CONTEXTUALIZED LEARNING STRATEGIES, LEARNER ENGAGEMENT, AND NUMERACY SKILLS OF GRADES 2 AND 3 PUPILS IN ZONE 4, DEPARTMENT OF EDUCATION, DIVISION OF CATANDUANES

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ABSTRACT

This study examined the extent of contextualized learning strategies used by teachers, the level of learner engagement, and the numeracy skills of primary grade pupils in Zone 4, DepEd Division of Catanduanes. The study aimed to assess how teachers implemented contextualized strategies, such as real-life examples, hands-on activities, problem-solving tasks, and the integration of local culture, and how these strategies influenced pupil engagement and numeracy skills. The relationships between contextualized strategies, learner engagement, and numeracy skills were also explored. Using a descriptive-correlational research design, 118 primary grade teachers were surveyed. The study tested three null hypotheses at a 0.05 significance level regarding these relationships. Findings revealed that teachers extensively employed contextualized learning strategies in numeracy instruction, with an overall weighted mean of 3.62 ("Strongly Agree/To a great extent"). Among the specific strategies, hands-on activities received the highest rating, followed by the integration of local culture and environment, problem-solving tasks, and the use of real-life examples. Pupils demonstrated a very high level of engagement in numeracy lessons, with an overall weighted mean of 3.52 ("Strongly Agree/Very High"), where motivation ranked highest, followed by collaboration, participation, and attention and focus. In terms of numeracy skills, pupils showed a proficient level, with an overall weighted mean of 3.21 ("Agree/Proficient"), performing strongest in number sense and mathematical reasoning, while computation skills and problem-solving ability were slightly lower. Correlation analyses revealed a significant positive relationship between the extent of contextualized learning strategies used by teachers and the level of learner engagement ($r = 0.843$), as well as between the extent of contextualized strategies and the level of numeracy skills ($r = 0.276$). A significant relationship was found also between learner engagement and numeracy skills ($r = 0.517$). The study concluded that teachers effectively utilize contextualized strategies that connect numeracy lessons to daily experiences, hands-on activities, problem-solving tasks, and local culture, and that pupil engagement plays a critical role in mediating learning outcomes. While the use of these strategies alone does not guarantee higher numeracy skills, pupils who are motivated, attentive, participative, and collaborative tend to perform better. Consequently, an action plan was formulated to enhance numeracy skills through the continued implementation of contextualized strategies and the promotion of active learner engagement, ensuring that instructional efforts lead to measurable improvements in pupils' understanding and application of numeracy concepts.

Keywords: Descriptive Correlational Study, Contextualized Learning Strategies, Learner Engagement, Numeracy Skills, Active Learner Involvement

INTRODUCTION

In the 21st century, numeracy has become a crucial foundational skill for learners to succeed in a knowledge-driven society. International assessments such as PISA and TIMSS highlight the need to strengthen mathematical literacy and problem-solving, particularly in developing countries where achievement gaps remain significant (OECD, 2019; Mullis, Martin, Foy, Kelly, & Fishbein, 2020). Numeracy extends beyond computation, encompassing mathematical reasoning, real-world problem analysis, and application across contexts. In the Philippines, national assessments reveal persistent challenges in basic numeracy, with many primary pupils performing below expected proficiency levels (DepEd, 2022). This underperformance is concerning because numeracy is foundational for learning other subjects such as science, technology, and economics. Research has explored strategies to improve numeracy, though most studies focus on specific techniques or limited contexts. For example, Villanueva (2018) found that contextualized learning materials improved Grade 3 pupils' comprehension but did not fully examine learner engagement. Cabansag (2019) reported benefits from hands-on, culturally relevant activities, yet the study's scope was limited, while Santos and David (2020) showed that active participation and collaboration improved computation skills without focusing on teacher strategies. Internationally, Chen and Zhang (2021) emphasized the role of motivation and engagement in predicting mathematics achievement, and locally, Delos Reyes (2022) recommended further studies on the link between contextualized teaching and engagement.

Contextualized learning strategies, which connect mathematical concepts to real-life experiences, have shown promise in enhancing comprehension, engagement, and problem-solving (Geiger, Forgasz, & Goos, 2016; Mok, Ho, & Lai, 2021; Rashid & Yeo, 2020). Hands-on and technology-supported approaches further reinforce numeracy, with manipulatives and active participation improving understanding (Cavanagh, 2019; Lo & Hew, 2021), and digital tools fostering motivation and collaboration (Niemi & Multisilta, 2016; Cakiroglu & Cakiroglu, 2018; Tindowen, Bassig, & Cagurangan, 2017; Bernardo, 2017). Learner engagement—behavioral, emotional, and cognitive—significantly affects mathematics achievement. Engagement can be strengthened through aligning instruction with learning styles (Dizon & Gonzales, 2023), family involvement (Sonnenschein & Galindo, 2023), interactive and game-based learning (Herawati & Dewi, 2022; Mensah & Adu-Gyamfi, 2023), supportive classroom environments (Darling-Hammond, Flook, Cook-Harvey, Barron, & Osher, 2019), technology (Wulandari & Putri, 2022; Kong, 2021), and collaborative learning (Fredricks, Filsecker, & Lawson, 2016; Bond, Bedenlier, Marín, & Händel, 2020).

Early numeracy interventions and targeted instructional strategies produce significant improvements (Dizon & Gonzales, 2023; Iswara, Ahmadi, & Da Ary, 2022a, 2022b). Community-based programs such as "Kampus Mengajar" and locally made materials reinforce numeracy skills (Nurhayati et al., 2022; Sari, 2022). Structured support for struggling learners also proves effective (Aunio, Scherer, & Melby-Lervåg, 2022), and foundational skills like number sense and computation are prerequisites for advanced mathematics (Palabıyık & Işık Tertemiz, 2024). Philippine educational policies emphasize contextualized learning to make instruction relevant to learners' experiences (Republic Act No. 10533, 2013; Republic Act No. 9155, 2001; DepEd, 2019). Despite this, numeracy performance remains a concern, highlighting gaps in using localized strategies and fostering engagement. Specifically, no prior study has investigated the combined effect of contextualized strategies and learner engagement on numeracy outcomes in Zone 4, DepEd Division of Catanduanes—a rural area with unique socio-cultural and educational challenges.

This study aims to determine how teachers' contextualized learning strategies and learner engagement contribute to numeracy skills in Grades 2 and 3. It examines the alignment of strategies with engagement (motivation, attention, participation, collaboration), assesses numeracy proficiency (number sense, computation, problem-solving, reasoning), investigates relationships among these variables, and formulates an action plan to guide effective numeracy instruction in Zone 4.

LITERATURE REVIEW

Contextualized Learning Strategies in Teaching Numeracy

Contextualized learning strategies link mathematical concepts to real-life experiences and learners' prior knowledge, making abstract ideas more meaningful and applicable. Goos, Dole, and Geiger (2016) emphasized that situating numeracy within everyday contexts enhances understanding and problem-solving skills, while Geiger, Forgasz, and Goos (2016) and Allen, Smith, Brown, and Miller (2024) found that real-life and scenario-based tasks improve reasoning, retention, and performance. Empirical studies by Rashid and Yeo (2020), Cavanagh (2019), and Niemi and Multisilta (2016) affirmed that project-based, hands-on, and technology-integrated strategies deepen comprehension and motivation, whereas Cakiroglu and Cakiroglu (2018) and Abdullah and Lim (2017) showed that collaborative and everyday-context learning strengthens critical thinking and transfer of mathematical skills. Locally, Tindowen, Bassig, and Cagurangan (2017) reported that integrating local contexts enhances engagement in Philippine classrooms, and Wardana, Suryana, and Nandi (2023) together with Lo and Hew (2021) confirmed that contextualized and interactive instruction fosters meaningful learning and mathematical reasoning.

Learner Engagement in Numeracy

Learner engagement in numeracy is a multidimensional construct that significantly influences students' mathematical understanding, motivation, and achievement. Research emphasizes that engagement flourishes through the interplay of instructional, familial, environmental, and technological factors. Dizon and Gonzales (2023) found that students with kinesthetic learning preferences and higher engagement levels performed better in mathematics, while Sonnenschein and Galindo (2023) highlighted the positive role of family involvement in fostering early numeracy. Active and interactive approaches, such as game-based instruction (Herawati & Dewi, 2022) and play-based learning (Mensah & Adu-Gyamfi, 2023), have been shown to enhance enthusiasm and participation, particularly in resource-limited contexts. Supportive learning environments and strong teacher-student relationships further promote engagement and achievement (Darling-Hammond et al., 2019), and institutional efforts to implement active learning practices lead to greater participation and success (Association of Public and Land-grant Universities, 2020). Additionally, technology serves as a key driver of engagement; Wulandari and Putri (2022) found that digital game-based interventions improve motivation and numeracy outcomes, while Bond, Bedenlier, Marín, and Händel (2020) and Fredricks, Filsecker, and Lawson (2016) demonstrated that collaborative and interactive models foster cognitive and emotional involvement. Kong (2021) further confirmed that structured, technology-supported collaboration enhances reasoning and problem-solving.

Numeracy Skills of Primary Grade Pupils

Developing numeracy skills in the early grades establishes the foundation for lifelong mathematical competence and academic achievement. Research highlights that teacher

interventions, contextualized instruction, early support, and technology integration are essential in strengthening these skills. Dizon and Gonzales (2023) emphasized the pivotal role of teacher-led initiatives in improving basic numeracy abilities, while Iswara, Ahmadi, and Da Ary (2022a, 2022b) demonstrated that Realistic Mathematics Education and ethnomathematics-based instruction enhance problem-solving and numeracy literacy. Community-based programs such as Kampus Mengajar (Nurhayati et al., 2022) and the use of locally made materials (Sari, 2022) have also been shown to foster numeracy development. Early intervention remains critical; Aunio, Scherer, and Melby-Lervåg (2022) found that targeted support for struggling learners significantly improves mathematical performance. Similarly, Geiger, Forgasz, and Goos (2016) and Allen et al. (2024) underscored the importance of reasoning and explicit problem-solving instruction in building mathematical confidence and competence. Foundational skills such as computation and number sense are equally vital - Palabıyık and Işık Tertemiz (2024) confirmed their predictive value for later achievement, while Wulandari and Putri (2022) revealed that digital game-based learning enhances early numeracy through engaging, media-rich instruction.

METHODOLOGY

Research Design

This study utilized a descriptive-correlational design to explore how teachers' contextualized learning strategies and learner engagement contribute to enhancing numeracy skills among grades 2 and 3 pupils in Zone 4, DepEd Division of Catanduanes. The descriptive component determined the extent of contextualized learning strategies, the level of learner engagement in numeracy lessons, and pupils' numeracy proficiency. The correlational component identified significant relationships among these variables, specifically, the link between the extent of contextualized instruction and learner engagement; the extent of contextualized instruction and pupils' numeracy skills; and between learner engagement and pupils' numeracy skills. This design is appropriate for analyzing naturally occurring variables and identifying associations in real-world educational settings (Gall, Gall, & Borg, 2015).

Sources of Data

The primary sources of data for this study were the grades 2 and 3 teachers in the elementary schools of Zone 4, DepEd Division of Catanduanes. Only the empirical data obtained directly from these respondents were subjected to statistical treatment and analysis to ensure that the results faithfully represent their experiences regarding contextualized learning, learner participation in numeracy lessons, pupils' numeracy skills.

Population of the Study

The population of this study consisted of 124 Grade 2 and Grade 3 teachers in Zone 4, DepEd Division of Catanduanes. To ensure statistical validity, the sample size was computed using Slovin's formula at a 0.05 margin of error, yielding a representative sample of 95 respondents. Subsequently, stratified random sampling was applied to secure proportional representation across the identified groups.

Instrumentation and Validation

A researcher-developed questionnaire was employed as the primary data collection instrument for this study. The questionnaire comprised three sections. The first section

examined the contextualized learning strategies utilized by Grade 2 and Grade 3 teachers in teaching numeracy. The second section measured pupils' engagement during numeracy lessons, while the third section assessed pupils' numeracy skills. Face validity of the instrument was established through expert evaluation, and the recommended revisions were incorporated accordingly. To determine the reliability of the instrument, a pilot study was conducted involving 20 teachers who were not included in the main study. The Split-Half Method was applied, yielding a high reliability coefficient of 0.843, which indicates that the instrument was reliable for data collection.

Evaluation and Scoring

To determine the extent of teachers' implementation of contextualized learning strategies in teaching numeracy to Grades 2 and 3 pupils in Zone 4, Department of Education, Division of Catanduanes, the following measures were used:

Assigned Points	Numerical Range	Verbal Interpretation
4	3.25-4.00	Strongly Agree/To a great extent
3	2.50-3.24	Agree/To some extent
2	1.75-2.49	Disagree/To a less extent
1	1.00-1.74	Strongly Disagree/Not at all

To determine the level of learner engagement in numeracy lessons among Grade 2 and 3 pupils in Zone 4, Department of Education, Division of Catanduanes, the following measures were used:

Assigned Points	Numerical Range	Verbal Interpretation
4	3.25-4.00	Strongly Agree/Very High
3	2.50-3.24	Agree/High
2	1.75-2.49	Disagree/Low
1	1.00-1.74	Strongly Disagree/Very Low

To determine the level of numeracy skills among Grade 2 and 3 pupils in Zone 4, Department of Education, Division of Catanduanes, the following measures were used:

Assigned Points	Numerical Range	Verbal Interpretation
4	3.25-4.00	Strongly Agree/Highly Proficient
3	2.50-3.24	Agree/Proficient
2	1.75-2.49	Disagree/Developing
1	1.00-1.74	Strongly Disagree/Beginning

Data Gathering Procedure

The data-gathering procedure followed a structured and systematic approach. Prior to data collection, the researcher sought permission from the relevant authorities. A formal letter was sent to the Schools Division Superintendent and the Public Schools District Supervisor of Zone 4 to inform them of the conduct of the study and the distribution of the research questionnaires. Separate letters were also provided to the teacher-respondents. The researcher personally administered the three-part questionnaire to the identified Grade 2 and Grade 3 teachers. Before the distribution of the instrument, the objectives of the study and clear

instructions for answering the questionnaire were explained to the respondents. Confidentiality of responses and voluntary participation were strictly observed. After the questionnaires were completed, they were retrieved, encoded, and organized for statistical analysis.

Statistical Treatment of Data

The following statistical tools were employed in the study:

1.Weighted Mean was used to determine the extent of contextualized learning strategies implementation, learner engagement in numeracy lessons, and level of numeracy skills among grades 2 and 3 pupils.

2.Pearson Product-Moment Correlation Coefficient (Pearson r) was used to examine the relationships between the three variables - extent of contextualized learning strategies implementation, learner engagement in numeracy lessons, and level of numeracy skills among grades 2 and 3 pupils.

Presentation, Analysis and Interpretation of Data

1. Extent of Teachers' Use of Contextualized Learning Strategies in Teaching Numeracy to Grade 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Table 1
Extent of Teachers' Use of Contextualized Learning Strategies in Teaching Numeracy to Grade 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Variable	Weighted Mean	Verbal Interpretation	Rank
Use of Real-Life Examples	3.58	Strongly Agree/To great extent	4
Hands-On Activities	3.70	Strongly Agree/To great extent	1
Problem-Solving Tasks	3.61	Strongly Agree/To great extent	3
Integration of Local Culture/Environment	3.62	Strongly Agree/To great extent	2
Overall weighted mean	3.62	Strongly Agree/To great extent	

Legend:

3.25-4.00	-Strongly Agree/To great extent	1.75-2.49	-Disagree/To a less extent
2.50-3.24	-Agree/ To some extent	1.00-1.74	-Strongly Disagree/Not at all

As shown in Table 1, the overall weighted mean of 3.62, interpreted as *"Strongly Agree/To a Great Extent,"* indicates that teachers in Zone 4, DepEd Division of Catanduanes extensively used contextualized learning strategies in teaching numeracy. Hands-on activities (WM = 3.70) were the most frequently applied, followed by the integration of local culture (WM = 3.62) and problem-solving tasks (WM = 3.61). Real-life examples, though still important (WM = 3.58), ranked lowest.

These findings highlight that teachers consistently employed strategies such as hands-on activities, problem-solving tasks, and cultural connections to enhance pupils' numeracy understanding and engagement. Research supports these results, showing that incorporating local culture, using manipulatives, and applying problem-based learning positively impact mathematical literacy and critical thinking. Pratama and Yelken (2024) found that ethno mathematics-based learning significantly improves students' mathematical literacy, aligning with the study's integration of local culture. Sholihah et al. (2025) reported that problem-based learning with cultural contexts strongly enhances mathematical literacy, which reflects the findings on problem-solving tasks. A Philippine-based study by Causing, Araquil, and Baldove (2024) showed that using local materials like snail shells and bamboo sticks for hands-on learning improved numeracy skills, supporting the current study's results on manipulatives. Similarly, Colango (2024) found that the use of manipulatives positively affected students' procedural fluency and conceptual understanding. Additionally, a meta-analysis by Mauladaniyati, Sumarni, and Purnomo (2024) demonstrated that integrating local culture significantly improved mathematical understanding, aligning with the present study's observations.

Overall, these studies collectively support the current findings, showing that strategies such as real-life examples, hands-on activities, problem-solving tasks, and the integration of local culture are not only widely used by teachers but also effectively promote meaningful, practical, and culturally relevant numeracy learning.

2. Level of Learner Engagement in Numeracy Lessons of Grade 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Table 2
Level of Learner Engagement in Numeracy Lessons of Grade 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Variable	Weighted Mean	Verbal Interpretation	Rank
Motivation	3.57	Strongly Agree/Very High	1
Attention and Focus	3.49	Strongly Agree/Very High	4
Participation	3.50	Strongly Agree/Very High	3
Collaboration	3.51	Strongly Agree/Very High	2
Overall weighted mean	3.52	Strongly Agree/Very High	

Legend:

3.25-4.00	-Strongly Agree/Very High	1.75-2.49	-Disagree/Low
2.50-3.24	-Agree/ High	1.00-1.74	-Strongly Disagree/Very Low

Table 2 shows that Grade 2 and 3 pupils in Zone 4, DepEd, Division of Catanduanes, demonstrated a very high level of engagement in numeracy lessons, with an overall weighted mean of 3.52, interpreted as "Strongly Agree/Very High." Among the various aspects of engagement, motivation received the highest rating (WM = 3.57), indicating that learners were eager and confident in participating. Collaboration followed closely (WM = 3.51), suggesting that pupils worked well with peers in group tasks. Participation (WM = 3.50) and attention and focus (WM = 3.49) also received very high ratings, indicating that learners

consistently engaged in classroom discussions, actively contributed to activities, and maintained concentration throughout lessons. These findings align with previous studies. Guzman (2023) found that actively engaged Grade 11 students showed higher participation and performance. Campanilla (2024) emphasized that motivation significantly impacted students' persistence and eagerness, which mirrors the high motivation observed in this study. Malabayabas et al. (2024) reported that interactive, gamified math applications boosted attention and participation, further supporting the role of engagement. Additionally, Quirino and Ucang (2025) showed that localized learning fostered collaboration and improved learning outcomes.

Overall, these results demonstrate that pupils are highly engaged, motivated, participative, and collaborative, creating a positive learning environment. This engagement not only strengthens understanding but also fosters important skills like persistence, problem-solving, and teamwork, which are key for academic success and lifelong learning.

2. Level of Numeracy Skills of Grades 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Table 3
Level of Numeracy Skills of Grades 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Variable	Weighted Mean	Verbal Interpretation	Rank
Number Sense	3.31	Strongly Agree/Highly Proficient	1
Computation Skills	3.22	Agree/Proficient	2
Problem-Solving Ability	3.08	Agree/Proficient	4
Mathematical Reasoning	3.21	Strongly Agree/Highly Proficient	3
Overall weighted mean	3.21	Agree/Proficient	

Legend:

3.25-4.00	-Strongly Agree/Highly Proficient	1.75-2.49	-Disagree/Developing
2.50-3.24	-Agree/Proficient	1.00-1.74	-Strongly Disagree/Beginning

Table 3 shows that Grade 2 and 3 pupils in Zone 4, DepEd, Division of Catanduanes demonstrated a proficient level of numeracy skills, with an overall weighted mean of 3.21, interpreted as "Agree/Proficient." Pupils were strongest in number sense (WM = 3.31), followed by computation skills (WM = 3.22) and mathematical reasoning (WM = 3.21), while problem-solving ability (WM = 3.08) showed slightly lower proficiency. This pattern suggests that, while pupils have a solid foundation in number sense and reasoning, additional support is needed in computation and problem-solving. These findings align with Philippine studies emphasizing the development of numeracy skills among primary learners. Celemin (2023) showed that authentic, performance-based tasks improved pupils' number sense, computation, and problem-solving abilities. Marmito (2024) found that responsive teaching practices addressing learners' gaps in numeracy enhanced mathematical competence.

Francisco et al. (2025) demonstrated a positive link between numeracy skills and academic performance, supporting the need for foundational skill development. Bragas (2025) highlighted that project-based, collaborative, and hands-on activities effectively strengthened numeracy skills, especially in applying operations and reasoning. Overall, these studies confirm that numeracy skills can be effectively developed through meaningful and interactive learning activities. While pupils show a solid foundation, continuous practice, problem-solving exercises, and reasoning-focused interventions are essential to further enhance their skills and ensure mastery across all mathematical areas.

4. Relationship Between the Extent of Contextualized Learning Strategies Used by Teachers and the Level of Learner Engagement of Grade 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Table 4
Relationship between the Extent of Contextualized Learning Strategies Used by Teachers and the Level of Learner Engagement of Grade 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Variables	Statistical Test	Computed Value	Critical Value @ .05	Decision	Interpretation
Extent of Contextualized Learning Strategies Used by Teachers vs. the Level of Learner Engagement	Pearson r	0.843	0.195	Reject Ho	Significant Relationship

Ho: There is no significant relationship between the extent of contextualized learning strategies used by teachers and the level of learner engagement
£ = 0.05 level of significance

As presented in Table 4, there was a significant and strong positive relationship between the extent of contextualized learning strategies used by teachers and the level of learner engagement, as evidenced by a computed Pearson r value of 0.843, which was higher than the critical value of 0.195 at the 0.05 significance level. This indicates that when teachers implement strategies like real-life examples, hands-on activities, problem-solving tasks, and the integration of local culture, pupils are more motivated, attentive, participative, and collaborative during numeracy lessons. These findings are supported by Philippine studies. Puertollano and Pasia (2021) found that the use of Contextualized Teaching and Learning (CTL) strategies positively correlated with student engagement in mathematics. Ogates et al. (2023) reported that contextualized lesson materials, such as activity sheets based on real-life situations, significantly enhanced student engagement and learning outcomes in mathematics. Together, these studies confirm that contextualized learning strategies not only improve the understanding and application of mathematical concepts but also foster active learner engagement, underscoring the importance of teachers in creating interactive and meaningful learning experiences.

5. Relationship between the Extent of Contextualized Learning Strategies Used by Teachers and the Level of Numeracy Skills of Grade 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Table 5
Relationship between the Extent of Contextualized Learning Strategies Used by Teachers and the Level of Numeracy Skills of Pupils in Zone 4, Department of Education, Division of Catanduanes

Variables	Statistical Test	Computed Value	Critical Value @ .05	Decision	Interpretation
Extent of Contextualized Learning Strategies Used by Teachers vs. the Level of Numeracy Skills of Pupils	Pearson r	0.276	0.202	Reject Ho	Significant Relationship

Ho: There is no significant relationship between the extent of contextualized learning strategies used by teachers and the level of numeracy skills of pupils
£ = 0.05 level of significance

Table 5 shows the relationship between the extent of contextualized learning strategies used by teachers and the level of numeracy skills of pupils. The computed Pearson's correlation coefficient was r = 0.276, exceeding the critical value of 0.202 at the 0.05 level of significance, leading to the rejection of the null hypothesis. This indicates a significant positive relationship, suggesting that pupils' numeracy skills improve when teachers consistently use contextualized learning strategies that connect mathematical concepts to real-life situations and the students' immediate environment.

Supporting this, Kaminski and Sloutsky (2020) found that elementary students using student-created, colorful manipulatives, such as art-based materials, showed a stronger conceptual understanding of fractions. Similarly, Causing, Araquil, Baldove, and Toreno (2024) reported that using concrete manipulatives made from local materials in the Philippines, like stones and banana leaves, enhanced students' engagement and numeracy skills across various domains. These studies reinforce the finding that contextualized learning strategies not only improve conceptual understanding but also promote active participation, making numeracy lessons more relevant and effective for pupils.

6. Relationship between the Level of Learner Engagement and the Level of Numeracy Skills of Grade 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Table 6
Relationship between the Level of Learner Engagement and the Level of Numeracy Skills of Pupils in Zone 4, Department of Education, Division of Catanduanes

Variables	Statistical Test	Computed Value	Critical Value @ .05	Decision	Interpretation

Level of Learner Engagement vs, the Level of Numeracy Skills of Pupils	Pearson r	0.517	0.202	Reject Ho	Significant Relationship

Ho: There is no significant relationship between the level of learner engagement and the level of numeracy skills of pupils
£ = 0.05 level of significance

As shown in Table 6, a significant positive relationship (Pearson r = 0.517) was found between the level of learner engagement and the level of numeracy skills, surpassing the critical value of 0.202 at the 0.05 significance level. This led to the rejection of the null hypothesis, suggesting that pupils who are more engaged in numeracy lessons—through motivation, attention, participation, and collaboration—tend to perform better in numeracy skills. These findings align with existing literature. Guzman (2023) reported that Filipino Grade 11 students who were actively engaged in mathematics lessons demonstrated higher performance, emphasizing the role of engagement in enhancing mathematical understanding. Similarly, Janubas and Lomibao (2025) found a significant positive correlation between students' engagement (behavioral, cognitive, and emotional) and their mathematics achievement, underscoring engagement's importance in academic success.
Collectively, these studies confirm that learner engagement is crucial for improving numeracy skills, as active involvement, sustained focus, and cooperative participation are essential for achieving higher mathematical competence.

7. Proposed Action Plan
8.

The results indicate the need to develop an action plan to enhance the numeracy skills of Grade 2 and 3 pupils in Zone 4, Department of Education, Division of Catanduanes.

Proposed Acton Plan to Enhance Numeracy Skills of Grades 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Rationale

The findings of the study indicate that teachers extensively use contextualized learning strategies, and pupils show very high engagement in numeracy lessons. However, while engagement is strong, pupils' numeracy skills, particularly in computation and problem-solving, are only at a proficient level. This suggests that more targeted efforts are needed to translate effective teaching strategies and learner engagement into higher numeracy performance. Therefore, an action plan is necessary to provide structured and practical approaches that strengthen numeracy skills, foster motivation, and sustain active participation in learning.

Objectives

1. To improve pupils' computation skills through hands-on and practical learning activities.
2. To enhance pupils' problem-solving ability by integrating real-life and contextualized tasks.
3. To develop pupils' mathematical reasoning by encouraging explanation, justification, and reflective thinking.
4. To maintain and boost pupils' motivation for learning numeracy through interactive and meaningful activities.

5. To sustain pupils' attention and focus during numeracy lessons.
6. To increase pupils' participation in classroom discussions and activities.
7. To promote collaboration and cooperative learning among pupils.

Bases of the Action Plan

1. Findings on Teacher Practices: The study showed that teachers frequently use hands-on activities, integrate local culture, apply problem-solving tasks, and provide real-life examples to contextualize learning.
2. Learner Engagement: Pupils were found to be highly motivated, attentive, participative, and collaborative, highlighting the importance of sustaining and channeling this engagement toward skill development.
3. Numeracy Skill Levels: While pupils demonstrated proficiency in numeracy, areas such as problem-solving and computation need additional support.
4. Evidence from Literature: Research supports the use of contextualized, hands-on, and collaborative strategies to enhance numeracy skills and engagement (e.g., Pratama & Yelken, 2024; Sholihah et al., 2025).
5. Practical Considerations: Aligning teaching strategies with learners' cultural and daily experiences increases relevance, understanding, and application of mathematical concepts.

Action Plan Matrix to Enhance the Numeracy Skills of Grade 2 and Grade 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Objective	Strategies/Activities	Responsible Person(s)	Timeframe	Expected Outcome
1. Strengthen computation skills	- Conduct hands-on exercises using manipulatives (counters, sticks, coins) - Provide daily practice tasks for addition, subtraction, multiplication, and division - Use peer-assisted learning for problem areas	Teachers	Ongoing, per lesson	Pupils demonstrate accurate and confident computation skills
2. Improve problem-solving ability	- Integrate real-life and contextualized word problems - Encourage group problem-solving and peer discussions - Scaffold steps for complex problems	Teachers	Weekly sessions	Pupils apply strategies correctly and solve real-life math problems
3. Enhance mathematical reasoning	- Ask pupils to explain reasoning and justify answers during lessons - Use visual aids, drawings, and charts	Teachers	Bi-weekly	Pupils demonstrate logical thinking and can explain

	to illustrate concepts - Conduct reflective discussions after exercises			problem-solving processes
4. Maintain and boost learner motivation	- Use gamified numeracy activities and rewards - Relate lessons to daily experiences and cultural contexts - Recognize individual and group achievements	Teachers & School Staff	Ongoing	Pupils remain eager, confident, and engaged in learning numeracy
5. Promote attention and focus	- Incorporate short, interactive activities to sustain concentration - Minimize classroom distractions and create structured routines - Monitor individual engagement and provide gentle reminders	Teachers	Per lesson	Pupils remain attentive and complete tasks effectively
6. Foster participation	- Encourage pupils to volunteer answers and share ideas - Assign interactive tasks that require active involvement - Use cooperative learning methods in small groups	Teachers	Weekly	Pupils consistently participate in discussions and activities
7. Encourage collaboration	- Conduct pair or group projects using real-life scenarios - Assign collaborative problem-solving tasks - Rotate group members to expose pupils to different peers	Teachers	Bi-weekly	Pupils demonstrate teamwork, cooperation, and effective communication

SUMMARY OF FINDINGS

The salient findings of the study are as follows:

1. Extent of Teachers' Use of Contextualized Learning Strategies in Teaching Numeracy to Grade 2 and Grade 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

The overall weighted mean of 3.62, interpreted as "Strongly Agree/To a great extent," indicated that teachers extensively employed contextualized learning strategies in teaching numeracy. Among the strategies, hands-on activities received the highest rating (WM = 3.70, Rank 1), followed by integration of local culture and environment (WM = 3.62, Rank 2), problem-solving tasks (WM = 3.61, Rank 3), and use of real-life examples (WM = 3.58, Rank 4).

2. Level of Learner Engagement in Numeracy Lessons of Grade 2 and Grade 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Pupils demonstrated a very high level of engagement, with an overall weighted mean of 3.52, interpreted as "Strongly Agree/Very High." Among the aspects of engagement, motivation received the highest rating (WM = 3.57, Rank 1), followed by collaboration (WM = 3.51, Rank 2), participation (WM = 3.50, Rank 3), and attention and focus (WM = 3.49, Rank 4).

3. Level of Numeracy Skills of Grades 2 and 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

Pupils demonstrated a proficient level of numeracy skills, with an overall weighted mean of 3.21, interpreted as "Agree/Proficient." The highest-rated areas were number sense (WM = 3.31, Rank 1) and mathematical reasoning (WM = 3.21, Rank 3), while computation skills (WM = 3.22, Rank 2) and problem-solving ability (WM = 3.08, Rank 4) were slightly lower

4. Relationship Between the Extent of Contextualized Learning Strategies Used by Teachers and the Level of Learner Engagement in Grade 2 and Grade 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

There was a significant positive relationship, with a computed Pearson r value of 0.843, which is higher than the critical value of 0.195 at the 0.05 significance level. This indicates that as teachers use more contextualized learning strategies, the level of learner engagement tends to increase.

5. Relationship Between the Extent of Contextualized Learning Strategies Used by Teachers and the Level of Numeracy Skills of Grade 2 and Grade 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

There was a significant relationship, with a computed Pearson r value of 0.276, which is higher than the critical value of 0.195 at the 0.05 significance level. This suggests that as teachers use more contextualized learning strategies, the numeracy skills of pupils are enhanced

6. Relationship between the Level of Learner Engagement and the Level of Numeracy Skills of Pupils of Grade 2 and Grade 3 Pupils in Zone 4, Department of Education, Division of Catanduanes

There was a significant positive relationship, with a computed Pearson r value of 0.517, which is higher than the critical value of 0.195 at the 0.05 significance level. This means that as teachers use contextualized learning strategies, the level of learner engagement increases, and the numeracy skills of pupils are enhanced

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7. Proposed Action Plan

An Action Plan was formulated to enhance the numeracy skills of grade 2 and 3 pupils in Zone 4, DepEd Division of Catanduanes, based on contextualized learning strategies and learner engagement.

CONCLUSION

Based on the findings of the study, the following conclusions were drawn:

1. Teachers extensively employ contextualized learning strategies in teaching numeracy, integrating approaches that connect mathematical concepts to pupils' daily experiences, hands-on activities, problem-solving, and local culture.
2. Among the different strategies, hands-on activities are the most frequently applied by teachers, highlighting their focus on engaging pupils through practical and experiential learning.
3. Pupils demonstrate a very high level of engagement in numeracy lessons across all dimensions, indicating consistent involvement and active participation.
4. When teachers actively use contextualized learning strategies such as real-life examples, hands-on activities, problem-solving tasks, and integration of local culture, pupils tend to show higher levels of engagement in numeracy lessons. This means that learners are more motivated to participate, pay closer attention, contribute actively during discussions, and collaborate effectively with their peers, creating a dynamic and interactive learning environment.
5. Though the correlation is modest, there is a significant positive relationship between the use of contextualized learning strategies and pupils' numeracy skills. Effective numeracy development requires that these strategies be complemented with consistent practice, teacher guidance, and targeted support.
6. Pupils who demonstrate higher levels of engagement, manifested through motivation, sustained focus, active participation, and collaborative behavior, tend to achieve better numeracy outcomes. This suggests that learner engagement plays a crucial mediating role, meaning that even with effective teaching strategies, pupils' active involvement is essential for translating instructional efforts into measurable numeracy skills.
7. There is a need to implement the proposed action plan to enhance the numeracy skills of primary grade pupils, focusing on the use of contextualized learning strategies and promoting learner engagement.

RECOMMENDATIONS

In view of the study's findings and conclusions, the following recommendations are hereby presented:

1. Teachers should continue to use a variety of contextualized learning strategies, such as real-life examples, hands-on activities, problem-solving tasks, and the integration of local culture, to sustain and further strengthen pupils' engagement in numeracy lessons.
2. Teachers are encouraged to emphasize hands-on activities and experiential learning opportunities, as these strategies were the most frequently applied and highly valued, effectively allowing pupils to interact with materials and apply numeracy concepts in practical ways.

3. Learning activities should be designed to encourage motivation, attention, participation, and collaboration, ensuring that pupils are consistently involved and actively contributing to the lessons.
4. Teachers should intentionally incorporate activities that foster pupil engagement, such as interactive discussions, cooperative tasks, and collaborative problem-solving, since higher engagement directly supports improved numeracy performance.
5. Although contextualized strategies make learning more meaningful, teachers should combine them with regular practice, guided exercises, and structured support to strengthen pupils' computation, problem-solving, and reasoning abilities.
6. Teachers and schools should implement measures to observe and support pupils' engagement, particularly those who may be less participative, to ensure that all learners benefit from interactive and collaborative numeracy lessons.
7. The proposed action plan should be actively carried out, emphasizing the systematic use of contextualized learning strategies and promoting learner engagement. Regular monitoring and evaluation should be conducted to measure its effectiveness in improving pupils' numeracy skills.

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