant Trainings Attended	Lower	74	73.11	2100.50	.247	0.05	Not Significant
	Higher	64	65.32				
Highest Educational Attainment	Lower	85	67.98	2123.50	.567	0.05	Not Significant
	Higher	53	71.93				

Table 6 revealed that the comparative analysis of parental support when grouped according to the aforementioned variables showed a p-value less than the 0.05 level of significance in terms of age, indicating a significant difference between younger and older respondents. However, relevant trainings attended and highest educational attainment yielded p-values greater than 0.05, indicating no significant differences. Thus, the null hypothesis is rejected for age but accepted for the other variables.

The significant difference in age suggests that perceptions or experiences of parental support may vary between younger and older respondents, possibly due to differences in teaching exposure, communication approaches, or adaptability in engaging parents in blended learning contexts. On the other hand, the lack of significant differences in terms of trainings and educational attainment indicates that these factors do not substantially influence how parental support is perceived or utilized. Therefore, while age may require targeted strategies, a parallel action plan may still be applicable across groups in terms of training and educational attainment.

This result is consistent with literature highlighting the importance of parental support in blended learning environments while also recognizing variations in how it is experienced. Garbe et al. (2020) found that active parental involvement, such as monitoring assignments and maintaining communication with teachers, significantly improves learner outcomes. Similarly, Baten et al. (2023) emphasized that parental guidance is crucial, particularly in online learning settings. He (2023) and Zhou and Wang (2022) further noted that emotional support and positive parental attitudes enhance learners' motivation and persistence.



However, local studies by Delgado (2025) revealed that many parents face challenges in providing consistent support due to work constraints and limited digital skills, suggesting variability in parental involvement that may explain differences across age groups of respondents.

CONCLUSION

The study assessed key factors affecting learners' numeracy skills in a blended learning modality, focusing on teacher profiles, instructional strategies, learning environment, and parental support. Findings revealed that most teachers were younger, had attended fewer than five relevant training sessions, and held relatively lower levels of educational attainment, with only a small proportion having postgraduate units. Across all groups, instructional strategies and methods emerged as the most influential factor, followed by a supportive learning environment and parental involvement, with both younger and older teachers consistently rating these factors at a high to very high degree. Statistical analysis using the Mann-Whitney U Test showed no significant differences in perceptions when grouped according to age, training, and educational attainment, indicating a shared professional understanding of the factors influencing numeracy skills. Overall, the study concludes that effective numeracy development in blended learning requires strengthened instructional approaches that integrate ICT and foundational pedagogy, improved learning environments, and enhanced parental support systems, alongside broad-based professional development for teachers.

RECOMMENDATIONS

To improve numeracy outcomes, the study recommends that school administrators provide targeted professional development programs focused on blended instruction that integrates digital tools with local and concrete learning materials to enhance conceptual understanding. Teachers are encouraged to use differentiated instructional strategies and consistent digital follow-ups to maintain student engagement and support mastery of difficult concepts. Parents are also urged to establish structured home-based numeracy practices and utilize school-provided learning guides to better support and monitor their children's progress. Additionally, future researchers are advised to conduct longitudinal studies to evaluate the long-term impact of these blended learning interventions on students' standardized mathematics performance.

Conflict of Interest

The authors declare the absence of any conflict of interest that could have influenced the content or conclusions of this paper. They affirm that no financial, personal, or professional relationships with other individuals or organizations have compromised the objectivity, integrity, or impartiality of the research work. As a final point, no external parties influenced the study design, data collection, analysis, or interpretation.

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